GRANT COMPLETION REPORT

Knowledge Management Center - Integrated Participatory Development and Management of Irrigation Program

BAPPENAS
Kementerian Perencanaan Pembangunan Nasional/
Badan Perencanaan Pembangunan Nasional

Directorate of Water Resources
Ministry of National Development Planning
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LIST OF CONTENTS

LIST OF TABLE

CHAPTER I - GRANT DESCRIPTION

1.1 Grant Context

Based on the Financing Agreement between the Government of Indonesia and International Fund for Agricultural Development (IFAD), the Grant Number 2000001446 is effective on February 13, 2017, project end on March 31, 2023, and financing close on September 30, 2023. The Implementing agency of Grant is Ministry of National Development Planning/Bappenas and the amount of the grant is EUR 1.410.000.

1.2 Grant Objectives

The objective of the project, as outlined in the Financing Agreement, is to enhance food security and livelihoods in Indonesia. Specifically, it aims to increase the value of sustainable irrigated agriculture. One of the grant's sub-outputs, known as 4.3, focuses on improving policy coordination for irrigated agriculture. This involves establishing and supporting a Knowledge Management Centre (KMC) within the National Development Planning Agency/Bappenas. The primary role of the KMC is to coordinate assistance for smallholder irrigated agriculture, facilitate policy dialogue among domestic stakeholders, and strengthen both national and local policy processes. The KMC's responsibilities encompass knowledge management, policy development, and fostering seamless continuity between development projects and policies for smallholder irrigated agriculture. This entails extracting valuable insights, bridging knowledge from various initiatives, and promoting collaborative approaches to policy dialogue among domestic stakeholders while supporting national and local policy processes.

The Project Implementation Manual (PIM), to be issued by the Agency for Agricultural Extension and Human Resource Development (BPPSDMP) and approved by IFAD, will provide a clear delineation of the roles and responsibilities of the implementing agency. According to the PIM, the Development of Information and Knowledge in the Field of Agriculture and Irrigation, also known as KMC-IPDMIP, will be responsible for executing component 1 of the project. Within this component, sub-component 1.3 focuses on enhancing the coordination of policies related to irrigated agriculture.

CHAPTER II - ACTIVITY DESCRIPTION

2.1 Output KMC

According to the Project Implementation Manual (PIM), the Knowledge Management Centre (KMC) is responsible for delivering several outputs. These outputs include: (i) identification of current policy issues in the water and irrigation sector; (ii) conducting high-quality research and analysis on prioritized issues through selected consultants and/or institutions; (iii) reviewing the results of policy analysis and assessment, and formulating policy briefs with recommendations; (iv) undertaking special policy studies based on the identified policy issues; and (v) discussing and submitting policy recommendations to the National Steering Committee for Water Resources (NSCWR).

Throughout the project, the KMC carries out various activities including preliminary studies and in-depth research. They facilitate forum group discussions, workshops, and policy dialogues. Additionally, field visits are conducted in both the IPDMIP location and irrigation priority locations. The KMC produces policy papers/briefs and publishes books to disseminate their findings.

The outputs of the KMC are delivered to the NSCWR, and the recommendations are also provided to the Implementing Ministry as valuable input for the development of the draft Government Regulation on Irrigation.

CHAPTER III – ANALYSIS OF RESULT

3.1 Increasing Farmer Participation (WUA) in the Management of Irrigation Networks through Grant Provision

Policy Brief on Farmer Participation "Enhancing Farmer Participation (WUA) in Irrigation Network Management through Grant Provision" is a development of thought that responds to the provisions in Law No. 17/2019 on Water Resources, which limits the burden on farmers in irrigation management. The implementation of farmer participation has placed responsibility on farmers for irrigation management. However, the fact shows a decline in the Farmers' Exchange Value (*Nilai Tukar Petani*), indicating a decrease in farmers' well-being.

Therefore, the concept of farmer participation begins with providing financial assistance to farmers, which is utilized for irrigation network operation and maintenance, irrigation network rehabilitation, and farmer institutional development. The provision of financial assistance to farmers is one of the points mentioned in the Government Regulation Draft on Irrigation, which includes provisions regarding farmer participation.

3.2 Single Management Irrigation (SMI)

The background of the Single Management Irrigation (SMI) is the lack of integration in irrigation management at the field level and the disconnection between the main (primary and secondary) and downstream (tertiary/crop system) networks. Several Governors sent letters to the Central Government expressing concerns about the suboptimal reliability of the irrigation system in providing water for agriculture. In response, the President held restricted meetings and cabinet sessions, leading to the emergence of the concept of Single Management Irrigation. As a result of these cabinet sessions, the Coordinating Ministry for Economic Affairs sent a letter to the National Development Planning Agency/Bappenas to develop the Grand Design for Single Management Irrigation.

The Policy Brief on Single Management Irrigation (SMI) provides input or recommendations that emphasize principles in irrigation management as a unified system, including: i) the existence of a coordinator or ministry/technical agency responsible for irrigation management; ii) the development of a database system and information sharing among ministries and agencies, including the principle of one map policy; iii) role-sharing among ministries/agencies/offices in irrigation management;

iv) synergy among ministries/agencies in financing irrigation systems; and v) farmer participation.

3.3 Opportunity to Organize Irrigation Operational and Maintenance Activities Through Public Private Partnership Schemes - Availability Payment (KPBU-AP)

Sustainable Financing for Irrigation

Based on the Actual Operation and Maintenance Needs (AKNOP), Indonesia is still experiencing a backlog of funding for irrigation operation and maintenance. Therefore, the Ministry of Public Works and Housing (Kementerian PUPR) continues to develop alternative infrastructure financing schemes outside the state budget (APBN). Implementing irrigation network operation and maintenance through the Public-Private Partnership (PPP) scheme is expected to provide an alternative solution to the irrigation issues in Indonesia, supporting the realization of more optimal irrigation services and contributing to food security in the country.

