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Research Paper

The First Implementation of Land Consolidation for Paddy Fields in Indonesia Distributed in Sukamulya and Rancajawat, Tukdana Sub-district of Indramayu District of West Java in the Rentang Irrigation Modernization Project

Tatsuhiko Hiraiwa[1]*, Hady Susanto[2], Edwin Mardiansa[4], Maria Christina Kurniawati[3], Arif Taufik Hidayat[3], Yoshiharu Minoura[1], Takashi Hiruta[1], Muhammad Daffa Al Farras[1]

[1] *NIPPON KOEI CO., LTD.5 Chome-4 Kojimachi, Chiyoda City. Tokiyo 102-8539, Japan*
[2] *Kwarsa Hexagon, Jln. Rancabolang No 36, Sekejati, Kec. Buahbatu, Kota Bandung, Jawa Barat 40286, Indonesia*
[3] *Balai Besar Wilayah Sungai Cimanuk Cisanggarung*
[4] *Post Graduate Studies of Crop Sciences Program, Faculty of Agriculture, Universitas Sriwijaya, Palembang 30139, Indonesia*
***Corresponding author**: tsurugidake0531@gmail.com

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Abstract
The agriculture sector in Indonesia contributes 14.5% share of gross domestic product (GDP) in 2012 and the number of farmer accounts for about 40% of total labor force population in Indonesia. However, many of the irrigation systems have seriously been deteriorated. Consequently, DGWR (Director General of Water Resources) cannot operate the irrigation systems properly and the farmers have been facing difficulties in obtaining sufficient irrigation water and rice production. Based on the results of "appraisal mission for Rentang Irrigation Modernization Project between Japan International Cooperation Agency (JICA) and Government of Indonesia Represented by Ministry of Public Works and Housing and National Development Planning Agency" (August 2016), the Rentang Irrigation Modernization Project (hereinafter called RIMP) was started in August 2020. The RIMP consists of 15 packages for canal upgrading works, one (1) package for TM/TC system works, and one (1) package for Modernization Support Program (hereinafter called MSP). This paper mentions the land consolidation which is one of important and advanced activities in the RIMP, including background of the first introduction in Indonesia, site selection, socialization with benefit farmers, survey including geographical and cadastral and agricultural soil, design of irrigation canals and drains and farm roads, a land reallocation plan, issue of land certifications, improvement of soil, coordination with farmers during construction, introduction of IPHA (Water Efficient Rice Irrigation) and mechanization, and a knowledge movie. The implementation resulted in about a 90% increase in plot size and notable improvement in irrigation efficiency.

Keywords
Land Consolidation; Irrigation Modernization; and Food Security.

1. INTRODUCTION

As Indonesia's population grows, the demand for rice has increased significantly (Ariyanti et al., 2024). To ensure national food security, increased rice productivity is needed, which also supports the achievement of Sustainable Development Goal (SDG) number 2, namely the eradication of hunger (Gian et al., 2024). Although Indonesia is known as one of the world's major rice producers, production still fluctuates and is inconsistent (Rahim et al., 2024). The low national rice productivity is caused by various obstacles, both technical and institutional (Dudung et al., 2025). One major obstacle is the damaged irrigation system that no longer functions optimally in distributing water to rice fields (Mahdika et al., 2024). This situation is further complicated by internal weaknesses among farmers, such as land quality and limited arable land, coupled with external pressures in the form of limited access to production inputs (Ismail, 2020). As a result, farmers have difficulty increasing production output, while significant fluctuations in rice prices mean that national food security remains vulnerable and cannot yet be fully maintained through existing stabilization policies (Talattov and Kusumanegara, 2025).

To address these issues, a land consolidation program was implemented as one of the main strategies in the Rentang Irrigation Modernization Project (RIMP). Rural land consolidation aims to reorganize land use for greater efficiency, while strengthening ecological networks and green infrastructure, as well as increasing productivity and environmental sustainability (Minang, 2023). With the implementation of modern operating systems, agricultural water distribution becomes more efficient, groundwater use can

be controlled, and environmental sustainability and equitable access for farmers are increasingly assured (Kaghazchi et al., 2022). Furthermore, land consolidation plays a crucial role in supporting rural revitalization and sustainable development by providing social, economic, and ecological benefits that address limitations in funding, land, technology, and human resources (Zhou et al., 2020). This land consolidation program aims to encourage the transformation of subsistence agriculture to a market-oriented one, while simultaneously increasing economies of scale and crop productivity (Muyombano and Espling, 2020). Land consolidation is projected to not only improve the quality of agricultural space, but also become a strategic platform for uniting urban and rural resources in the context of rural revitalization (Rao, 2022).

The land consolidation activities in Sukamulya and Rancajawat Villages are the first of their kind in Indonesia, thus possessing significant novelty. This model adapts Japanese land consolidation standards but is tailored to local social, economic, and agricultural technical conditions. The uniqueness of this implementation lies in the integration of technical with social aspects, from socialization to farmers, through agreements on land reallocation, to the issuance of land certificates by the National Land Agency (BPN). Thus, land consolidation is understood not only as infrastructure modernization but also as an innovation in agricultural land governance and ownership. This research is crucial because it presents an initial model that can serve as a reference for land consolidation in Indonesia. As pioneering practices, land consolidation in Sukamulya and Rancajawat demonstrates a new breakthrough capable of strengthening sustainable national agricultural development. However, previous studies on land consolidation have mainly focused on policy and socio-economic impacts, with limited empirical evidence on its practical implementation in Indonesia. Therefore, this study aims to analyze the first quantitative outcomes and technical feasibility of agricultural land consolidation through the Rentang Irrigation Modernization Project. Furthermore, land consolidation aligns with Indonesia's agrarian reform policy that emphasizes asset reform and access reform, which aim to ensure equitable land ownership and empower small farmers. This pilot project represents an applied model that supports the national agenda on rural revitalization and agricultural modernization through participatory and equitable land governance.

