



The Effectiveness Of The Land optimisation Programme For Enhancing Food Security (SDG 2) in The Village of Kepala Sungai

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ABSTRACT

Food security is a crucial issue currently facing Indonesia and is a goal in sustainable development, namely SDG 2. The Ministry of Agriculture launched the Land Optimization Program (OPLAH) to maintain food sovereignty and fulfill SDG 2. This program aims to increase agricultural land productivity to achieve food sovereignty in Indonesia. This study aims to analyze the implementation of the OPLAH program and analyze the supporting and inhibiting factors. The location of this research was conducted in Kepala Sungai Village, Secanggang District with purposive because this village is one of the recipients of the OPLAH Program. This research employed a qualitative approach with a case study method. Data collection techniques included focus group discussions (FGDs) and interviews with extension workers, the head of the farmer's group (Gapoktan), and the head of groups participating in the OPLAH program in Kepala Sungai Village. The results showed that the OPLAH Program was able to help farmers in improving land and increasing productivity. Supporting factors, consisting of the use of digital technology through WhatsApp groups as a tool for disseminating information in program implementation, the role of extension workers as information disseminators, facilitators, and evaluators, the role of the Gapoktan head as a communicator and motivator. Furthermore, inhibiting factors include the age of the majority of farmers, who are approaching unproductive age, resulting in limited access to information and assistance with poor-quality seeds, resulting in suboptimal cultivation.

Keyword: Land Optimisation Programme, SDG 2, Food Security, Sustainable Development

ABSTRAK

Kedaulatan pangan merupakan isu krusial yang sedang dihadapi oleh Indonesia dan menjadi tujuan dalam pembangunan berkelanjutan, yaitu SDG 2. Kementerian Pertanian meluncurkan Program Optimalisasi Lahan (OPLAH) untuk menjaga kedaulatan pangan dan memenuhi SDG 2. Program ini bertujuan untuk meningkatkan produktivitas lahan pertanian untuk mencapai kedaulatan pangan di Indonesia. Penelitian ini bertujuan untuk menganalisis implementasi program OPLAH dan menganalisis faktor pendukung dan faktor penghambat. Lokasi penelitian ini dilakukan di Desa Kepala Sungai, Kecamatan Secanggang yang dipilih secara *purposive* karena Desa ini menjadi salah satu penerima Program OPLAH. Penelitian ini menggunakan pendekatan kualitatif dengan metode studi kasus. Teknik pengambilan data menggunakan FGD dan wawancara dengan penyuluh, Ketua Gapoktan, dan Ketua Kelompok yang mendapatkan Program OPLAH di Desa Kepala Sungai. Hasil penelitian menunjukkan bahwa Program OPLAH mampu membantu petani dalam memperbaiki lahan dan meningkatkan produktivitas. Faktor pendukung, terdiri dari penggunaan teknologi digital melalui grup WhatsApp yang menjadi alat penyebaran informasi dalam implementasi program, peran penyuluh sebagai diseminasi informasi, fasilitator, dan evaluasi, peran ketua Gapoktan sebagai komunikator dan motivator. Selain itu, faktor



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penghambat, antara lain usia petani yang mayoritas menuju tidak produktif sehingga mereka memiliki keterbatasan terhadap akses informasi dan bantuan benih yang kurang baik, sehingga budidaya menjadi tidak optimal.

Keyword: Program Optimalisasi Lahan, SDG 2, Ketahanan Pangan, Pembangunan Berkelanjutan

1. Introduction

Food sovereignty is a crucial issue in Indonesia due to the rising population, which is affecting food availability. Food is a basic human need that must always be met, so food availability must be guaranteed [1]. Food management must meet basic human needs and guarantee national food sovereignty, self-reliance and security [2]. This necessitates a strategy to strengthen sustainable food security so that dependence on imports can be minimised in order to safeguard national food sovereignty. For this reason, the agricultural sector continues to hold a vital position in Indonesia.

The agricultural sector relates to the utilisation of biological resources by humans to produce foodstuffs to meet their basic needs [3]. The agricultural sector provides the primary source of food and raw materials required by a country. Significant demographic pressures in developing countries, coupled with rising incomes among certain sections of the population, have led to a continuous increase in demand for these resources. Furthermore, the agricultural sector must also be capable of providing the factors necessary to support the expansion of other sectors, particularly the industrial sector [4]. The transition towards a more modern and technology-based agricultural system has become an urgent necessity to address the challenge of land scarcity. The integration of such innovations is expected to create production efficiency whilst simultaneously ensuring the sustainable conservation of agricultural ecosystems. Thus, the agricultural sector plays a vital role in safeguarding food sovereignty and supporting sustainable economic growth. This sector is a key factor in achieving one of the Sustainable Development Goals, namely Sustainable Development Goal 2 (zero hunger).

