



Land Use Conversion in Indonesian Food Security Policy: Environmental Impacts and Sustainable Food Land Provision Strategies

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ABSTRACT

The state is obligated to ensure food security and environmental protection. In Indonesia, this is pursued through the food estate program to increase food production. However, land conversion in forest and peatland areas causes environmental degradation and sustainability risks, raising legal issues regarding compliance with environmental and sustainable land management regulations. This study analyzes the environmental impacts of land conversion under the food estate program and identifies legally sustainable strategies for food land provision within Indonesian environmental and agrarian law. This research proposes a sustainable legal framework that prioritizes strengthening the protection of Sustainable Food Agricultural Land and Protected Rice Fields, alongside utilizing the Land Bank mechanism as more environmentally responsible alternatives to large-scale land clearing. The research employs a normative juridical approach by examining legal doctrines, statutory regulations, and policy documents on land conversion, food security, and environmental protection, complemented by focus group discussions with key informants to clarify practical legal issues. The study finds that the designation of food estate areas, particularly in forest and peatland ecosystems, has caused significant environmental harm, including ecosystem degradation, biodiversity loss, hydrological disruption, and increased disaster risks that undermine long-term food security goals.

INTRODUCTION

Food is a basic human need, so every country is obliged to be able to meet the food needs of its people. Not only that, a country's economy is also greatly influenced by the country's ability to meet its food needs. The Covid-19 pandemic in 2020 gave the idea that domestic food production must be the main focus for every country due to the disruption of international trade routes. In addition, changes in people's lifestyles are also one of the triggers for shifts in food patterns globally, including in Indonesia. An increase in the number of populations, a large number of working women, and an increase in community welfare will affect consumer preferences for the type of food needed.¹ Thus, the ability of a nation to meet its food needs depend on the success of agricultural sector output and the availability of agricultural land.

¹ Sri Widowati, "Ketahanan Pangan: Capaian dan Arah Kebijakan," in *Ketahanan Pangan dan Keamanan Pangan Indonesia: Sekarang dan ke Depan* (Yogyakarta: Interlude, 2020), 3–12.

The Background Study of the Vision of Indonesia 2045 by the National Development Planning Agency of the Republic of Indonesia (Bappenas RI) stated that the underlying challenges of Indonesia's food policy related to food production, health problems, and food utilization patterns have changed. For example, related to food production, although there is an increase in production, high demand for food causes a deficit in the comestibles, this increase price due to high demand.² The problems faced by agricultural development are growing increasingly complex overtime, including rapid population growth and increasing conversion of agricultural land.³ The conversion of agricultural land constitute a crucial problems for the agricultural sector itself. It's not only causing a decline in food production, but also a form of investment loss, agroecosystem degradation, and erosion of agricultural traditions and culture, which resulted in the narrowing of the farmland and the decline in farmers' welfare.⁴

Land conversion is a change in the function of part or all of the land area from its original function (as planned) to another function that can negatively impact the environment and the potential of the land itself.⁵ The consequence of the continuous and uncontrolled conversion of agricultural land to non-agricultural use, will cause a further reduction in land area for agricultural activities. This is evident in the decline of food production, the physical environment, and the level of farmers' welfare.⁶

Various factors influenced the transfer of land use both for the interests of individuals and groups, and even for the interests of the community. According to Pasandaran, there are at least three factors that influence land conversion, particularly the scarcity of land and water resources, development dynamics, and the increase in the number of populations.⁷ In addition, land conversion also occurs in the upstream area to become plantations due to the lack of agricultural land to meet the community's food needs. One pertinent example can be found in the villages around the Citarum Hulu Watershed, with high population density and low land ownership, as well as forest-dependent livelihoods with farming culture and land-based economic systems. This pressure has led to an increase in the number of vacant land where forests have changed their function to agricultural land for vegetables such as potatoes, carrots, cabbage, and leeks.⁸

Every year, the area of agricultural land decreases from 8.1 million hectares (2015) to 7.5

² Tim Penyusun Visi Indonesia 2045, *Visi Indonesia 2045* (Jakarta: Kementerian PPN/Bappenas, 2019).

³ "Keputusan Menteri Pertanian RI No. 484/KPTS/RC.020/M/8/2021 tentang Perubahan Kedua Atas Keputusan Menteri Pertanian No. 259/KPTS/RC.020/M/05/2020 tentang Rencana Strategis Kementerian Pertanian Tahun 2020-2024".