2. EXPERIMENTAL SECTION

2.1 Research Location

This study introduces land consolidation activities carried out by NIPPON KOEI CO., LTD. (in collaboration with PT. Tata Guna Patria, PT. Yodya Karya, PT. Kwarsa Hexagon, and PT. Wiratman and PT. Intimulya Multikencana) contracted with Balai Besar Wilayah Sungai Cimanuk Cisanggarung (BBWS-CC) during November 2020 to December 2024, the research location focused on Sukamulya Village and Rancajawat Village, Tukdana Sub-District, Indramayu District, West Java Province, Indonesia. This research was conducted in two villages with a land area of 12.9 ha for Sukamulya Village consisting of 80 plots with each plot measuring 0.16 ha and Rancajawat Village covering 22.9 ha consisting of 128 plots with each plot measuring 0.18 ha. For more details, please see Table 1, and Figure 1.

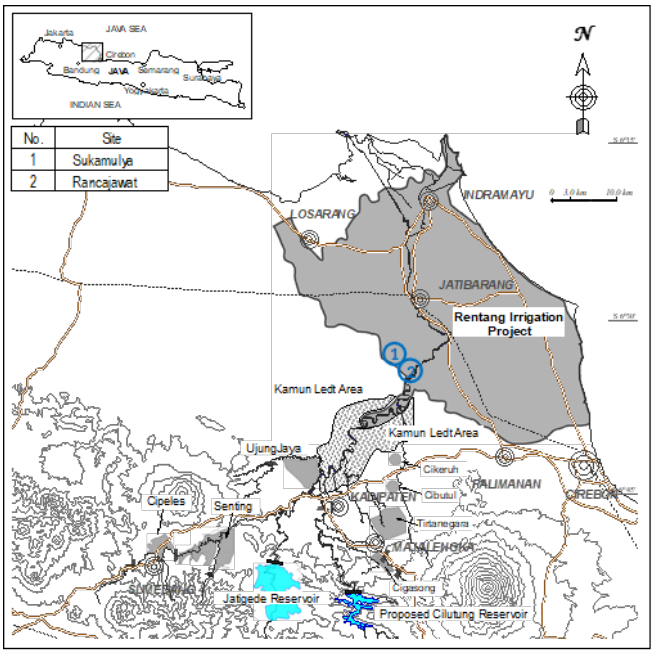


Figure 1. Map of Study Location

2.2 Development Methods of RIMP and Land Consolidation

The method used in the RIMP is a combined approach to implementation, with "hard components" such as irrigation infrastructure improvements and "soft components" supported by the Modernization Support Program (MSP), including asset management programs, irrigation water management, and agricultural support. The left bank of the RIMP covers 36,545 ha for rehabilitation and new development, and for the soft component, an area of 87,840 ha covering the left and right banks of the RIMP as shown in Table 2.

While the hard components improve the main facilities, including main, secondary, and tertiary canals, and drains. However, generally on-firm development within rice fields, such as land reallocation, quaternary canals and drains, and farm roads, is not included. The land consolidation as a demonstration activity program includes on-firm development supported by "hard components" and IPHA supported by "soft components".

Table 1. Existing conditions of Sukamulya and Rancajawat sites

Site	Sukamulya	Rancajawat
Province	West Jawa	West Jawa
District	Indramayu	Indramayu
Sub-district	Tukdana	Tukdana
Village	Sukamulya	Rancajawat
Area (ha)	12,9	22,9
Land Owner	No (Vilalage Land)	52 Farmers
Plot	80 nos	182 nos
Conditions (before land consolidation)		
Tofography	Gentle Slope	Gentle Slope
Plot Size	0,16 ha/plot	0,18 ha/slope
Irigation Canal	Available	Available
Drain	Available	Available
Road Access	Available	Available
Crop Intensity	210%	200%
Cropping Pattern	Paddy-Paddy-Soyabean	Paddy-Paddy

2.3 Equipment

Several materials were used in the research, including Belgian Auger Bor, Total Station (TS) measuring instruments, and various other materials. Cameras were also used for documentation and writing to record activities. GIS software was also used for mapping and spatial data collection. Organic fertilizer was also used to maintain soil conditions after the land consolidation process, especially for the newly reallocated rice fields.

2.4 Data Collection

This data collection consists of primary and secondary data conducted through surveys, direct socialization with the owners of rice fields/cultivators, and direct observations and interviews in the field with the aim of obtaining good and accurate results. Respondents included local farmers, landowners, and village leaders who participated voluntarily. Selection was based on direct ownership or cultivation of rice plots within the project area to ensure representativeness. Data were analyzed both quantitatively and qualitatively, comparing pre- and post-consolidation productivity levels. Social aspects such as consensus building, conflict mediation, and satisfaction levels among farmers were also observed. The data collected are in the form of topographic surveys, cadastral surveys/detailed ownership of rice fields, agricultural soil surveys, minutes, letters of statement and agreement, and land ownership certificates issued by the National Land Agency of Indramayu District.

Table 2. List of main packages

Package	Scope
1 to 3	Rentang Headworks, Cipelang/Urara/ Barat Main Canal Upgrading Works;
4 to 11	Secondary Canal and Drain Upgrading Works;
12 to 15	Tertiary Canal Upgrading Works;
16	TM/ TC System Works;
17	Irrigation Modernization Support Program (MSP)

2.5 Data Analysis

The data analysis used includes tabulation and spatial data analysis. The data presented in tabular form covers irrigation systems, land ownership, transportation, and other land information. The results of the spatial data analysis are then presented in map form, and the land information is presented in schematic form for ease of presentation.

3. IMPLEMENTATION

3.1 Procedure and Concept

Land consolidation is an effective strategy for improving water use efficiency, agricultural productivity, and strengthening the sustainability of food systems (Zhou et al., 2020). This land consolidation model aims to demonstrate its feasibility in Indonesia. Furthermore, land consolidation aims to increase efficiency of irrigation water use and increase rice productivity through improvements in irrigation water distribution, transportation, farming, and water management.

Land consolidation regulations, including agricultural land, have been issued, but there is no practice of land consolidation for agricultural land, including land loss and land reallocation. Based on these regulations, the standard procedures for land consolidation are shown in Table 3, and the RIMP follows these procedures.