The Sustainable Development Goals (SDGs) are sustainable development objectives agreed upon by 193 countries worldwide. SDG 2 (Zero Hunger) is a strategy to eliminate hunger and achieve food security by 2030. Efforts to achieve this goal are being made through a programme launched by the Ministry of Agriculture via the Land Optimisation Programme (OPLAH). The Land Optimisation Programme is designed to accelerate planting and increase rice production. Farmers will plant rice three times a year. This programme is implemented by Farmers' Groups (KT) and Farmers' Group Unions (Gapoktan). The programme was only introduced in 2024 with the aim of achieving food self-sufficiency, particularly for rice. The programme has been successfully implemented thanks to effective extension services regarding the Oplah Programme. One of the areas benefiting from this programme is Kepala Sungai Village, Secanggang Sub-district, Langkat Regency.

This programme was implemented through agricultural extension activities carried out by extension workers in their respective areas. One of the extension models used was the 'train and visit' approach. The 'train and visit' extension method serves to train farmers in the practice of OPLAH. Furthermore, this method is also used to monitor any obstacles to programme implementation in the field. The current digital era requires extension workers to conduct extension activities digitally using the internet. On the other hand, farmers in Kepala Sungai Village have not yet been able to apply digital technology optimally. Consequently, digitalised extension activities have not yet been implemented, so extension workers still provide information in person during visits or regular meetings.

Extension activities involving visits to regular meetings enable farmers to obtain information about the OPLAH programme more effectively. This is because the farmers are elderly and have limited ability to operate digital devices. However, one of the platforms used by extension workers and the Gapoktan is WhatsApp. The use of this platform is considered suitable and effective for exchanging information and can be easily used by the Gapoktan. This certainly supports optimal information exchange, even though the Gapoktan can only communicate via WhatsApp. Therefore, the researcher aims to analyse the factors supporting and hindering the implementation of the OPLAH Programme in Kepala Sungai Village.

In addition to communication and extension aspects, the OPLAH Programme has also faced challenges, namely sub-optimal seed quality. Based on pre-research observations, farmers complained that the condition

of the seeds provided was poor, resulting in low crop yields and germination rates. Seed quality is a determining factor in the success of this programme. Good seed quality will result in optimal crop productivity. Furthermore, good-quality seeds are also more resistant to pest and disease attacks. Conversely, the use of low-quality seeds carries the risk of crop failure and reduced productivity.

Based on the above issues relating to limitations in the use of communication media, the digitalisation of extension services, and sub-optimal seed quality. The researcher is interested in conducting an in-depth analysis of the effectiveness of the OPLAH Programme implementation in Kepala Sungai Village. This analysis will focus on the supporting factors and barriers to the effectiveness of the OPLAH Programme. It is hoped that this analysis will provide an overview of how the OPLAH Programme is progressing in line with its set objectives. Extension activities involving visits to regular meetings enable farmers to obtain information about the OPLAH programme more effectively. This is because the farmers are elderly and have limited ability to operate digital devices. However, there is one medium used by the extension.

2. Method

This research was conducted in May 2025 using a qualitative approach and case study methodology. The research location was selected using purposive sampling in Kepala Sungai Village, Secanggang Sub-district, as this area is one of the regions implementing the OPLAH Programme. Meanwhile, the selection of research informants was also carried out using purposive sampling with the following criteria: (1) being the chairperson of an active tanni group in Kepala Sungai Village; (2) being directly involved in the OPLAH Programme; (3) possessing knowledge and authority regarding the implementation of the OPLAH Programme; (4) being willing to provide information openly and objectively. The data collection techniques used in this study included semi-structured interviews, observation, and a literature review, whilst the data used comprised primary and secondary data. Primary data was obtained directly through interviews with key informants (the Field Agricultural Extension Officer of Kepala Sungai Village); main informants (the Chair of the Ingin Giat Farmers' Group, the Chair of the Sepakat II Farmers' Group, the Chair of the Bina Insan Farmers' Group, and the Chair of the Budi Makmur Farmers' Group); supporting informants (Chair of the Kepala Sungai Village Farmers' Association), whilst the secondary data used was sourced from journals, books, data from the Central Statistics Agency (BPS), and documentation. The research data was analysed using the Miles and Hubberman method, namely data reduction, data presentation, and drawing conclusions.