⁴ *Ibid.*

⁵ Agung Hadi Hidayat, Usamah Hanafie, and Nurmelati Septiana, "Dampak Konversi Lahan Pertanian Bagi Taraf Hidup Petani di Kelurahan Landasan Ulin Barat Kecamatan Liang Anggang Kota Banjarbaru," *AGRIDES: Jurnal Agribisnis Perdesaan* 2, no. 2 (October 8, 2024): 95–107, doi:10.20527/agrides.v2i2.20592.

⁶ Ajeng Pramesthy H.k et al., "Dampak Alih Fungsi Lahan Sawah Dilindungi (LSD) terhadap Ketahanan Pangan Pedesaan di Kabupaten Jember," *INICIO LEGIS* 4, no. 2 (November 25, 2023): 167–181, doi:10.21107/il.v4i2.23103.

⁷ Rauf A. Hatu, *Problematisa Tanah: Alih Fungsi Lahan dan Perubahan Sosial Masyarakat Petani*, ed. Sumarjo (Yogyakarta: Absolute Media, 2018).

⁸ Bani Siliwangi, "Perusakan Lingkungan Akibat Alih Fungsi Kawasan Hutan di Hulu Sungai Citarum Menjadi Kawasan Pertanian Dihubungkan Dengan Undang-Undang Nomor 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup," *Jurnal Wawasan Yuridika* 30, no. 1 (2014): 75–96, doi:10.25072/jwy.v30i1.76.

million hectares (2019),⁹ representing average annual loss approximately 100-150 thousand hectares. This fact demonstrates that the existence of agricultural land in Indonesia is threatened and if efforts are not made to control land conversion, the existence of agricultural land has the potential to be destroyed within the next 38 years.¹⁰ Thus, the provision of agricultural land is fundamental in achieving food security.

The dependence of meeting food needs on the area of land that can be used for production creates a dilemma for stakeholders *in* making food policies. On the one hand, agricultural land that can be used is very limited and decreasing overtime, so the government needs to ensure the availability of food land through a policy of determining areas that cannot be converted. On the other hand, food needs continue to increase as a result of the demographic bonus that requires the government to make policies to meet food needs that often have an impact on the environment. An example is the use of conservation areas and/or protected forests by converting them into food land with a food security policy, called the "food estate" policy implemented in several regions in Indonesia. The food estate policy is a food business program on a wide scale, so it is certain that the land used is not small, so that the opportunity to use protected forests for the policy is open. This program is projected as one of the breakthroughs in production modes, implemented with the aim meet Indonesia's food needs.¹¹

Land use conversion, that is not planned properly and appropriately, will pose a serious threat to the sustainability of land functions and the surrounding environmental ecosystem due to the loss of environmental services and multi-benefits of agricultural land for the environment.¹² For example, land conversion, such as the conversion of agricultural land to settlements and forests to agricultural/non-agricultural areas, can cause flooding in urban areas. This occurs because of the loss of environmental services as a "parking" place and rainwater catchment, which causes a *run-off* volume or surface flow that will exceed the tamping capacity of drainage channels.¹³ In addition, it also causes the loss of habitat and biodiversity of flora and fauna that live in the ecosystem around the land. The long-term impact of land conversion can cause a weakening of food security. Therefore, policies and efforts are needed to continue to improve food security, without having to convert land that should not be used for agriculture, one of which is by providing sustainable food land. Based on this background, this article will discuss the impact of land use conversion on the food estate food security policy implemented by the Government of Indonesia on the environment, and how to provide sustainable food land.

⁹ Tri Yudi Santosa, "Mengendalikan Alih Fungsi Lahan Pertanian," *Kompas.id*, May 12, 2024, <https://www.kompas.id/baca/opini/2024/05/11/mengendalikan-alih-fungsi-lahan-pertanian>.

¹⁰ Fopy Angrian, Siska Selpiyanti, and Ahmad Walid, "Dampak Alih Fungsi Lahan Terhadap Degradasi Lingkungan: Studi Kasus Lahan Pertanian Sawah Menjadi Lahan Non Pertanian," *Jurnal Swarnabhumi : Jurnal Geografi Dan Pembelajaran Geografi* 5, no. 2 (August 22, 2020): 36, doi:10.31851/swarnabhumi.v5i2.4741.

¹¹ Adrianus Eryan, Difa Shafira, and Etheldreda E. L. T. Wongkar, *Seri Analisis Kebijakan Kehutanan dan Lahan: Analisis Hukum Pembangunan Food Estate di Kawasan Hutan Lindung* (Jakarta: Indonesian Center for Environmental Law, December 18, 2020).