According to the provisions in Presidential Regulation of the Republic of Indonesia Number 38 of 2015 regarding Government Cooperation with Business Entities in Infrastructure Provision, infrastructure provision includes construction work to build or enhance infrastructure capacity, infrastructure management activities, and infrastructure maintenance activities aimed at improving the utility of infrastructure.

Water Resources and Irrigation Infrastructure are among the types of infrastructure that can be cooperated through the PPP scheme. Therefore, based on the aforementioned regulation, irrigation system operation and maintenance activities have the opportunity to be carried out through the PPP system, with the expectation that Business Entities can participate in enhancing the reliability of irrigation facilities based on asset management standards and performance assessment of the existing irrigation system.

One of the investment repayment schemes for PPP projects is the Availability Payment (AP) scheme. Some advantages of the AP scheme include the absence of demand risk for the Business Entity and the certainty of investment return. This type of repayment source is usually used for social infrastructure projects. Thus, it is expected to attract Business Entities to invest in social infrastructure due to the guarantee of payment for the services provided.

According to the Regulation of the Minister of Finance of the Republic of Indonesia Number 260/PMK.08/2016 concerning the procedures for payment of service availability in government cooperation projects with business entities for infrastructure provision, the criteria for projects that can use the PPP-AP scheme are as follows:

1. Economic or social infrastructure projects that have significant benefits for the public as service users.
2. Projects whose investment return is not sourced from user payments at service rates determined by the government.
3. Selection of the Business Entity is carried out through a fair, open, and transparent process, taking into account the principles of healthy business competition.

Several important aspects need to be considered to ensure efficiency in Public-Private Partnership (PPP) projects, based on references from the World Bank. The project structure, the level of competition among business entities in the related infrastructure sector, and investor interest are essential factors to achieve value for money. Therefore, the process of selecting suitable projects to be implemented under the PPP scheme also needs to be carried out optimally. In situations where the Government chooses PPP as the last resort without considering these three factors, there is a possibility that efficiency may not be achieved.

3.4 Study on the Development of Digital Literacy Learning for Farmers in Agriculture and Irrigation in Preparation for the Closed Loop Model

The design of this study first requires identifying the issues and digital literacy needs of farmers in the fields of agriculture and irrigation. Then, a literature review is conducted to gather information related to farmers' digital literacy and existing Closed Loop models. Surveys are also conducted among farmers to assess their level of digital literacy and how they use technology in their agricultural and irrigation practices. The survey results are then analyzed to determine the level of digital literacy among farmers and how technology is utilized in agricultural and irrigation practices. Based on this data analysis, the need for digital literacy learning among farmers in agriculture and irrigation can be determined. This study design is crucial to develop an effective learning program for farmers and ensure they understand and apply digital literacy in agriculture and irrigation, thereby preparing an effective Closed Loop model.

3.5 Irrigation Water Requirement Calculation Study by Utilizing Remote Sensing Technology

This study aims to develop an irrigation water demand model and identify potential drought and flood disasters in paddy fields by utilizing remote sensing data in collaboration with relevant stakeholders. The method used involves collecting various data, including: (i) 2019 basic paddy field map; (ii) irrigation area maps, irrigation zone maps, and irrigation water network maps; (iii) soil type maps; (iv) climate and weather data (rainfall, evaporation, and temperature); (v) Indonesian

Land Cover Map (RBI); (vi) satellite imagery (Sentinel-1, Sentinel-2, and Landsat-8); as well as information and knowledge developed by ministries/agencies such as the Standing Crop Information System (SISCrops) by the Ministry of Agriculture and the National Earth Observation System (SIPANDORA) by National Aviation and Space Agency (LAPAN). These data are then analyzed, including: (i) analysis of the suitability of the basic paddy field and irrigation area maps; (ii) land analysis (cropping patterns and schedules); (iii) climate and weather analysis (spatial water balance); and (iv) irrigation water demand analysis. The results of the data analysis are further used to develop a model, which is accompanied by field verification and validation.

The results of the data from the study on the utilization of remote sensing technology in the Menganti irrigation area (Cilacap, Ciamis, and Pangandaran districts) are utilized by the Citanduy River Basin Authority. In the next phase, collaboration between Ministries and Institutions in sharing (interoperability) of data and information needs to be improved.

3.6 Irrigation Management

Irrigation Infrastructure Invesment for Agriculture Productivity.

Based on the results of the study on the contribution of irrigation infrastructure investment to production, it was found that for irrigation areas under central authority, without intervention from loan funds, partial maintenance and routine operations have a significant impact on production. Partial budget interventions from loans do not significantly affect rice production individually, but simultaneously, loan funds for maintenance and routine operations have a significant impact on both planting indexes and rice production. This is because the intervention in irrigation infrastructure funded by loans is not accompanied by adequate funding for proper operation and maintenance.

Meanwhile, for irrigation areas under provincial and district authorities, low efficiency is due to the low contribution to irrigation infrastructure interventions, especially in irrigation network rehabilitation activities. In provincial and district authority irrigation areas, the Special Allocation Fund (DAK) for the irrigation sector has a positive partial contribution to efficiency, planting indexes, and productivity. The partial contribution of additional DAK allocations for the rehabilitation of irrigation networks under regional authority can be understood, considering the high level of damage to irrigation networks, the large area of authority, and the limited or minimal funding/investment available.

The study's results recommend that at all levels of irrigation authority (central/provincial/district), there should be a continued focus on allocating funds for routine maintenance and operations, especially in central irrigation schemes, to ensure the sustainability of existing infrastructure functions over the long term. Specifically

for district authority irrigation areas, there is a need for increased investment in irrigation infrastructure, both from local sources such as Regional Own-Source Revenue (*Pendapatan Asli Daerah*) or other government funding, and from the private sector.

Another recommendation from this study is the need for improved coordination among government sectors to ensure the utilization and sustainability of the built infrastructure and to control the conversion of agricultural land into non-agricultural use. In the long term, it is essential to promote the self-reliance of farmers, especially in irrigation areas with numerous landowners, adequate water availability, and a skilled workforce.

The Impact of Irrigation Operation and Maintenance IPDMIP Activities in Selected Locations.