3. Result and Discussion

3.1 The OPLAH Programme

The OPLAH Programme is a food security initiative launched by the Ministry of Agriculture in 2024 as part of a strategy to boost agricultural productivity, particularly on peatland. The programme aims to improve irrigation systems, reclaim unproductive land, and implement modern agricultural technologies to increase crop yields. As part of the OPLAH Program, farmers implemented mechanized land preparation practices through the use of agricultural machinery for soil tillage operations (Figure 1).



Figure 1. Farmer's activity in OPLAH Programme
(Source: Primary data, 2025)

This demonstrates that the programme helps make rice farmers' land increasingly productive. For instance, land that was previously dry or peatland has been transformed into usable land suitable for rice cultivation. This is because the programme provides agricultural tools and materials, such as tractors, ploughs, cultivators, sprayers, and irrigation systems. However, this technological assistance is provided gradually by the government. Furthermore, accessing these agricultural tools is subject to regulations, such as extension officers being required to provide data on farmers' paddy fields.

The OPLAH programme is aimed at farmers who own rice fields in swampy areas, and not all farmers are eligible for this programme. This is, of course, tailored to river flow patterns and the condition of the rice fields so that water flow to the land can be optimally controlled during both the dry and wet seasons. During the dry season, water flow can be collected and channelled to the rice fields, whilst during the rainy season, water flow can be adjusted for greater efficiency and stored for use during the dry season when water is in short supply.

“Farmers who own land; there are no other requirements. But not all groups receive the programme. Actually, this programme is intended for peatland, but for this village, the farmers' land is adjacent to river flows, as the water source is nearby. Land is selected that is guaranteed to improve crop yields, so that planting can take place during both the dry and wet seasons.”
(DDA, Extension Officer)

This indicates that in the implementation of the OPLAH Programme, land selection is carried out selectively and takes into account geographical conditions as well as crop success. As indicated by the interview findings, priority is given to land situated near river channels so that water management can be carried out more effectively in response to seasonal changes. With this approach, the OPLAH programme does not focus solely on increasing agricultural productivity, but also takes into account land conditions and the use of water resources.

3.2. Supporting Factors

3.2.1. Chairperson of the GAPOKTAN

The Chairperson of the GAPOKTAN plays a key role in the implementation of the OPLAH Programme. As an institution with official legal status, it functions to support the sustainable development of the agricultural sector in its region [5]. An extension worker in Kepala Sungai village stated that:

“The OPLAH Programme was assigned to villages under the name of GAPOKTAN and launched in 2024,...and the person most involved is the GAPOKTAN Chairperson...” (DDA, Extension Worker)

This indicates that the implementation of the OPLAH Programme is supported by the role of the Gapoktan chairperson as a communicator and motivator. This is because the Gapoktan acts as one of the key agents in promoting the programme to the group leaders receiving assistance. The Gapoktan chairperson not only serves as an extension of government agencies in conveying programme information, but also acts as a liaison between farmers and agricultural extension officers. Within the context of the OPLAH Programme, the Gapoktan Chairperson bears strategic responsibility for coordinating programme implementation, from the awareness-raising stage and the identification of land meeting the criteria, through to monitoring the utilisation of the assistance provided.

As a communicator, the Gapoktan Chairperson must be able to convey both technical and administrative information in language that is easily understood by farmers. This is important to ensure that every farmer in the farmers' group understands the programme's objectives, how it is implemented, and the long-term benefits to be achieved, particularly regarding land optimisation and water use efficiency. The Gapoktan Chairperson's strong communication skills can enhance farmers' trust in the programme and encourage their active involvement at every stage of implementation.

Meanwhile, the role of motivator is evident in the way the Gapoktan Chairperson encourages the enthusiasm of the farmers' group members to participate in the programme, even though only a portion of the land receives assistance. He also encourages collaboration among farmers to create synergy in water resource management and agricultural practices that are more adaptive to climate change. Furthermore, the Chairperson's understanding of the social and geographical conditions of the area makes them a strategic figure in bridging the interests of farmers with government programme policies. Consequently, the success of the

OPLAH Programme at the village level depends heavily on the extent to which the Chairperson can fulfil these roles actively, responsively, and inclusively.

3.2.2. *The Role of Extension Workers*

The role of extension workers in the implementation of the OPLAH programme centres on information dissemination, motivation and evaluation. Their roles in information dissemination and motivation are carried out during ‘farmers’ association meetings’. These meetings are gatherings comprising all the heads of farmers’ groups, heads of women’s farmers’ groups, the head of the farmers’ association, and extension workers. This activity aims to share information, discuss current challenges, and convey the aspirations of the group leaders.