¹² Angrian, Selpiyanti, and Walid, "Dampak Alih Fungsi Lahan Terhadap Degradasi Lingkungan: Studi Kasus Lahan Pertanian Sawah Menjadi Lahan Non Pertanian."

¹³ Nono Rusono et al., *Evaluasi Implementasi Kebijakan Lahan Pertanian Pangan Berkelanjutan (LP2B)* (Jakarta: Direktorat Pangan dan Pertanian Kementerian PPN/Bappenas, 2015).

METHODS

This study uses a normative juridical approach. The normative method is generally associated with legal, practical, and professional work to solve a specific legal problem.¹⁴ The research was conducted from 2022 to 2024 by examining the existing theories, policies, laws, and regulations, and also synthesizing the empirical results of studies related to land conversion, food security, and environmental impacts to determine the accuracy of the application of legal principles in solving land use conversion problems in food security policies that have an impact on the environment and provide sustainable land provision strategies. To strengthen the results of the literature research, the researcher also conducted a focus group discussion with key informants who understood the problem of land conversion at the research site. The results of the discussion corroborate the researcher's initial findings and provide a clearer picture of legal problems in the field and help the researcher formulate conclusions.

DISCUSSION

Land Acquisition and Tenure Security for Farming Communities in Food Security Programs

Sustainable food security cannot be separated from legal certainty in land tenure for farming communities, as access to and control over land constitute the material foundation of agricultural production.¹⁵ From a legal perspective, food security programs require clear and lawful mechanisms for land acquisition to ensure that farmers cultivating food crops possess secure and legally recognized land rights. In the absence of tenure security, food production initiatives risk becoming unsustainable, as farmers remain vulnerable to displacement, land conversion, or competing land claims that undermine long-term agricultural investment.¹⁶

In the Indonesian legal framework, in principle the acquisition and protection of land for cultivating food crops is basically regulated by the Indonesian Basic Agrarian Law (UU No. 5 of 1960), which emphasizes the principle of the social function of land and mandates that land use must serve the greatest prosperity of the people. This principle is further strengthened by Law Number 41 of 2009 concerning Protection of Sustainable Food Agricultural Land (LP2B), which prioritizes the allocation and preservation of land for food production purposes. In addition, mechanisms such as land redistribution through agrarian reform, utilization of state land, and granting land rights in the form of property rights, cultivation rights, or use rights are legally recognized pathways to provide farming communities with access to the land needed to maintain food production.

Furthermore, tenure security plays a crucial role in ensuring that food security programs are not merely policy driven but also legally enforceable. Secure land tenure provides legal protection for farmers, enhances productivity, and supports the intergenerational sustainability of agricultural

¹⁴ Tunggal Ansari Setia Negara, "Normative Legal Research in Indonesia: Its Originis and Approaches," *Audito Comparative Law Journal (ACLJ)* 4, no. 1 (February 2, 2023): 1–9, doi:10.22219/aclj.v4i1.24855.

¹⁵ Tiyas Vika Widyastuti, Achmad Irwan Hamzani, and Anis Masdurohatusun, "The Impact of Food Law Policies on Local Community Empowerment in Indonesia's Sustainable Food Garden Program," *Indonesia Law Review* 14, no. 4 (December 31, 2024), doi:10.15742/ilrev.v14n4.1.

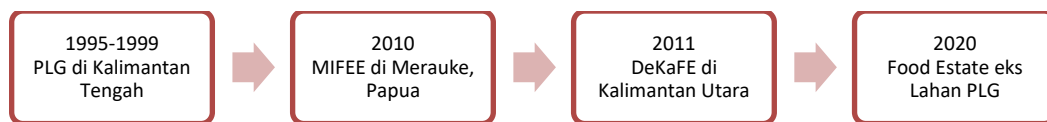
¹⁶ Margaret B. Holland, Yuta J. Masuda, and Brian E. Robinson, eds., *Land Tenure Security and Sustainable Development* (Cham: Springer International Publishing, 2022), doi:10.1007/978-3-030-81881-4.

land.¹⁷ Therefore, integrating land acquisition mechanisms and tenure security into food security policies is essential to uphold legal certainty, protect farmers as the primary actors in food production, and ensure the long-term continuity of sustainable food security programs.¹⁸

During the Covid-19 pandemic, the food supply chain experienced disruptions caused by restrictions on availability and accessibility, uncertain price fluctuations and caused farmers to stop their production, thus having an impact on declining food production to a food crisis as warned by the Food and Agriculture Organization (FAO). This is the main factor for the Government of Indonesia to increase food security by creating a food estate program. Food estate is an agricultural area that is developed on a large scale with the aim of producing food needed by the community in the hope of contributing to the challenges of Indonesia's food needs in facing the food crisis in the future.¹⁹ However, the post-COVID-19 pandemic food estate program is not a pilot project created by the Indonesian government. The food estate program occurred during several periods of the Indonesian government, as depicted in the timeline below.