This study delves into the impact of O&M (Operations and Maintenance) of irrigation infrastructure in the IPDMIP activity locations on: (i) the opportunity costs incurred by farmers in the form of planting index and rice productivity, (ii) rehabilitation activities of irrigation infrastructure, (iii) the implementation of optimal O&M activities, (iv) farmer participation in O&M implementation, (v) estimated O&M costs, and (vi) the potential for alternative O&M financing through PPP schemes.

Based on the methods and data analysis conducted, this study found that in central authority irrigation areas, the opportunity cost of irrigation infrastructure O&M is 4% of the planting index or approximately 0.05 planting index. This means that in central authority irrigation areas, if O&M is carried out more efficiently, it is likely to result in an additional 4% of the average planting index. This can be understood because the management of central authority irrigation infrastructure is relatively good, and the level of damage is relatively small, allowing for optimal operations.

In contrast, for provincial authority irrigation areas, the opportunity cost of O&M is 16% of the planting index or approximately 0.3 planting index. This implies that if O&M is done efficiently, there is a possibility of an additional 16% planting index from the existing average planting index. This opportunity cost value is relatively larger compared to central authority irrigation areas. This is likely because the damage to irrigation infrastructure in provincial authority irrigation areas is relatively higher than in central authority areas. This finding indicates that rehabilitation is a significant variable and negatively affects the opportunity cost. The larger the rehabilitation budget in provincial authority irrigation areas, the smaller the opportunity cost of the planting index, making it more efficient. Therefore, in provincial authority irrigation areas, rehabilitation should be prioritized. Thus, with good infrastructure conditions, O&M becomes more optimal.

In district authority irrigation areas, it was found that the opportunity cost of O&M is 24% of the planting index or approximately 0.4 planting index. This means that if O&M is carried out efficiently in district authority irrigation areas, there is a possibility of an additional 24% planting index from the existing average planting index. This opportunity cost value is relatively larger compared to the opportunity costs in provincial authority and central authority irrigation areas. This condition is likely because the level of infrastructure damage and land area in districts is much larger than in provincial and central authority irrigation areas. Therefore, to make O&M more efficient, the rehabilitation of irrigation infrastructure must be carried out first. The larger the rehabilitation budget in district authority irrigation areas, the smaller the opportunity cost of O&M to the planting index, making it more efficient.

On the other hand, there is a significant positive effect between the O&M budget and the opportunity cost. This can be understood because with a high level of irrigation infrastructure damage, generally what is needed most is rehabilitation.

Optimal O&M implementation in central authority irrigation areas requires competent personnel, the availability of funds, and the participation of Water User Associations (WUA). The importance of competent personnel in technical infrastructure is a prerequisite for optimal O&M. This is in line with the analysis results that show that field operations carried out by personnel are an important variable in minimizing opportunity costs.

For optimal O&M in provincial and district authority irrigation areas, the main variables to consider are WUA participation, infrastructure conditions, the commitment of local governments, and cooperation among authorities. WUA is a key variable that must be supported by the commitment of local governments through WUA institution strengthening programs in participating in O&M activities.

Furthermore, the study also found that cooperation between private companies and farmers can be an alternative potential source of O&M financing. This is evident in the case study of Kediri district authority irrigation areas, which demonstrates a mutually beneficial relationship between sugar milling companies and farmers in O&M implementation. Additionally, companies can initiate land consolidation and utilize differences in agricultural input factor prices in the market compared to input factor prices within farmer groups, which is also a potential alternative for O&M implementation, as seen in Jombang district.

Operation and Maintenance (O/M) Efficiency in Irrigation Area Authority of Yogyakarta Province

Based on the quantitative analysis of secondary data, the implementation of irrigation O&M in all irrigation areas under the authority of the Daerah Istimewa Yogyakarta (DIY) Province shows efficient results. This efficiency is attributed to

comprehensive interventions in all components, enabling the connectivity of three components: natural capital, physical capital, and human capital. These three aspects are connected by dominant cultural factors in DIY Province. This can be interpreted as meaning that in irrigation management, and more specifically, the implementation of irrigation O&M, it is not only reliant on technical expertise but must also be combined with sociological and anthropological perspectives present in the specific region.

3.7 Utilization of System Information Standing Crop (SiSCROP) for Innovation in Irrigated Agriculture Management

The SiSCROP study conducted in 2022 is based on the use of remote sensing data previously carried out by BPPSDLP, Ministry of Agriculture. This information system combines rainfall data and dry season information to predict water availability in relation to water requirements during the rice planting season. It can be used as a consideration in adjusting cropping patterns.

In 2022, the mindset and findings of the SiSCROP study were introduced in the Komering Irrigation Project-KIP loan JICA IP. 574 and Rentang Irrigation Modernization Project-RIMP loan JICA IP. 573. These projects focused on monitoring cropping patterns, including conducting training using SICORP data analysis facilitated by local government agencies. Internally at BAPPENAS, by the end of 2022, the SiSCROP study results served as a benchmark as a complementary or second opinion in predicting rice production. Subsequently, this information was internalized in the data collection process of rice planting areas and production by the Central Statistics Agency. In 2023, a series of FGDs and workshops (policy dialogues) were conducted for the transfer of knowledge, with the aim of calibrating, validating, and improving the validity of SiSCROP. This effort aimed to enable the application of remote sensing systems using SiSCROP in predicting rice planting areas and production data collection by the Central Statistics Agency.

3.8 Assessment Of The Readiness Plan For Utilizing Irrigation Network For Micro Hydropower Plant (PLTMH) Development Using The Early Stage Assessment Standard - Hydropower Sustainable Assessment Protocol

The utilization of irrigation networks for the development of micro-hydro power plants (PLTMH) in practice does not disrupt the flow of irrigation water used to meet the needs of farmers in their irrigation activities. This is because the PLTMH technology used for power generation only harnesses the flow of irrigation water. PLTMH only requires a constant flow of water in the channels with a specific volume, both at the drop and flow velocity aspects.