This activity aims to increase the efficiency of irrigation water use and increase rice productivity by improving irrigation water distribution, transportation, farming, and water management. Integrated agricultural land, the construction of new canals and new drains, quaternary canals, and farm roads are implemented through land consolidation activities. These rice field plots are being reallocated because the land is lost from the original rice fields (Figure 2).

After land consolidation, all rice fields are equipped with irrigation canals, drainage channels, and farm roads. Therefore, agricultural land consolidation has the potential to build large-scale agricultural system a more efficient,

Table 3. Phase and activity

Phase	Activity
Phase-1 (Preparation)	Search and selection of land consolidation sites/Socialization with farmers and villages/Preparation of basic agreements/Submission of proposed plans for paddy filed consolidation activities (DURK) from BPN to Province.
Phase-2 (Data Collection)	Identification of land ownership/Measurement and mapping
Phase-3 (Implementation)	Land consolidation design map and discussion/ Land reallocation/ Construction works/ Land certification

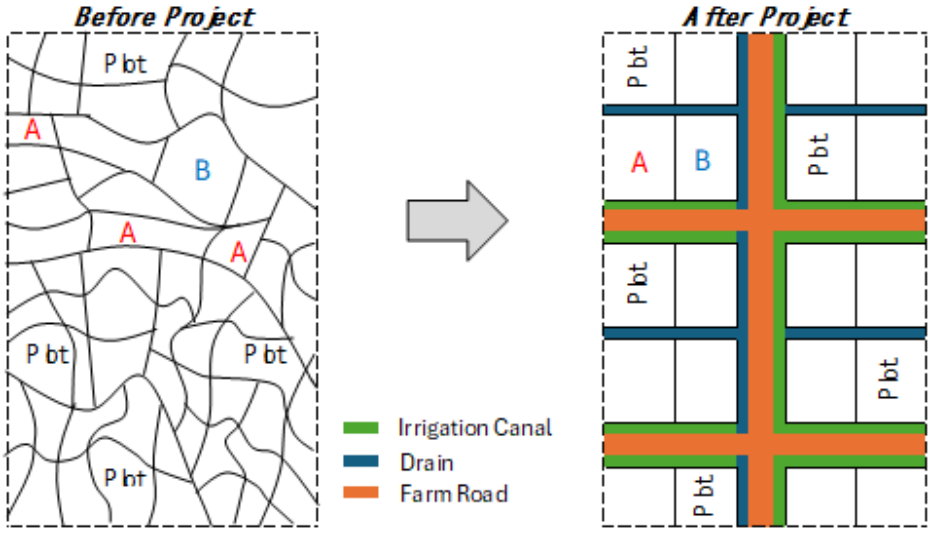


Figure 2. Concept for land consolidation

cost-effective, can increase productivity, income, and environmental sustainability (Duan et al., 2021). Farmers will receive improved plots with the land lost from their plots. A land reallocation plan for the plots is ultimately required to reach agreement among the beneficiary farmers before construction begins. This approach is consistent with the theoretical framework of integrated land and water management in agricultural modernization, which emphasizes spatial reorganization and participatory land reallocation to enhance productivity (Zhou et al., 2020; Duan et al., 2021).

3.2 Merit and Demerit of Land Consolidation

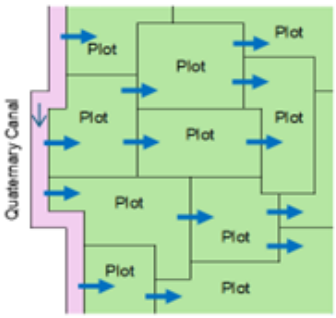
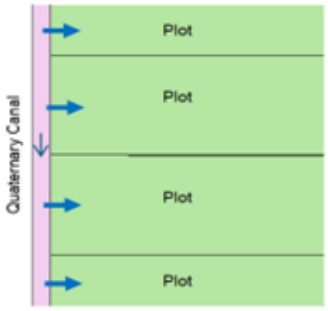
The implementation of land consolidation activities has merit and demerit. Land consolidation provides benefits in the form of increased productivity, efficiency, and economic value of land while strengthening smallholder farmers' access to markets (Muyombano and Espling, 2020). Land consolidation also demonstrates unique features in increasing cost efficiency through varying optimal land expansion across regions, thereby supporting sustainable agriculture and food security (Zhang et al., 2024). Furthermore, despite its many benefits, land consolidation can also incur several demerit. One of these is the loss of agricultural land due to the construction of irrigation infrastructure and farm roads (Zhou et al., 2020). Furthermore, the land reallocation process often creates dissatisfaction among some farmers due to differing perceptions of land values and the distribution of new land (Talattov and Kusumanegara, 2025).

3.2.1 Merits

Increase of Efficiency of Irrigation water use, Cropping Intensity and Crop Yield Irrigation system before land consolidation is plot to plot. Meanwhile the system after land consolidation is a plot with a quaternary canal (Table 3), so that the efficiency of irrigation water use increases. The "plot to plot" system is difficult to manage irrigation water. Especially, cropping intensity and crop yield after land consolidation would be higher than before that in the dry season especially.

Increase of Land Value According to a study (Estimating Land Value Change Post Land Consolidation of Gadingsari Village, Bantul Regency, Special Region of Yogyakarta, Indonesia (Agtha Astrisele, Purnama Budi Santosa, 2019),

Table 4. Irrigation system before and after land consolidation

Item	Before Land Consolidation	After Land Consolidation
Sketch		
Irrigation System	Plot to plot	Plot with quatenary canal
Coveyance Efficiency	Low	High
Water Management	Diffcult	Easy on demand
Cropping Intensity	Low	High
Crop Yield	Low	High

the estimated land value before land consolidation ranges from Rp. 11,000 to Rp. 370,000, while the estimated land value after land consolidation ranges from Rp. 21,000 to Rp. 605,000, where the land value has doubled.