Figure 1

Timeline of the Food Estate Program in Indonesia



Source: Forestry and Land Policy Analysis Series: Legal Analysis of Food Estate Development in Protected Forest Areas, ICEL, 2020

The first food estate policy in Indonesia occurred during the time of President Soeharto by signing Presidential Decree Number 82 of 1995 concerning Peatland Development for Food Crop Agriculture in Central Kalimantan, which stipulated a large-scale rice paddy printing project (known as the One Million Hectare Peatland Development – PLG) on peatland under the name of *the Mega Rice Project* program (MRP).²⁰ The food estate policy during this administration was implemented with a scheme to convert 1,457,100 hectares of land on peatland, yet only 31,000 hectares were successfully opened.²¹

During the administration of President Susilo Bambang Yudhoyono, the food estate was carried out with *the Merauke Integrated Food and Energy Estate* (MIFEE) program in Papua, which was

¹⁷ Soulé Akinhola Adéchian and Mohamed Nasser Baco, "How Does Land Tenure Security Contribute to the Sustainable Development of Rural Households? Evidence from Benin (West Africa)," *Frontiers in Sustainable Food Systems* 9 (October 2, 2025), doi:10.3389/fsufs.2025.1621537.

¹⁸ Holland, Masuda, and Robinson, *Land Tenure Security and Sustainable Development*.

¹⁹ Alsafana Rasman, Eliza Sinta Theresia, and M Fadel Aginda, "Analisis Implementasi Program Food Estate Sebagai Solusi Ketahanan Pangan Indonesia," *Holistic: Journal of Tropical Agriculture Sciences* 1, no. 1 (July 31, 2023), doi:10.61511/hjtas.v1i1.2023.183.

²⁰ Greenpeace, *Food Estate: Menanam Kehancuran Menuai Krisis Iklim* (Jakarta: Greenpeace, 2022).

²¹ Anfasa Isyam Derawan and Arlina Permanasari, "Program Lumbung Pangan (Food Estate) Di Hutan Indonesia Menurut Paris Agreement," *Reformasi Hukum Trisakti* 5, no. 3 (June 13, 2023): 611–22, doi:10.25105/refor.v5i3.16939.

approved on August 11, 2010, by the Ministry of Agriculture and was aimed at catching up with Papua from other regions. The current food estate program aims to produce food products and biofuels.²²

Table 1.

Location Point for Food Estate Program Development During the reign of SBY

Province	Area	Broad
Central Kalimantan	Former Peatland Project (PLG)	770,601 hectares
South Sumatra	Kab. Musi Banyuasin, Pali, Musi Rawas Utara, Muara Enim, Banyuasin, Ogan Komering Ilir, Kota Palembang, OKU Timur, Ogan Komering Ulu, Musi Rawas	235,351 hectares
North Sumatra	Humbang Hasundutan Regency	30,000 hectares
Papua	Merauke, Mappi and Boven Digoel Regencies	2,052,551 hectares

Source: Agency for Agricultural Research and Development, 2011. (edited)

During Joko Widodo administration, in response to FAO's call during the Covid-19 pandemic to revive the food estate program in the food system, coupled with anticipating the impact of drought, it was responded to with a solution, namely increasing rice production by printing new rice fields.

Table 2.

Location Point for Food Estate Program Development During the Jokowi Administration

Province	Area	Broad
Central Kalimantan	Kapuas, Pulang Pisau, South Barito, Katingan, Palangkaraya (Former Peatland Project – PLG)	770,601 hectares
North Sumatra	Humbang Hasundutan Regency	23,225 hectares
	Central Tapanuli	12,655 hectares
	North Tapanuli	16,833 hectares
	Pakpak India	8,329 hectares
South Sumatra	Kab. Musi Banyuasin, Pali, Musi Rawas Utara, Muara Enim, Banyuasin, Ogan Komering Ilir, Kota Palembang, OKU Timur, Ogan Komering Ulu, Musi Rawas	235,351 hectares
East Nusa Tenggara	Central Sumba Regency	5,000 hectares
	East Sumba Regency	1,000 hectares
	Belu Regency	500 hectares
Papua	Merauke	1,780,000 hectares
	Mappi	1,289,000 hectares