Here are some advantages of developing PLTMH within irrigation networks:

1. The construction used is generally simple, making it easy and cost-effective to operate and maintain.
2. PLTMH technology is generally environmentally friendly.
3. PLTMH management can be combined with other activities such as fisheries or other small businesses that utilize electrical energy.
4. It can be managed by the community, thus linking it to forest and water resource management and used to enhance economic productivity.

However, there are several common challenges in PLTMH development, including:

1. The need for land for building locations, including turbines, generators, and other supporting facilities, which requires discussions and agreements with the community.
2. Technical expertise in managing PLTMH, including availability of spare parts in remote areas.
3. The financing of PLTMH development can be expensive for communities or natural resource management communities.
4. Permitting processes and regulations are not clear, especially concerning the utilization of state assets such as irrigation networks.

To overcome these challenges in PLTMH development, especially within irrigation networks, it is essential to consider guidelines and best practices used in the international hydropower development. One evaluation method that can be utilized for PLTMH development is the Hydropower Sustainable Assessment Protocol (HSAP). HSAP is a framework for assessing the performance of hydroelectric projects according to a set of sustainable development topics, covering environmental, social, technical, and financial aspects.

3.9 Facilitation and Input for Drafting Government Regulation on Irrigation

Report FGD

KMC facilitates/coordinates in the preparation of the Draft Government Regulation on Irrigation through a series of forum group discussions, workshops, policy dialogues conducted with KNI-ID, HATHI, and O/M community.

KMC's facilitation in providing input for the Draft Government Regulation on Irrigation is also carried out to complement the SMI policy paper and Farmer Participation, which is intended to contribute to the development of the Draft

Government Regulation on Irrigation. Some new aspects/emphases to be adequately addressed in the preparation of the Irrigation Regulation include: i) providing grant funding to farmers; ii) facilitating water user associations to develop and become self-reliant; and iii) ensuring proportional regulation in the management of swamp irrigation areas.

3.10 Sustainable Swamp Development and Management

Book Development

In order to fulfill the role of knowledge sharing and document knowledge accumulation, KMC implements/improves knowledge management of wetland management based on the thematic paper grant from the World Bank (Water Management for Climate Change Mitigation and Adaptive Development - WACLIMAD).

The principles of wetland management with the approach of Integrated Peat Hydrology Unit (KHG) through the analysis of macro, meso, and micro zoning are compiled in a book titled "Development and Management of Sustainable Wetlands". The book also includes principles of managing water resources infrastructure in wetland areas and lessons from local wisdom in wetland cultivation. The book is expected to serve as a reference for academics, practitioners, and government agencies in collaborating on wetland management.

CHAPTER IV - RISK EVALUATION & MANAGEMENT INFORMATION SYSTEM – KMC

4.1 Risk Evaluation

Several studies, policy papers, assessments, and policy briefs conducted by KMC have resulted in knowledge sharing, and some of them have provided input or recommendations. For example: i) Single Management Irrigation (SMI), participatory approaches, and sustainable wetland management have contributed to the drafting of the Government Regulation on Irrigation; ii) The Preliminary Study on Public-Private Partnership (PPP) - Availability Payment as an alternative financing mechanism for irrigation operation and maintenance is followed by its implementation in the Komering irrigation area in Palembang and the High-Level Diversion (HLD) interconnection in Lombok; iii) Irrigation Operation and Maintenance Management as input for the drafting of Government Regulation on Irrigation; iv) Assessment of the readiness plan for utilizing irrigation networks for the development of Micro Hydro Power Plants using the early-stage assessment standard - Hydropower Sustainable Assessment Protocol (HSAP) is followed by the implementation of micro-hydro power plant (PLTMH) installations in the Lembor irrigation area in East Nusa Tenggara Province; v) Proceedings of the Indonesian Irrigation Forum as input for the preparation of the National Medium-Term Development Plan (RPJMN) 2020-2024 in the field of water resources and irrigation. Additionally, KMC's support for agriculture is carried out through the studi of Study Development of Digital Literacy Learning for Farmers in Agriculture and Irrigation in Preparation for the Closed Loop Model and facilitating the utilization of the Standing Crop Information System (SISCROP) for monitoring cropping pattern.

The details of several studies, policy papers, summaries, report, book, and proceedings that have been utilized are presented in the table below.

Table 4. 1 Risk Evaluation of Utilized KMC Products

No.	Title	Chapter
1.	Policy Paper "Increasing Farmer Participation (WUA) in the Management of Irrigation Networks through Grant Provision"	**3.1** As a development of thought in response to the knowledge in Law No. 17/2019 on Water Resources, which limits the burden on farmers in irrigation management, as farmer participation has historically placed responsibilities and burdens on farmers in management. Therefore, the concept of farmer participation begins with providing

No.	Title	Chapter
		financial assistance to farmers, which can be used for O&M, irrigation network rehabilitation, and farmer institutional development. The regulation of the mechanism for providing financial assistance to farmers is one of the points in the Draft Government Regulation on Irrigation, particularly in the article regarding farmer participation regulation. **Output:** 1) Explicit emphasis in the preparation of the Draft Government Regulation on Irrigation as the basis for implementing participatory irrigation. 2) Input for the revision of the Regulations of the Minister of Public Works and Public Housing, the Regulations of the Minister of Home Affairs, and the Regulations of the Minister of Agriculture to clarify which government agencies are responsible for the development and empowerment of P3As in financial and organizational/institutional aspects. 3) Preparation of guidelines related to the technical implementation of farmer participation in the rehabilitation and operation of irrigation networks, as well as regulations governing financing aspects, thereby providing opportunities for WUAs to carry out rehabilitation and OM activities of irrigation networks, at least 10-20% of the required costs with a certain maximum budget. 4) Internalization of Participatory Irrigation Management (PPSI) into regional medium-term development plans (RPJMD). **Risk Evaluation:** This study is utilized as input for the preparation of the Draft Government Regulation on Irrigation, especially the article that regulates farmer/WUA participation. Additionally, it serves as a recommendation for the conceptual framework of farmer participation in the