“...we meet at least once a month, so information is passed on to the farmers...” (DDA, Extension Worker)

This demonstrates interaction between each farmer and the extension worker, thereby strengthening communication and the dissemination of information. However, extension workers should provide training on the effective use of digital media. This will ensure that the exchange of information, both with the extension workers and among farmers, is optimised so that reporting for the OPLAH Programme also runs smoothly. Extension workers also act as facilitators, serving as intermediaries between farmers and other relevant parties, such as the village government and the agricultural department, in conveying reports on achievements and challenges encountered in the field.

Furthermore, the extension workers act as evaluators whilst the programme is being implemented, as they are required to account for the implemented programme to the farmers. This is consistent with the statement made by one of the chairpersons of a farmers’ group who has experienced the OPLAH Programme, namely the chairperson of the Tani Ingin Giat farmers’ group.

“The parties involved include the village head, the village defence officer, the extension workers, and the farmers’ groups... but the PPLs often come down to supervise us...” (PK)

This evaluation serves as a key reference for decision-making regarding the programme’s future implementation, including the possibility of replication or expanding the areas receiving assistance. The extension workers’ role as evaluators helps ensure the smooth implementation of the OPLAH Programme. The extension officers’ regular presence in the field gives the impression that this programme is genuinely monitored and assessed directly, rather than merely being an aid programme provided without supervision. Furthermore, the evaluation process carried out by the extension officers is not merely administrative in nature, but also covers technical aspects such as water management, the use of agricultural tools, and the effectiveness of cultivation on peatland.

3.2.3. *The Use of Digital Technology*

Digital technology is a tool that supports communication and collaboration. It provides information through automated and complex computerised systems [6]. This digital technology has become a key pillar in improving access to information in the agricultural sector as it offers numerous benefits to the agricultural ecosystem [7;8], provides a foundation for sustainable agriculture [9;10], and creating opportunities to accelerate food security processes [11]. The use of digital Information and Communication Technology (ICT) in agricultural extension practices has ushered in a new era that facilitates development transformation in the agricultural and rural sectors [12].

“...the digital technology we use is WhatsApp. I’m also one of the group admins because I’m the Gapoktan chairperson, and the group was set up by the PPL. The group is effective for sharing information and discussing agricultural matters...” (T, Gapoktan Chairperson)

In practice, the digital technology typically used by farmers in Kepala Sungai Village is a WhatsApp group. This platform serves as a communication tool between the group chairperson and the Field Agricultural Extension Officer (PPL). The Gapoktan chairperson created a WhatsApp group for all group chairpersons in Kepala Sungai Village along with the PPL. This has led to improved communication and coordination between the group leader and the PPL. With the WhatsApp group, important information can be communicated quickly and directly, reducing the misinformation that often arises in traditional communication. Furthermore, as WhatsApp is already widely used by farmers, its use is all the more effective.

“...as for digital technology extension or digital-based training, like from YouTube, I’ve never done that...” (DDA, Extension worker)

On the other hand, no training related to digital technology has been provided at all. This is one of the challenges that must be overcome, as digitalisation is a crucial process in today’s world. The role of extension workers should be to support farmer groups so that they can optimise the use of an application in the reporting process. Thus, the role of extension workers is vital, not only as technical advisors but also as those who guide the implementation of the programme to ensure it aligns with local conditions.

“...to use the open camera, we had to learn it ourselves; the extension workers just told us that we had to use the open camera to document every planting and land preparation activity and then send the footage to the PPL...” (PK, KT Chairperson)



Figure 2. Interview in FGD
(Source: Primary data, 2025)

This indicates that technological development and growth have not been matched by a sufficient supply of qualified extension workers. Therefore, the government must ensure that extension workers receive adequate training to utilise technology effectively. Without improvements in human resource quality, technological innovations will not deliver optimal benefits for farmers.

3.3. Barrier Factors

3.3.1. Age

The older a farmer is, the slower they tend to be in adopting innovations and the more likely they are to stick to practices that are already common within their community [13]. Furthermore, farmers who have long been engaged in agriculture tend to find it difficult to accept new ideas due to farming practices that have been passed down through generations for a long time [14].