²² Takeshi Ito, Noer Fauzi Rachman, and Laksmi A. Savitri, "Power to Make Land Dispossession Acceptable: A Policy Discourse Analysis of the Merauke Integrated Food and Energy Estate (MIFEE), Papua, Indonesia," *The Journal of Peasant Studies* 41, no. 1 (January 2, 2014): 29–50, doi:10.1080/03066150.2013.873029.

Boven Digoel 166,000 hectares

Source: Environmental Paperwork & Food Estate: Planting Destruction Reaps the Climate Crisis
(processed)

Based on the results of research in East Nusa Tenggara (2022), Central Kalimantan (2023), and West Nusa Tenggara (2024), the land area from the policies that the Indonesian government has made regarding the protection of agri-food land was obtained.

Table 3.
The area of SFAL, SFARL, SFFA, and PPF of NTB Province

Regency/City	SFAL	SFARL	SFFA Area	PPF Decree of the Minister of ATR 1589/2021
Mataram City	1.833,00	125,00	338,65	1.414,39
North Lombok	7.449,00	41.878,00	12.475,12	5.129,18
East Lombok	45.382,00	39.413,00	41.283,77	39.398,55
West Lombok	25.153,00	59.624,00	13.125,36	14.637,62
Central Lombok	51.202,00	43.120,00	42.700,17	49.327,55
Sumbawa	43.179,00	174.736,00	104.491,73	54.334,45
West Sumbawa	8.952,00	22.174,00	13.923,84	9.102,17
Dompu	19.194,00	58.693,00	13.100,98	19.059,93
Bima City	1.927,00	7.994,00	2.164,43	1.628,71
Bima	30.784,00	153.038,00	38.458,12	39.529,15

source: FGD ALG Research 2024 Public Works and Spatial Planning Office & NTB Provincial
Agriculture and Plantation Office

Table 4.
NTT Province SFAL Progress Data

Regency/City	SFAL Regional Regulation in RTRW			SFAL Loss		
	SFAL	SFARL	SFFA	SFAL	SFARL	SFFA
Alor	9.435	-	9.435	230.640	-	-
Belu	-	-	3.849	-	-	-
Ende	-	-	-	4.265	-	-
East Flores	-	-	-	10.576	-	-
Kupang City	-	-	-	-	-	-
Kupang	-	-	-	-	-	-
Lembata	-	-	-	-	-	-
Manggarai	-	-	-	12.365	27.993	-
West Manggarai	-	-	19.119	16.787	-	-
East Manggarai	4.500	-	4.500	-	-	-

Malaka	-	-	-	-	-	-
Nagekeo	9.936	-	9.936	-	-	-
Ngada	-	-	-	35.850	-	35.850
Rote Ndao	-	-	-	-	-	-
Sabu Raijua	15.574	-	15.574	-	-	-
Sikka	-	-	-	1.907	-	1.907
West Sumba	-	-	-	-	-	-
Central West Sumba	-	-	-	-	-	-
Central Sumba	-	-	5.816	-	-	-
East Sumba	-	-	-	-	-	-
South Central Timor	18.335	-	18.335	-	-	-
North Central Timor	-	-	-	-	-	-

source: FGD ALG Research 2022 Public Works and Spatial Planning Office & NTT Provincial Agriculture and Plantation Office

The food security policy researched in this study is the food estate policy. The results of the study show that the failure of the food estate program during the previous administration as a result of not paying attention to the social and economic aspects of the local community, and the unavailability of enough land to support the proposed agricultural activities, did not necessarily make the next government stop. Instead, it continues the Food Estate program with new packaging. Through the 2020-2024 RPJMN in several regions in Indonesia, such as North Sumatra, South Sumatra, Central Kalimantan, and Papua. The food estate program itself is made a National Strategic Project (PSN) through Presidential Regulation Number 109 of 2020 concerning the Third Amendment to Presidential Regulation Number 3 of 2016 concerning the Acceleration of the Implementation of National Strategic Projects. The PSN status in the food estate program is stated to achieve rice self-sufficiency through the printing of new rice fields and meet the needs of sugar and bioethanol through sugarcane plantations.²³ In addition, this PSN status means that all necessary permits and non-permits (services, fiscal facilities, data, and necessary information) are provided by ministers/heads of institutions, governors, and regents/mayors, so that in the process of implementing food estate programs, such as land acquisition, will be facilitated, even land owned by indigenous and local peoples can be allocated.²⁴