No.	Title	Chapter
		development and management of irrigation.
2.	Policy Paper "Single Management Irrigation (SMI)"	**3.2** The terminology "SMI" (Single Management Irrigation) emerged due to letters from several Governors to the President, where the essence was the lack of continuity between irrigation networks (primary-secondary-tertiary), which was also reflected in the lack of continuity between activities (primary-secondary networks with farmer business networks or tertiary networks). These facts and conditions led to the convening of a Cabinet Meeting on March 14, 2017, with one of the follow-up actions being a letter from the Coordinating Ministry for Economic Affairs to Bappenas to prepare the grand design for Single Management Irrigation. In relation to SMI or the management of an integrated irrigation system, the specifics are not addressed in Law No. 17/2019 on Water Resources but will be regulated in the Irrigation Government Regulation, so the results of this policy paper serve as input in the preparation of the Draft Government Regulation on Irrigation. **Output:** 1) The development and management of an integrated irrigation system (water source, primary, secondary, and tertiary networks). 2) In the implementation of a unified development and management of the irrigation system, the Institution will establish relationships with local governments and other stakeholders involved in irrigation management (rolesharing). 3) Coordination and synergy between ministries/agencies with one technical ministry/agency as the coordinator, as well as between the central government and regional governments. 4) Utilizing geospatial information technology in irrigation management.

No.	Title	Chapter
		5) The budget for the implementation of activities in the unified development and management of the irrigation system comes from the government in accordance with the authority of the Irrigation Area. **Risk Evaluation:** This study is utilized as input in the drafting of Government Regulations on Irrigation, especially in the articles that regulate the development and management of irrigation.
3.	Preliminary Study "Opportunity to Organize Irrigation Operational and Maintenance Activities Through Public Private Partnership Schemes - Availability Payment (KPBU-AP)"	**3.3** This study serves as preparatory material for further studies within the framework of identifying Public-Private Partnership (PPP) projects for Irrigation Areas (DI) that have the potential to implement Irrigation Operation and Maintenance with the PPP-Availability Payment scheme. **Output:** 1) Identifying central irrigation authority areas as pilot projects for PPP-AP implementation. 2) Further study on the feasibility and readiness of IKSI (Irrigation System Performance Index), ISA (Irrigation Service Agreement), and e-Paksi (Electronic Asset Management and Irrigation System Performance Management) as output specifications, performance indicators, calculation formulas, and monitoring systems that can be used in PPP-AP for Irrigation Operation and Maintenance. 3) Opportunities for the PPP-AP model with 2 (two) other alternatives, namely the leasing system and asset transfer (concession). **Risk Evaluation:** This study is utilized to prepare for the implementation of KPBU-Unsolicited in the Komering irrigation area and the HLD-Interconnection in Lombok.
4.	Study on the Development of Digital Literacy Learning for Farmers in	**3.4** This study is the preparatory stage for developing a closed-loop model. The study

No.	Title	Chapter
	Agriculture and Irrigation in Preparation for the Closed Loop Model	findings indicate that the development of a closed-loop model must be supported by adequate Information Technology (IT). Past experiences with IT services for farmers show that to empower the role of extension workers in irrigated areas, the dissemination of agricultural technology, starting from the provision of seeds, fertilization, pest and disease control to marketing, can be done digitally. **Output:** 1) Documenting the entire process of providing ICT services to farmers and how these services can assist farmers' core businesses. 2) Documenting lessons learned and best practices from the implementation of activities and other relevant activities, including ICT services organized by the Directorate General of Regional Development of the Ministry of Home Affairs (NPIU IPDMIP). The expected outcome of this activity is policy recommendations on digital transformation in the agriculture and irrigation sectors. This aligns with the government's agenda, including the preparation of the National Medium-Term Development Plan (2025 - 2029) and the National Long-Term Development Plan (2025 - 2045). **Risk Evaluation:** This study is used to prepare for the closed-loop program, so that the future closed-loop horticulture partnership program, which will be implemented by the Coordinating Ministry for Economic Affairs in Kebumen and Banjarnegara Districts, can run smoothly.
5.	Study: (Irrigation Management) a) Irrigation Infrastructure Invesment for Agriculture Productivity b) The Impact of Irrigation Operation and Maintenance IPDMIP Activities in Selected Locations	**3.6** Several of these studies delve into the impact of O&M (Operational and Maintenance) of irrigation infrastructure in the IPDMIP activity locations on: (i) the opportunity cost incurred by farmers in terms of planting index and rice productivity, (ii) rehabilitation of irrigation infrastructure activities, (iii) the

No.	Title	Chapter
	c) Operation and Maintenance (O/M) Efficiency in Irrigation Area Authority of Yogyakarta Province"	implementation of what is considered optimal O&M activities, (iv) farmer participation in O&M implementation, (v) estimated O&M costs. **Output:** 1) All levels of irrigation authority (central/provincial/district) should continue to focus on O&M allocation. Increased coordination among government sectors is needed to ensure the utilization and sustainability of the built infrastructure. 2) Achieving optimal O&M implementation in irrigation areas requires competent personnel, the availability of funds, infrastructure conditions, and the participation of Water User Associations (WUA). 3) The efficiency of O&M implementation is influenced by the comprehensive intervention of several components, including natural capital, physical capital, and human capital. In the context of irrigation O&M, it is not only reliant on technical expertise but must also be combined with sociological and anthropological perspectives present in specific regions. **Risk Evaluation:** This study is used as input for the Draft Government Regulation on Irrigation, especially in the articles that regulate the development and management of irrigation.
6.	Indept "Utilization of System Information Standing Crop (SiSCROP) for Innovation in Irrigated Agriculture Management"	**3.7** The in-depth study of SiSCROP conducted in 2022 is based on the use of remote sensing data previously carried out by BPPSDLP, Ministry of Agriculture. **Output:** 1) SiSCROP combines rainfall data and dry season information to predict water availability in relation to water requirements during the rice planting season, serving as a consideration in adjusting cropping patterns.