Integration of Land Ownership Typically, landowners own several small plots, and agricultural land ownership is spread across a single irrigation block. After land consolidation, land ownership is integrated into a single location, as shown in Table 5. Landowners achieve high productivity by integrating their plots.

Improvement of Transportation from Plots Basically, there are no farm roads in the tertiary irrigation blocks. Farmers cannot access markets or their villages from their land by motorbike. New farm roads are built through land consolidation. Farmers can easily access markets via these roads, as shown in Table 6.

3.2.2 Demerit

Loss of Agricultural Land New construction of quaternary canals, drains, and farm roads have been undertaken. There has been loss of farmland for new construction. Landowners must provide a portion of their land based on the same proportions as shown in Figure 3.

Plot Reallocation Land owners are given new land which is reallocated in a new location by integrating their land.

3.3 Site Selection

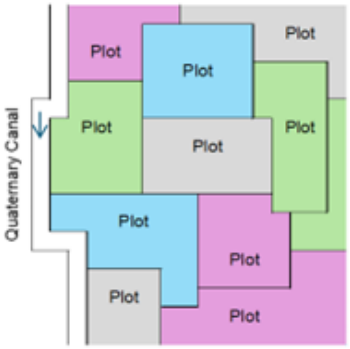
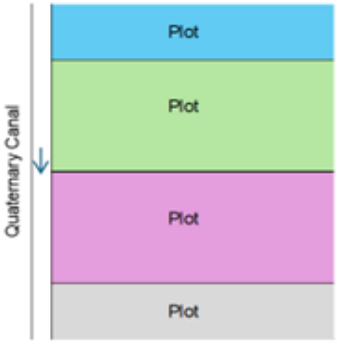
Selecting the right location is crucial for increasing agricultural land productivity through improvement efforts such as liming and balanced fertilization (Alridiwirsah et al., 2022). In determining the location of land consolidation activities, there are criteria, as shown in Table 7, which represents the location of land consolidation for demonstration purposes.

The RIMP MSP team held a meeting with nine (9) village heads regarding the concept of land consolidation at the UPTD Bangodua office in Indramayu District on December 30, 2020. As the results, the village heads showed the opinion that it was very difficult to implement land consolidation in the MDA (Modernization Demonstration Area) due to the strong traditional land ownership. They recommended two (2) locations around the MDA. One is in Sukamulya Village and the other one is in Rancajawat Village. Then, field surveys and discussions with village officials were conducted at both locations, the PIMP MSP team conducted socialization meeting with the UPTD, BPN (National Land Agency), Village officials, and related land owners at the Rancajawat Village Office on February 20, 2021 (Figure 4). All land owners agreed with the land consolidation activity.

Based on observation of conditions, Sukamulya Village is suitable for land consolidation activities due to its location and topography. These conditions are in accordance with the criteria for selecting a land consolidation location (Figure 5).

Since colonial times, Sukamulya Village has controlled all of the farmland designated as the land consolidation site. In the land consolidation site, farmers do not own the land and are merely cultivators. Implementation of the land consolidation requires only approval from Sukamulya Village (no need agreements with cultivators). Sukamulya Village approved the introduction of the land consolidation at the proposed site at a socialization meeting held on February

Table 5. Land ownership before and after land consolidation

Item	Before Land Consolidation	After Land Consolidation
Sketch		
Mechanization	Difficult	Easy
Management of Land Ownership	Difficult	Easy
Productivity	Low	High
Land Value	Low	High

20, 2021. Furthermore, Rancajawat Village is also suitable for land consolidation activities, similar to the Sukamulya site, as seen in Figure 6.

In Rancajawat site, one landowner owned a large area with numerous plots, and other many farmers have small plots. Prior approval from the large landowner was required for implementation of the land consolidation. The RIMP MSP team and a village official discussed the matter with him and obtained his approval. The RIMP MSP team then held a public awareness meeting with all landowners and reached their agreements on February 20, 2021.

3.4 Survey and Design

Land surveys supported by spatial data are crucial for evaluating the impact of land consolidation on agricultural productivity and more targeted planning (Hong et al., 2020). Furthermore, ecological landscape-based consolidation designs can improve environmental balance while supporting sustainable agricultural practices (Minang, 2023). Therefore, surveying and design are crucial in land consolidation activities.

3.4.1 Topographic and Cadastral Survey Activities

Topographic and cadastral surveys at the two locations were conducted by the RIMP MAS and Construction Supervision (S/V) teams in 2022. The results of the topographic survey in Sukamulya and the cadastral survey in Rancajawat are shown in Figure 7 and Figure 8, respectively.

In the topographic survey, the elevation of all rice fields was measured to determine the elevation of the new plots and to optimize the volume of earthworks (cut and fill). In preparation for the cadastral survey, temporary stakes were installed at the boundary lines to measure coordinates (x, y) with the presence of relevant stakeholders (landowners, village officials). The RIMP MSP and S/V teams conducted the cadastral survey based on the instruction by the Indramayu National Land Agency.

3.4.2 Soil Survey

Soil texture and depth are limiting factors in land consolidation. A simple agricultural soil survey was conducted at three locations in Rancajawat (Table 8) and two locations in Sukamulya to evaluate soil conditions on June 28, 2022. The results of the agricultural soil survey at five locations are summarized in Table 9.

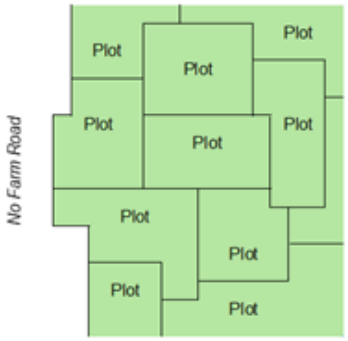
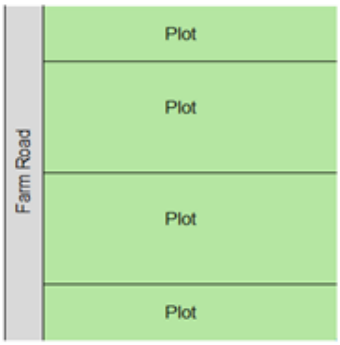
Based on the survey results, organic fertilizer (2.0 tons/ha) was given to maintain better soil conditions after implementation of the land consolidation at the sites in Sukamulya and Rancajawat (Figure 10).