Food estates are expected to increase food production on a large scale, provide markets, and facilitate the production process by providing seeds, fertilizers, and medicines.²⁵ Through the

²³ Konsorsium Pembaruan Agraria, "Terbukti Selalu Gagal, Pertanian Food Estate Bukan Jawaban Pemenuhan Pangan Nasional," *Kpa.or.id*, accessed September 30, 2025, <https://www.kpa.or.id/2024/10/terbukti-selalu-gagal-pertanian-food-estate-bukan-jawaban-pemenuhan-pangan-nasional/>.

²⁴ Mevitama Shindi Baringbing, "Problematika Lingkungan Terhadap Regulasi Food Estate Sebagai Program Strategis Nasional Di Desa Gunung Mas & Pulang Pisau Kalimantan Tengah," *Seminar Nasional Hukum Universitas Negeri Semarang* 7, no. 1 (July 26, 2021): 353–366, doi:10.15294/snhunnes.v7i1.710.

²⁵ Alisya Rahma Saebani and Irwan Triadi, "Analisis Terhadap Proyek Food Estate Dalam Penggunaan Lahan Hutan dan Ketahanan Pangan Ditinjau Dari Perspektif Hukum Lingkungan," *Depositi: Jurnal Publikasi Ilmu Hukum* 2, no. 3 (June 24, 2024): 65–74, doi:10.59581/deposisi.v2i3.3674.

Regulation of the Minister of Environment and Forestry No. 24 of 2020, the government regulates the Provision of Forest Areas for Food Estate Development, but then the regulation was revoked and replaced with Regulation of the Minister of Environment and Forestry Number 7 of 2021 concerning Forestry Planning, Changes in the Designation of Forest Areas, Changes in the Function of Forest Areas, and the Use of Forest Areas. The change in regulations has not had any significant impact or relatively small changes. However, Ministerial Regulation No. 24 of 2020 regulates two events to provide land for food estates, namely changing the designation of forest areas or the determination of Forest Areas for Food Security (KHKP). After the change in regulations, the food estate program can only be carried out through the KHKP determination mechanism.

The determination of the location of the food estate program in forests and ex-peatlands raises several environmental problems, considering that this food estate is likely to be carried out by “clearing” forests to create new agricultural lands through the *land-grabbing method*.²⁶ The environmental impact caused is in the form of reduced peatland functions as water system regulators, carbon sinks, and biodiversity sustainability guardians because peatlands are basically wet. Not only that, the determination of the location also raises concerns about repeated forest fires with various backgrounds such as the selection of cheaper land clearing methods, thus causing air pollution due to smoke that has the potential to cause state losses.²⁷ According to Lola Abas, National Coordinator of Pantau Peat, under peat there is something called pyrite sediment, if the substance comes into contact with oxygen during land cultivation, it will become a toxic substance that can pollute the soil and also the surrounding water sources.

The food estate program implemented in forest areas will actually accelerate the rate of deforestation and damage the ecosystem and biodiversity in the forest ecosystem. Deforestation in forests that become water catchment areas will have an impact on the supply of clean water supply for communities in the surrounding areas. The release of forest areas to implement the food estate program will have a direct impact on changes in the nature of soil layers and degradation of watersheds which will cause greater natural disasters such as flash floods, landslides, and droughts.²⁸ The problem of the food estate program is not only occurs in the planting process, but also in the land acquisition process which aggravates environmental damage due to the conversion of forest land to agriculture. Based on the research conducted, the impact of environmental damage from the food estate program is more real than the main goal, which is to increase food production for food security.

The food estate location in Central Kalimantan consists of three locations, namely Gunung Mas Regency which focuses on cassava cultivation, Gunung Mas Regency and Kapuas Regency which focuses on rice cultivation. Based on the results of the interview with NGOs “Save Our Borneo”, the

²⁶ Sibuea P and Devananta Rafiq, “Dilema Food Estate & Perangkap Impor Pangan,” in *Manganese Sian Tano Ni Ompung: Food Estate versus Kedaulatan Petani* (Yogyakarta: Insist Press, 2011).