No.	Title	Chapter
		2) The application of remote sensing systems using SiSCROP enables the prediction of rice planting areas and production data. **Risk Evaluation:** This study is used to introduce the framework for utilizing SiSCROP, one of which can be used for monitoring cropping plans. The framework is introduced to the Ministry of Public Works and Public Housing, River Basin Organizations (BBWS), as well as Local Governments that are the locations for IPDMIP loans, SIMURP-World Bank, Komering Irrigation Project (KIP)-JICA loan, Rentang Irrigation Modernization Project (RIMP)-JICA loan, and the local government of South Sumatra, which is the location for KIP.
7.	Assessment Of The Readiness Plan For Utilizing Irrigation Network For Micro Hydropower Plant (PLTMH) Development Using The Early Stage Assessment Standard - Hydropower Sustainable Assessment Protocol	**3.8** This study delves into the utilization of irrigation networks for the development of micro-hydro power plants (PLTMH) using the HSAP assessment standard. **Output:** 1) Analysis of the benefits of early-stage assessment using the HSAP method. 2) Obtaining a gap analysis or differences between the PLTMH development process in irrigation networks with the business-as-usual (BAU) scenario and the PLTMH development process using the HSAP assessment method in the Early-Stage Assessment. 3) Analysis and recommendations for the application process of early-stage HSAP protocol, which can serve as a learning experience for assessing the readiness of irrigation networks for other PLTMH projects. **Risk Evaluation:** This study is used for the implementation of Micro-Hydro Power Plants (PLTMH) in the Lembor irrigation area of East Nusa Tenggara Province, which is one of the irrigation areas under the IPDMIP project.

No.	Title	Chapter
8.	Report FGD - "Facilitation and Input for Drafting Government Regulation on Irrigation"	**3.9** The activity of preparing input documents for the Draft Government Regulation on Irrigation through a series of forum group discussions, workshops, policy dialogues conducted with KNI-ID, HATHI, and O/M community. **Output:** ▪ In general, some of the issues noted in the series of FGDs include: Irrigation management issues, institutional aspects, irrigation modernization, single irrigation management, division of irrigation management authority, farmer participation, water governance, management of tertiary networks, and human resources/employment related to irrigation operation and maintenance **Risk Evaluation:** The FGD report is used as input for the Draft Government Regulation on irrigation as mandated by Law No. 17/2019 on Water Resources, which is also a revision of Government Regulation No. 20/2006 on Irrigation.
9.	Book Development "Sustainable Swamp Development and Management"	**3.10** This book is an improvement over the previous edition titled "Sustainable Wetland Development – Integrating Environmental and Socio-Economic Approaches (2015 edition)." It provides a detailed overview of wetlands in Indonesia, including definitions and types of wetlands, the history of wetland development in Indonesia, wetland management and policies, wetland zoning, development concepts for wetlands in Indonesia, peatland water management, and the socio-economic aspects of communities in peatland areas. **Output:** ▪ The conceptual framework of wetland management serves as a guideline for integrated and sustainable management.

No.	Title	Chapter
		Risk Evaluation: The book "Sustainable Wetland Development and Management" is utilized as a reference for information and knowledge on wetland management by various parties, including the government, universities, non-governmental organizations, observers, and the community.
10.	Proceeding FII	The Indonesian Irrigation Forum (FII) serves as a platform for consolidating best practices, lessons learned, and current ideas regarding the development of water resources, food, and energy. This involves contributions from government entities, academics, as well as non-governmental organizations. **Output:** ▪ The proceedings contain information and knowledge related to irrigation management and its connection to agricultural and energy sector development. This information and knowledge include best practices, lessons learned, concepts, and ideas. The implementation of FII in 2018 coincided with the preparation of background studies for the National Medium-Term Development Plan (RPJMN) for the period 2020-2024, so it is expected that FII can also contribute to the formulation of RPJMN. **Risk Evaluation:** The FII proceedings are used as input in the preparation of the National Medium-Term Development Plan (RPJMN) for the period 2020-2024 in the field of water resources and irrigation.

The details of studies and policy brief that have not been followed up are presented in the table below.

Table 4. 2 Risk Evaluation of Unused KMC Products

No	KMC Products	Brief Description and Consideration	What of the current Issues	Next Step
2	Preliminary Study of Potential Utilization of Irrigation Water as an Alternative to Fulfillment of Raw Water in Java Island with Case Studies in Several Cities/Districts	Analyze of the conversion of irrigated paddy fields which will affect the reduced allocation of irrigation water <u>Consideration:</u> • Adjustment of water allocation is necessary due to the conversion of paddy fields, which is expected to result in a difference in water allocation. Therefore, the difference in water allocation can be utilized for other purposes apart from irrigation. • On the other, due to the reduced availability of water, the pattern of water allocation operations is also decreased.	• Referring to the policy of implementing irrigation modernization, where irrigation water efficiency becomes crucial due to the increasingly limited water availability. On the other hand, the rate of agricultural land conversion, especially in Java Island, is increasing. Therefore, adjustments to irrigation water allocation need to be made, where excess irrigation water allocation can be used for other purposes.	• In the future, it is necessary to conduct a thorough analysis of the technical aspects of the process of reallocating irrigation water for raw water. These technical aspects need to be supported by periodic data from satellite imagery to analyze the rate of agricultural land conversion.
3	Policy Paper: Synergy, Synchronization, and Institutional	The idea of consolidating farmer/farmer organizations at the	• Farmers' cooperatives promote the implementation	• To strengthen institutions and promote the concept of