3.4.3 Design of Facilities

The basic design approach for public facilities, including the formation of new plots, quaternary canals, drains, and farm roads, is based on Japanese criteria. The final general layout drawing was prepared based on discussions with stakeholders at the Sukamulya and Rancajawat locations, as shown in Figure 11.

For the plots, there are several basic approaches for improving and increasing efficiency of irrigation water use, increasing agricultural productivity, minimizing land loss (maximum 10% of the existing land area), independence in irrigation management and water disposal for each plot. All rice plots are equipped with irrigation canals, drains, farm roads. The design of water level of the quaternary

Table 6. Transportation before and after land consolidation

Item	Before Land Consolidation	After Land Consolidation
Sketch		
Mechanization	Difficult	Easy
Access	Difficult	Easy
Land Value	Low	High

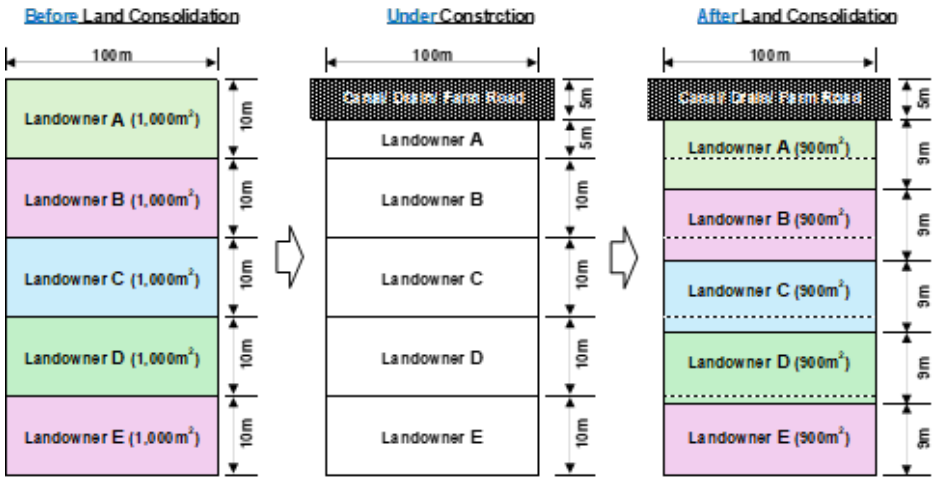


Figure 3. Loss of farmland

Figure 4. Socialization meeting with landowners (Rancajawat Village. 20th February 2021)

canals for the land consolidation is a priority. Existing facilities such as irrigation canal, drains, and residential roads are one of the requirements. The long side of the rice field plots is arranged at 90 degrees to the slope direction. The plot size of 0.3 ha (3000 m^2 = 30 m x 100 m) is same as the practice in Japan which is applied as standard design criteria for the land consolidation as shown in Figure 12.

Then, there is re-formation of the plots and boundaries. The existing plot shape is uniform. The shape after the land consolidation is rectangular (standard: 30 m x 100 m) taking into account efficiency of irrigation water use, productivity, and implementation of future mechanization. And the dimensions of the plot boundary is 0.3 m upper width and 0.3 m height with a slope of 1:1.0 based on Japanese practice.

Quaternary canals, drains, and farm roads also have a basic approach. The irrigation system must be separated