²⁷ Salshabila Trianggaraeni Wandanarum, Asya Tirta Prameswari, and Sabrina Elsa Dianti, “Peran Keuangan Negara Terhadap Pembangunan Food Estate Pada Masa Pandemi COVID-19 Dalam Menjawab Upaya Ketahanan Pangan dan Kaitannya Dengan Isu Lingkungan,” *Jurnal Acitya Ardana* 1, no. 2 (December 31, 2021): 175–183, doi:10.31092/jaa.v1i2.1370.

²⁸ Amelia Putri Anisah et al., “Dampak Alih Fungsi Lahan Terhadap Keberlanjutan Suplai Air Bersih Dalam Menjaga Ekosistem Darat,” *Jurnal Syntax Admiration* 2, no. 12 (December 21, 2021): 2246–2259, doi:10.46799/jsa.v2i12.354.

main problem with the food estate program in Gunung Mas is the unsuitable land for planting cassava seeds, so that the Gunung Mas food estate experienced crop failure because the planted cassava grew only the size of a “finger”.²⁹

The food estate program has not been proven to be a solution to food security, but as mentioned earlier, there are consequences of environmental damage that might occur. According to climate risk management expert from the Bogor Agricultural University, Rizaldi Boer, the food estate program could threaten Indonesia's commitment to address the climate crisis, which should be achieved by reducing the extent of deforestation and improving peatland management.³⁰ Forests and peatlands are ecosystems that have an important role in preventing floods and overcoming the climate crisis. In addition, the safety of the local community is also threatened, as evidenced by the fact that in 2021 as many as 8 districts in Central Kalimantan were flooded. Although food estates are not the main cause of flood disasters, but reduced water intake is undeniable evidence that the risk of disasters is getting greater.³¹

The food estate program in East Nusa Tenggara has 2 sites, one of which is in Central Sumba, with an area of 50,000 hectares, which has been worked on since 2019. The way of farming or land management in this food estate program did not consider the carrying capacity and carrying capacity of the environment. Throughout the history of the agricultural ecosystem, Central Sumba has not been an agricultural area because it does not have irrigation. Thus, the existence of the food estate program can damage the environment because the groundwater extraction is not based on environmental impact analysis, where hundreds of well points are forced for the food estate area just to ensure that water can be fulfilled. Forced well points can damage underground hydrology, underground cavities, and cause ecological impacts.³²

Sustainable Food Land Provision Strategy

According to data from the Central Statistics Agency (BPS), the area of rice land in 2023 is around 10.20 million hectares with a downward trend of 255.79 thousand hectares or 2.45% compared to the area of rice land in 2022 of 10.45 million hectares.³³ The declining trend of rice land area is caused by the conversion of agricultural land to non-agricultural land, such as housing, industry, mining, and toll roads. The land conversion is one of the crucial problems that not only causes food production to decline but will also threatens food security. In addition to the problem of declining agricultural land area, land ownership by farmers that is getting narrower is also a problem

²⁹ Ida Nurlinda et al., *Laporan Penelitian ALG: Konsep Pengelolaan Sumber Daya Alam Sektor Lahan Pangan Berbasis Reforma Agraria Yang Berkeadilan Dalam Rangka Mewujudkan Ketahanan Pangan* (Bandung: Universitas Padjadjaran, 2023).

³⁰ “Kegagalan Food Estate dan Dampaknya Bagi Krisis Iklim,” *insight*, accessed October 2, 2025, <https://www.cxomedia.id/general-knowledge/20221115140419-55-177068/kegagalan-food-estate-dan-dampaknya-bagi-krisis-iklim>.

³¹ *Ibid.*

³² Frans Pati Herin and Ahmad Arif, “Nasib” Food Estate” Belu Setelah Jokowi Pergi,” *Kompas.id*, October 20, 2023, <https://www.kompas.id/baca/humaniora/2023/10/20/setelah-jokowi-pergi>.

³³ Nurlinda et al., *Laporan Penelitian ALG: Konsep Pengelolaan Sumber Daya Alam Sektor Lahan Pangan Berbasis Reforma Agraria Yang Berkeadilan Dalam Rangka Mewujudkan Ketahanan Pangan*.

faced in the agricultural sector.³⁴ Therefore, a sustainable food land provision strategy is needed as an effort to maintain productive land for food buffers through the implementation of Law Number 41 of 2009 concerning the Protection of Sustainable Food Agricultural Land and its derivative regulations.