No	KMC Products	Brief Description and Consideration	What of the current Issues	Next Step
	Consolidation of Farmers in Irrigated Land	tertiary level (Farmers Group and WUA) and the need to optimize synergy, synchronization, and consolidation of farmer institutions in managing irrigated land in order to increase farmer productivity and welfare. <u>Consideration:</u> • Until now, the policy aspect for the implementation of farmer institution development in agricultural development and irrigation management has not been fully implemented and has not considered the principle of sustainability. Policies between Ministries/Agencies have not been integrated and synergized to support the sustainability of	of consolidating fragmented land into a single entity and consolidating agricultural management by farmer groups (FGs) and water user associations (WUAs) under one farmer institution in the form of a farmers' cooperative. This facilitates the realization of effective and efficient agricultural cultivation. Agricultural mechanization on a business scale that meets economies of scale is also increasingly necessary to ensure the sustainability of farmer institutions.	sustainable farmer cooperatives, it is recommended that the Government issue a synergistic regulation in addition to Ministerial Regulations and Government Regulations, in the form of a Presidential Instruction. This Presidential Instruction should regulate: 1) the concept of cooperatives and land consolidation, as well as the management of farmer groups, water user associations, and other farmer institutions; 2) opportunities for farmer institutions in irrigation network operation and maintenance (O&M) activities; and 3) integrated capacity building

No	KMC Products	Brief Description and Consideration	What of the current Issues	Next Step
		farmer institutions. • Farmer cooperatives promote the implementation of consolidating fragmented land into one entity and consolidating agricultural management by farmer groups and P3A (Water User Associations) consolidated under one farmer institution in the form of a farmer cooperative.		for farmer institutions by several Ministries/Agencies.

4.2 Management Information System – KMC

The KMC has developed a Management Information System (MIS) as an important step in improving project management and utilizing information related to the irrigation sector. This MIS serves as a central platform that collects, stores, manages, and disseminates information related to projects and best practices in the development and management of irrigation and water resources.

The data that serve as input into this information system consist of two types, namely:

1. Structured data, originating from the internal Directorate of Water Resources, KMC's research results, and relevant government agencies such as the Ministry of Public Works and Public Housing, using web-service methods.
2. Unstructured data, which will come from International and National Journal Portals, news portals, and others, in formats such as Word, PDF, XLS, and so on.

Currently, the Management Information System contains various data, information, and knowledge about water resources, irrigation, and other aspects such as socio-economics, with 10 (ten) categories of data catalogs (Data, Maps, Journals, Regulations, KMC Studies, KMC Products, Policy Briefs and Reports, Webinars and FGDs, and Integration with related Government Systems).

In the MIS developed by KMC, there are several menus/features, including:

1. Analysis feature, which contains analysis results with progress per quarter in 2023. It is still in the transition process to continue, so the analysis data is still static (not yet updated) until the end of the KMC Grant.
2. GIS feature, presenting geographic data or information in several sub-menus, including GIS Irrigation, GIS Existing Dams, and GIS Dams.
3. Selected journals feature (related to irrigation and agriculture), which are journals subscribed to by KMC for one year.
4. KMC products feature during the grant project.

The links can be accessed as follows:

https://kmc-pengairan.bappenas.go.id/knowledge-management.

CHAPTER V - FINANCIAL EVALUATION

The project cost and financing as presented in detail in appendix 2. The budget allocation for grant IFAD is EUR 1.410.000. The total project cost until 14 September 2023 is EUR 1.377,04 (97,66%) and its estimate until the end of the project date 30 September 2023 is EUR 1.381.951. The table 2.3 provides a profile of project finance by funding source and categories and component/sub-components. The project monitored cost non only by Expenditure Categories but also by components and subcomponent.

The processing of withdrawal application for grant has been regular and effective. The performance in financial management is satisfactory. At the time of project completion is estimated 98% of the IFAD Grant. The submission of Intern Financial Report (IFR), unaudited financial statement, and audited financial statement have been submitted timely and compliant with procedures. The Financial statement were generally well prepared and in conformity with IFAD requirements for cash-based accounting.

The project established effective internal control to ensure the financial transactions and event were correctly processed, recorded, and reported. Similarly, record keeping for fixed assets, and inventories was adequate, and a register was properly maintenance and regularly reconciled. The procurement is effectively executed in compliance with Government's and IFAD's procurement requirements.

CHAPTER VI – RECOMMENDATION AND FUTURE OPPORTUNITIES

6.1 Recommendation

To ensure the sustainability of the Knowledge Management Center (KMC), here are some recommendations to consider:

1. **Sustainable Resources**: Ensure that the human, technological, and financial resources needed for KMC operations are available sustainably.
2. **Strategic Partnerships**: Continue and strengthen strategic partnerships with various stakeholders, including government, universities, non-governmental organizations, and the private sector. These partnerships can aid in knowledge exchange and resource support.
3. **Stakeholder Engagement**: In developing and managing KMC, actively involve all stakeholders in the water resources and irrigation sector. This ensures that KMC remains relevant and beneficial to all parties.
4. **Periodic Evaluation**: Conduct periodic evaluations of KMC's performance to identify areas for improvement and measure its impact on the development and management of water resources and irrigation. Use feedback from users and stakeholders for continuous improvement.
5. **Capacity Building**: Continuously enhance capacity in the use of information technology and knowledge management. This includes training in the maintenance and use of the platforms or systems used by KMC.
6. **Awareness Promotion**: Continue to promote awareness of the importance of KMC in supporting sustainable development and management of water resources and irrigation. Use various communication channels, such as seminars, publications, and social media, to reach stakeholders.
7. **Content Development**: Continuously improve and update the content provided by KMC. This includes adding the latest information, case studies, and up-to-date guidelines in the field of water resources and irrigation.
8. **Adoption of Latest Technology**: Keep an eye on the latest information technology developments that can enhance the efficiency and effectiveness of KMC. Consider the use of artificial intelligence (AI) and data analytics to improve knowledge management.
9. **International Participation**: Consider participating in international knowledge networks and organizations focused on water resources, irrigation,

and agriculture. This can open up opportunities for global collaboration and knowledge sharing.

10. **Performance Measurement**: Establish clear performance metrics to measure the impact and added value generated by KMC. This will help justify resource allocation and motivate sustainable growth.

Taking into account these recommendations, KMC can function effectively and sustainably, playing a role in improving the overall management of water resources and irrigation to support sustainable agricultural sector development.