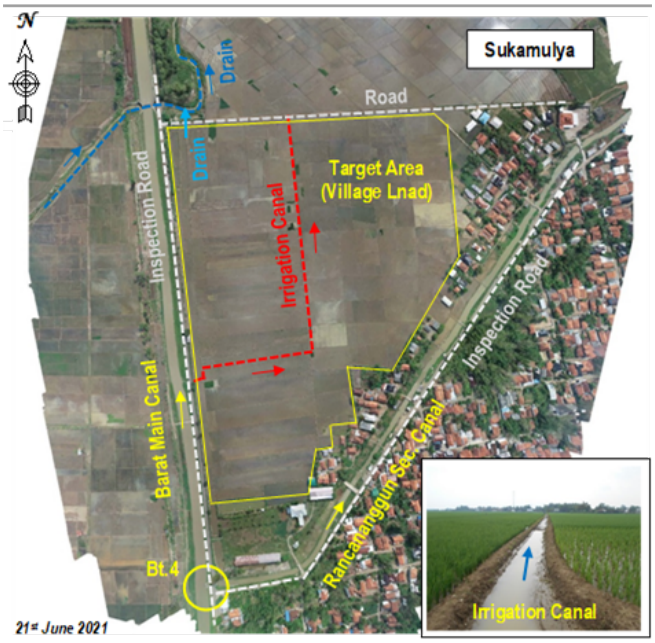


Figure 5. Exsisting conditions of Sukamulya land consolidation site

Figure 7. Results of topographical survey

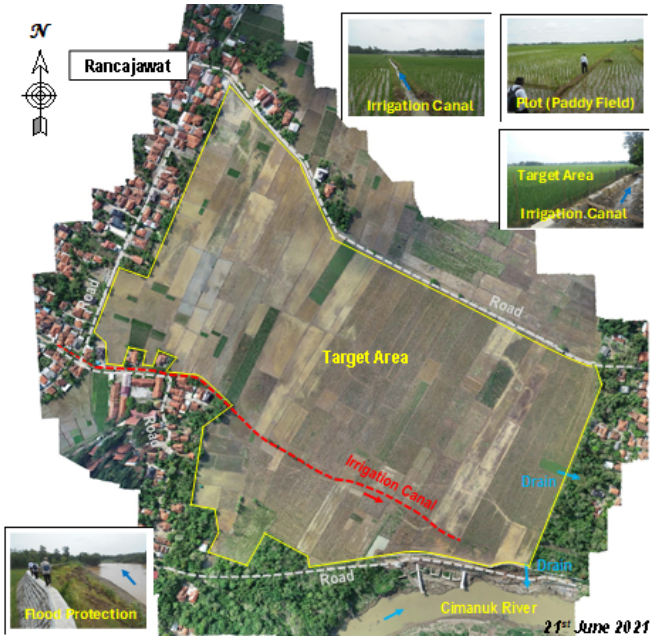


Figure 6. Exsisting conditions of Rancajawat land consolidation site

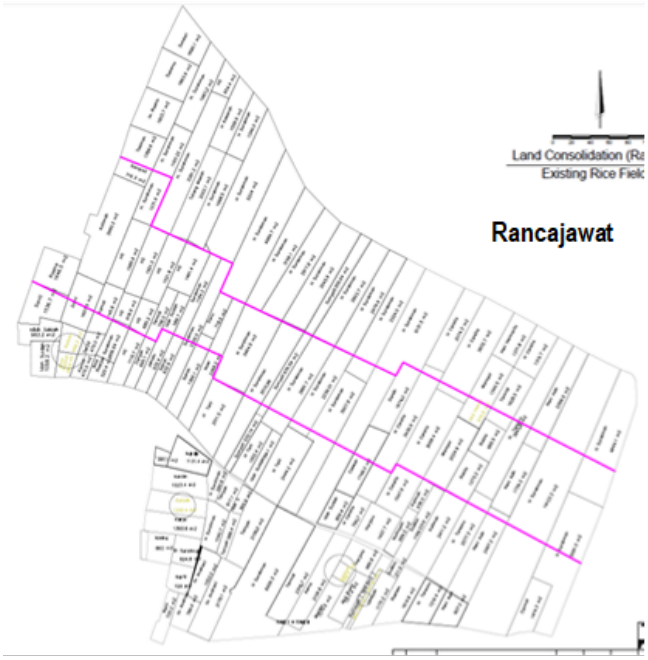


Figure 8. Results of cadastral survey

Table 7. Criteria for site selection

Criteria	Contents
1	Agreement for Concept After socialization, landowners' agreements based on the concept of land consolidation are priority due to smooth implementation.
2	Topographic Conditions Gentle slope is priority due to low construction costs.
3	Plot Size Large plot size is a priority due to easy agreements regarding re-allocation of plots.
4	Location A site near a main/secondary/tertiary canal is priority due to effective demonstration.

Figure 9. Agricultural soil survey

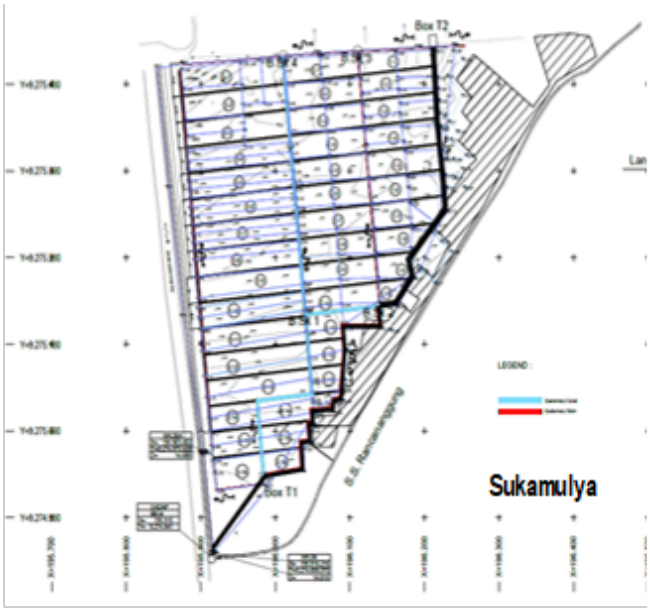
from the drainage system for effective and proper water management, quaternary canals are arranged in higher areas in the site.

The drain is arranged in lower areas in the site. The quaternary canal alignment should be straight and as short as possible, the farm road arrangement must be accompanied with quaternary canals or drains to facilitate operation of irrigation water and maintenance activities. And the detailed design of quaternary canals, drains, and farm roads follows "Irrigation Planning Standards, Planning Criteria, Tertiary Plot Section, KP-05, 2013" as shown in the following figure (Figure 13).

3.4.4 Cost Estimation

The construction costs of two land consolidation locations were estimated with the official unit prices of the construction packages of the RIMP based on the detailed drawings. The total costs were Rp. 1,578 million and Rp. 5,201 million, respectively, as shown in Table 9. The unit cost in Rancajawat (Rp. 227 million per ha) was approximately two (2)

Figure 10. Provision of organic fertilizer



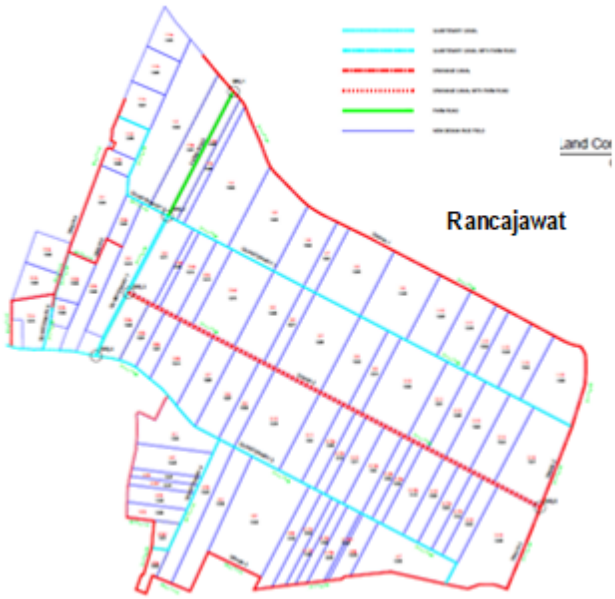


Figure 11. General layout of Sukamulya (A) and general layout of Rancajawat (B)

Table 8. Summary of soil conditions

Item	Results of Evaluation
Topography	Flat to gentle slope with 0 – 3%
Soil texture	Land suitability class: Very Suitable to Suitable (S2 – S1) for lowland rice.
Soil Depth	Depth 100 cm from surface: S2 to S1 including Marginal Suitable to Suitable (S2 – S3)