Sustainable Food Agricultural Land (SFAL) is a manifestation of the Indonesian government's policy to prevent land conversion and protect the availability of agricultural land, so that there is no conversion of agricultural land into non-agricultural land, with the aim of food security and sovereignty, including efforts to increase the prosperity and welfare of farmers and the community in general.³⁵ The policy is carried out by integrating the results of mapping and determining Protected Rice Fields (PPF) as Food Crop Areas and/or SFAL in spatial plans. However, this integration process takes a long time, while the pressure to convert rice fields continues along with population growth and investment interest.

The scope of SFAL protection includes planning and establishment, development, research, utilization, coaching, control, information systems, protecting and empowering farmers, and finance. Not only the determination of the area of raw rice fields as a form of SFAL protection, but the SFAL policy also supports other points, including SFAL protection incentives as stated in Government Regulation Number 12 of 2012 concerning Sustainable Food Agricultural Land Incentives. The purpose of providing incentives to farmers includes encouraging the realization of SFAL that has been determined; encourage efforts to control the transfer of SFAL functions; increasing empowerment, income, and welfare for farmers; providing certainty of land rights for farmers; and increase the partnership of all stakeholders in the context of the utilization, development, and protection of SFAL in accordance with spatial planning.

Policies to provide incentives to SFAL farmers by the Central Government and Provincial Governments can take several forms, including in the form of agricultural infrastructure development, financing research and development of superior seeds and varieties, ease of access to information and technology, provision of agricultural production facilities and infrastructure, guarantees (central government)/financial assistance (provincial governments), issuance of land rights certificates at SFAL, and/or awards for high-achieving farmers. Meanwhile, the provision of incentives by the district/city government is almost the same as the central government/provincial government, but there is an additional type of incentive, namely land and building tax relief assistance.

The consistency of the policies carried out by the government to maintain or provide the availability of food land does not stop at the formation of SFAL alone, but from the land sector, for example, with the establishment of a land bank as a new special agency which then one of its functions is to carry out land management, issues related to the development of agriculture-based

³⁴ Keputusan Menteri Pertanian RI No. 484/KPTS/RC.020/M/8/2021 tentang Perubahan Kedua atas Keputusan Menteri Pertanian No. 259/KPTS/RC.020/M/05/2020 tentang Rencana Strategis Kementerian Pertanian Tahun 2020-2024.

³⁵ Anggita Mustika Dewi, "Dinamika Pengaturan Kriteria Pengalihfungsian LP2B Sampai Dengan Berlakunya Undang-Undang Cipta Kerja," *Refleksi Hukum: Jurnal Ilmu Hukum* 7, no. 1 (December 16, 2022): 83–102, doi:10.24246/jrh.2022.v7.i1.p83-102.

areas become an inseparable part of the preparation of land for incoming activities into the land development plan through the land bank as regulated in Article 11 of Government Regulation Number 64 of 2021 concerning the Land Bank Agency. In addition, Article 16 and Article 17 of the regulation regulating food security areas are also one of the activities that are then guaranteed by the land bank considering that this food security area is included in the element of public interest.

However, in carrying out its functions and duties, the land bank does not only focus on ensuring the availability of land for the public interest, which includes food security areas, the land bank also has other functions and duties including social interests, national development interests, economic equity, land consolidation, and agrarian reform as stated in Article 16. So that then the priority scale in providing land for this activity becomes the next question, where in the current existing government regulations have not been explained in detail, it still depends on the discretion or policy of the head of the land bank agency who serves so that there is no clear legal certainty that food land will be available for sure through this land bank.

CLOSING

Food security requires the availability of adequate food land, so the government needs to ensure the availability of food land to meet the food needs of the community and be accessible to the community. The need for food land is the government's justification in issuing a food estate policy that aims to increase the area of food land in Indonesia. However, the results of the study show that the determination of food estate areas has an environmental impact because it is carried out in forest areas. The implementation of food estates that are not carried out in forest areas also has an impact on the environment because the selection of commodities that are not in accordance with land conditions and land clearing that damages the carrying capacity of the environment. So the government needs to reconsider the implementation of food estates to be in accordance with the food security goals to be achieved.

On the other hand, the government has a mechanism to protect food land through the establishment of Sustainable Food Agricultural Land, Protected Rice Fields and the use of Land Banks, but it has not been consistent in its implementation because supporting instruments such as incentives for farmers have not been properly implemented. In fact, if the government can protect existing food land and increase food production on existing land, the problem of food security can be overcome.

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³⁶ Moran Ofir and Ido Sadeh, "A Revolution in Progress: Regulating P2P Lending Platforms," *NYUJL & Bus.* 16, no. 3 (2019): 683.

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