“Not everyone is in the group, because some don’t have a mobile phone, and others borrow their children’s... because the farmers are also quite elderly...” (T, Chair of the Farmers’ Group)

This statement illustrates that age and limited access to technology are significant barriers to the dissemination of information and the adoption of agricultural innovations, including in the implementation of the OPLAH Programme. Older farmers often do not possess personal communication devices such as mobile phones, or if they do, they still rely on their children or other family members to access digital information. This naturally hinders the flow of information that should otherwise be conveyed quickly and efficiently via digital media or online communication groups such as WhatsApp. This situation also contributes to the low level of active participation by some farmers in technology-based group discussions or agricultural forums. They are more comfortable with conventional communication methods, such as face-to-face meetings or word-of-mouth information sharing. Consequently, extension workers and Gapoktan chairmen must adapt their communication strategy to ensure that programme messages reach all members, including those with limited access to or difficulty adapting to technology.

3.3.2. Seeds

The problems in implementing the OPLAH Programme stem not only from technical aspects of its execution, but also from the quality of the assistance received by farmers. As stated by the Chair of the Farmers' Group, there have been complaints from group members regarding the quality of the seeds provided. The seeds received were deemed to be of poor quality, inconsistent, and their quality only became apparent after planting had taken place. This has caused disappointment among farmers, as their hopes of achieving an optimal harvest have been dashed from the outset.

“...only one seed given yesterday was poor quality and unattractive, so the group members complained, but this has already been reported to the PPL. So, the farmers are disappointed... because, you see, they only found out after planting...” (T, Chairman of the Farmers' Group)



Figure 3. The monthly meeting of the PPL, chair of Gapoktan and chair of farmers group in Kepala Sungai Village

(Source: Primary data, 2025)

The Gapoktan Chairperson has conveyed this complaint to the extension officer (PPL) as part of coordination and accountability in conveying the group's concerns. However, issues such as this highlight gaps in the supervision of distribution and quality checks of the production inputs provided to farmers. This incident also underscores the importance of a swift evaluation and feedback system to prevent similar problems from recurring in the future.

Based on the analysis of the results and discussion, the researcher presents a summary of the supporting factors and inhibiting factors of the Land Optimization Programme for Enhancing Food Security (SDG 2) in the Village of Kepala Sungai in Table 1 as follows.

Table 1. the supporting factors and inhibiting factors of the Land Optimization Programme

Category	Aspect/Indikator	Finding Primary Data
Supporting Factors	1. Chairperson of the Gapoktan	1. Communicator: acts as a bridge for information between government agencies/extension officers and the chair of the farmers' group, able to simplify the programme's technical language thereby increasing farmers' trust. 2. Motivator: encourages farmers' group members to engage in water management and climate change adaptation.
	2. The Role of Extension Workers	1. Dissemination of information and motivation: utilising the monthly Gapoktan arisan meetings as a forum for sharing information, gathering feedback

Barrier Factors		and motivating all members of the farmers' group.
		2. Evaluation: PPL officers carry out monitoring and are directly responsible for ensuring that the programme is implemented as intended.
	3. The Use of Digital Technology	The use of digital technology through WhatsApp groups between group leaders and Field Agricultural Extension Officers (PPL). This has led to improved communication and coordination between group leaders and PPLs. Thanks to the WhatsApp group, important information can be conveyed immediately and quickly, thereby reducing misinformation that often occurs in traditional communication.
	1. Age	1. Older farmers >45 years old rarely have a personal internet-enabled mobile phone in their household for accessing digital information. 2. Older farmers are more comfortable with face-to-face methods or word-of-mouth information.
	2. Seeds	The poor quality of the seeds distributed by the government. The seeds received were deemed to be of poor quality, inconsistent, and their quality only became apparent once the planting process had begun. This caused disappointment among farmers, as their hopes of achieving an optimal harvest were dashed from the outset.

4. Conclusion

The Land Optimisation Programme (OPLAH), launched by the Ministry of Agriculture in 2024, has made a significant contribution to efforts to enhance food sovereignty by increasing the productivity of agricultural land, particularly peatland. In Kepala Sungai Village, the implementation of this programme has had a positive impact in the form of land improvement, increased crop yields, and intensive support from agricultural extension officers and the Chair of the Farmers' Group (Gapoktan). The use of digital technology, although still limited to simple platforms such as WhatsApp groups, has proven effective as a tool for communication and coordination in programme implementation. However, there are several key challenges hindering the programme's full success. Firstly, the limited access of elderly farmers to digital technology hinders the dissemination of information and innovation. Secondly, the inconsistent quality of inputs such as seeds has led to farmer dissatisfaction. Therefore, this programme requires improvements in the supervision of the distribution of production inputs, digital training for farmers, and an active role for extension workers as facilitators and evaluators in the field. Overall, the success of the OPLAH Programme depends heavily on the synergy between technology, agricultural institutions, and the role of local actors in supporting farmers to adapt to changes and sustainable agricultural innovations.

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