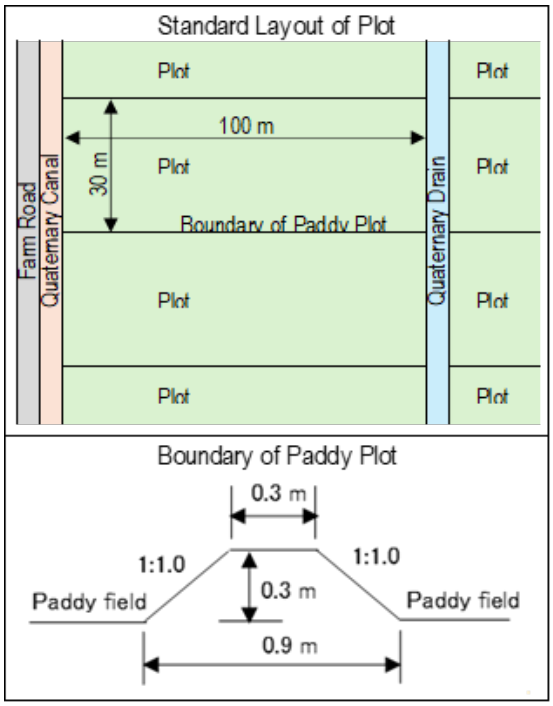


Figure 12. Detailed drawings for plot

times higher than in Sukamulya (Rp. 122 million per ha) due to the main reasons as shown in Table 9.

3.5 Land Reallocation Plan

As the basic approach to the land reallocation plan in the case of the Sukamulya location, the village has ownership of the entire target area. A land reallocation plan with certification is not required. In the case of the Rancajawat location, there are many landowners. A land reallocation plan is required. Beneficiary farmers have to agree with the plan including their land loss without compensation and new location. It is better that the land loss is less than 5% of the original land area. After the land consolidation, land certifications are issued by the National Land Agency (BPN). Sukamulya Village approved the land reallocation plan. Finally, beneficiary farmers agreed with the land reallocation plan in Rancajawat as shown in Table 11. Ultimately, the reduction in land area from the target location for the land

Table 9. Cost estimate for land consolidation sites

Item	Sukamulya	Rancajawat
Total Cost (Rp.million)	1.578	5.201
Area (ha)	12,9	22,9
Unit Cost (Rp.million/ha)	122	227

Table 10. Reasons of high unit cost

Reason	Picture
a) The retaining wall of the drain was constructed to prevent erosion of slope by rainfall.	
b) The village roadside wall was reconstructed by concrete due to construction of the drain.	

reallocation plan was 0.65 ha (5.0%) in Sukamulya and 1.1 ha (4.9%) in Rancajawat.

One of concept for the land consolidation is integration of plots. A comparison of plot dimensions in two locations is shown in Table 12. The area per plot was increased from 0.16 to 0.31 ha in Sukamulya and 0.18 to 0.29 ha in Rancajawat. This increase shows more efficient irrigation water use and higher rice productivity. The National Land Agency (BPN) issued land certificates (as shown in Figure 14) to all 52 landowners in the Rancajawat location. Certifications will be granted to landowners through the Rancajawat Village Head after obtaining approval from the Indramayu Head District.

3.6 Construction Works

Construction works at two locations has been carried out since November 2023 for one year as shown in Figure 15 for Sukamulya, and Figure 16 for Rancajawat.

3.7 Knowledge Films

The RIMP is the first irrigation modernization project in Indonesia. As following the RIMP, next irrigation projects

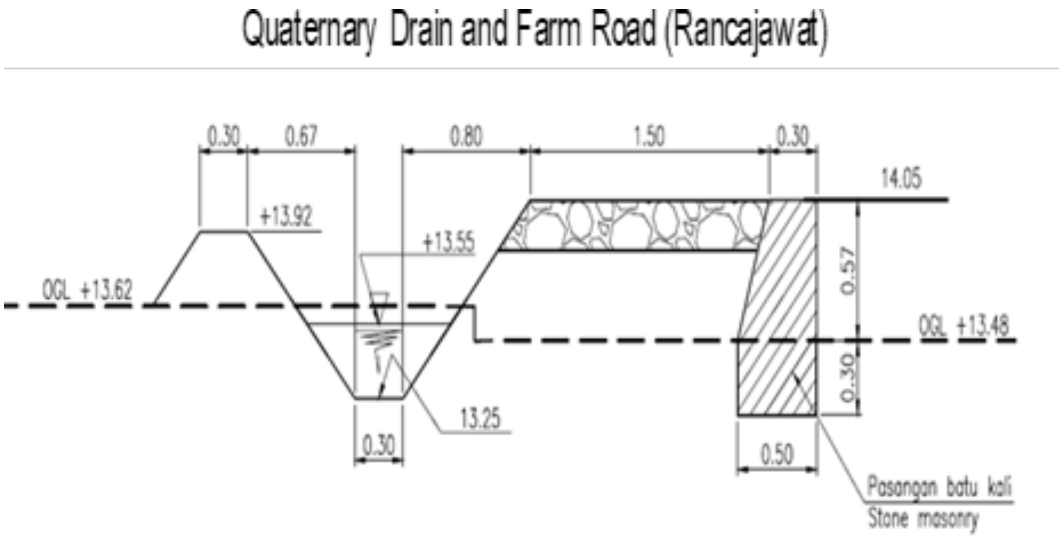


Figure 13. Detailed drawing of structures

Table 11. Land loss in Sukamulya and Rancajawat

Item		Sukamulya	Rancajawat
Existing Area (m^2)	(a)	128.999,0	229.072,1
Land Reallocation Plan (m^2)	(b)	122.519,6	217.766,8
Balance (canal, drain, farm road (m^2)	(c=a-b)	6.479,4	11.305,3
Land Loss Proporsion	(d=c/a)	5,0%	4,9%

Figure 14. Land certification issued by BPN

Table 12. Dimension of plots in land consolidation sites

Item		Sukamulya	Rancajawat
Area (ha)	Before	12,9	22,9
	After	12,3	21,8
Number of Plot (nos.)	Before	80	125
	After	42	79
Area per plot (ha)	Before	0,16	0,18
	After	0,31	0,29

would be developed with modernization concept. A knowledge management center has been constructed near the Rentang Main Building to provide knowledge on irrigation modernization. About 15-minute films have been created on implementation of land consolidation, as shown in Figure 17.

4. CONCLUSION

1. At the target locations (Sukamulya: 12.9 ha and Rancajawat: 22.9 ha), land consolidation activities including survey, design, construction, and monitoring of rice

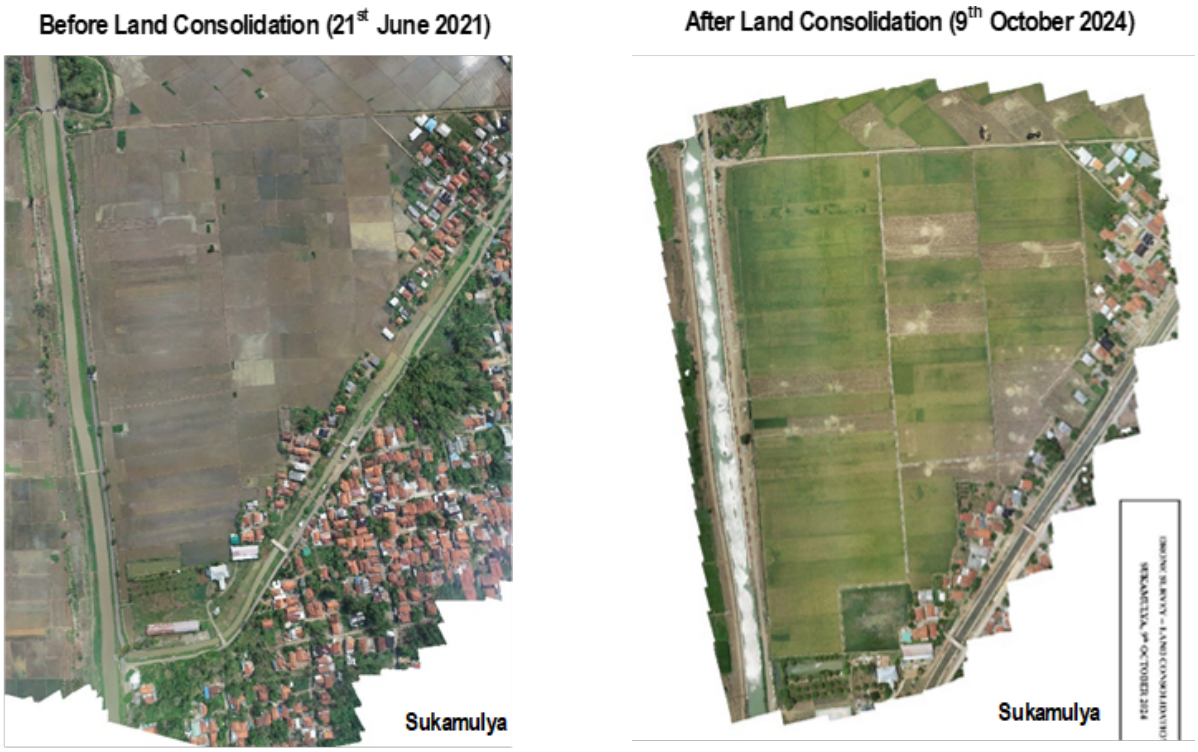


Figure 15. Sukamulya before land consolidation (A), Sukamulya after land consolidation (B)

Figure 16. Rancajawat before land consolidation (A), Rancajawat after land consolidation (B)

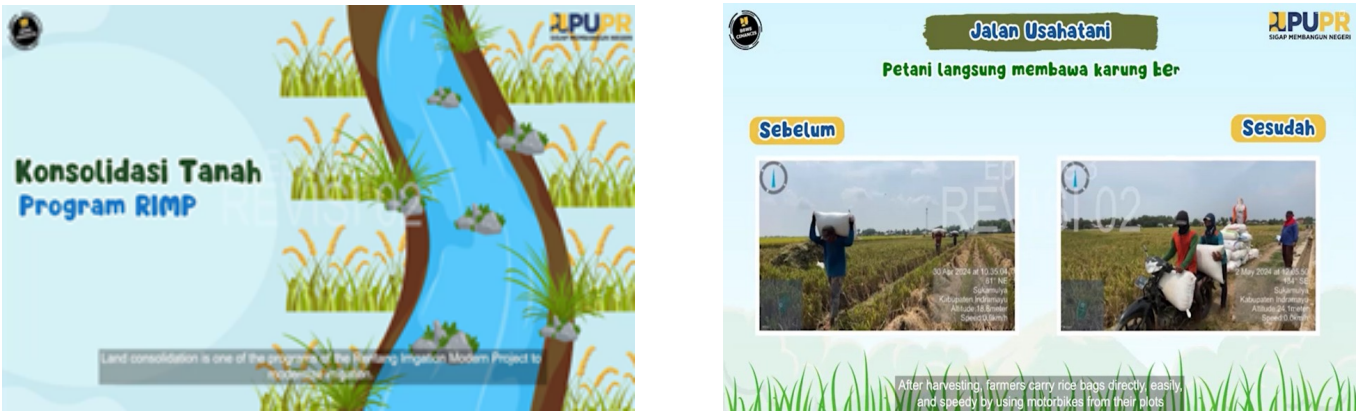


Figure 17. Scene 00:23 (A), scene 13:55 (B)

fields, quaternary canals, drains, and farm roads were successfully constructed.
2. All plots were rearranged based on the owner's request with a lot of socialization in the field.
3. At the Rancajawat site, the land reallocation plan was made in collaboration with landowners, and land certifications were issued by the BPN.
4. After the land consolidation activities, farming became better than before.

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