6.2 Future Opportunities

The Knowledge Management Center (KMC) in the field of water resources and irrigation has great potential to play a significant role in the future. Some opportunities that can be highlighted are as follows:

1. **Improved Sustainable Water Resource Management**: KMC can play a crucial role in supporting efforts for sustainable water resource management. This includes monitoring water quality, climate change modeling, water conflict management, and water conservation strategies. KMC can provide access to the latest data and knowledge in all these aspects.
2. **Utilization of Advanced Technology**: Advancements in Information and Communication Technology (ICT), including the Internet of Things (IoT), sensors, and Artificial Intelligence (AI), open up new opportunities for KMC to collect and analyze real-time data. This will enhance the monitoring of water resource conditions and improve irrigation operational efficiency.
3. **Stakeholder Engagement**: Stakeholders in the water resources and irrigation sector are increasingly recognizing the importance of sharing knowledge and information. KMC can facilitate collaboration between governments, farmers, research institutions, and the private sector to achieve common goals.
4. **Water Crisis Management**: Climate change and extreme weather events often lead to water crises. KMC can play a role in planning rapid responses to water emergencies, including floods and droughts, by providing real-time information and action guidelines.
5. **Capacity Building**: KMC can continue to serve as a provider of training and education in the field of water resources and irrigation. This includes training in the use of the latest technology, conflict management, and best practices in water management.

6. **Business Opportunities**: KMC can create new business opportunities in the development and sale of technology solutions for the water resources and irrigation sector. This includes the development of mobile-based applications, smart sensors, and water monitoring systems.
7. **Policy Development**: KMC can make a significant contribution to shaping government policies related to water and irrigation. This includes policy analysis, impact modeling, and policy recommendations based on accurate data and knowledge.
8. **International Collaboration**: KMC can partner with international organizations and international projects related to water and irrigation. This can open doors for global knowledge exchange and financial support.
9. **Public Education**: KMC can play a role in educating the public about the importance of sustainable water resource management. This can be done through educational programs, awareness campaigns, and the provision of educational resources.
10. **Green Technology Adoption**: KMC can promote the adoption of green technology in water and irrigation management. This includes the use of renewable energy, water-efficient technology, and sustainable farming practices.

By leveraging these opportunities, KMC can serve as a center of excellence in water resource and irrigation management in the future, supporting the sustainability of water ecosystems and improving the quality of life for communities dependent on these resources.

Reference List

1. Reference

Financing Agreement Integrated Participatory and Management of Irrigation Project (IPDMIP) between the Republic of Indonesia and the International Fund for Agricultural Development (IFAD) on 13 February 2017.

PCR Mission Aide Memoire, Integrated Participatory and Management of Irrigation Project (IPDMIP) – IFAD on 10th – 21st July 2023.

2. Appendix

Table 2. 3 Output of KMC During the Project

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
A. Study						
1	Assessment of the Readiness Plan for the Utilization of Irrigation Networks for the Development of Micro Hydro Power Plants (PLTMH) Using the Hydropower Sustainable Assessment Protocol (HSAP) Assessment Standards	Conduct screening with HSAP of the PLTMH construction plans in Semawung, Komering (already installed), and Perjaya Dam (planning stage) Consideration: • In the IPDMIP-ADB loan, there is an activity under the Non-DLI Objective called "Development of Micro Hydro Power Plants in	Encouraging Directorate Irrigation and Low Land, MPWH to screen plans to develop PLTMH in the irrigation network at the IPDMIP location using the HSAP method. Status: **Adopted**: The micro-hydro power plant (PLTMH) study has been implemented in the irrigation area of East Manggarai Regency.	• MPWH • Private	• Some common challenges in the development of micro hydro power plants (PLTMH) include: i) the need for land as a location for turbine and generator buildings, as well as other supporting facilities; ii) technical expertise	• Further studies on the development of micro hydro power plants (PLTMH) in irrigation networks are needed, taking into consideration guidelines and best practices for hydropower development using the "Hydropower

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		Irrigation Canal", which requires learning through assessment studies using HSAP to be implemented and sustained.			in PLTMH management, including availability of spare parts in remote areas; iii) the high cost of PLTMH development, which may be challenging for communities or water resource management organizations to afford; and iv) unclear licensing processes and regulations, particularly regarding the utilization of state assets such as irrigation networks.	Sustainable Assessment Protocol (HSAP)". HSAP is a framework for assessing the performance of hydropower projects, including PLTA/PLTMH, based on a set of sustainable development topics, which include environmental, social, technical, and financial aspects.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
2	Preliminary Study of Potential Utilization of Irrigation Water as an Alternative to Fulfillment of Raw Water in Java Island with Case Studies in Several Cities/Districts	Analyze of the conversion of irrigated paddy fields which will affect the reduced allocation of irrigation water Consideration: • Adjustment of water allocation is necessary due to the conversion of paddy fields, which is expected to result in a difference in water allocation. Therefore, the difference in water allocation can be utilized for other purposes apart from irrigation. • On the other, due to the reduced availability of water, the pattern of water allocation operations is also decreased.	As a material for consideration in planning/follow-up studies regarding actual/realization of water allocation Status: **Discontinue**	• MPWH-River Basin Organizaion /RBO • PJT • Local Government	• Referring to the policy of implementing irrigation modernization, where irrigation water efficiency becomes crucial due to the increasingly limited water availability. On the other hand, the rate of agricultural land conversion, especially in Java Island, is increasing. Therefore, adjustments to irrigation water allocation need to be made, where excess irrigation water allocation	• In the future, it is necessary to conduct a thorough analysis of the technical aspects of the process of reallocating irrigation water for raw water. These technical aspects need to be supported by periodic data from satellite imagery to analyze the rate of agricultural land conversion.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
					can be used for other purposes.	
3	Preliminary Study of Potential Replication of low Land/Swamp Management by the Topi Koki Rice Company at Ogan Keramasan Lowland Irrigation Scheme, South Sumatra	Conducting an analysis of the best practices employed by Topi Koki Company in implementing the polder system for lowland/swamp management in the Ogan Keramasan Lowland Irrigation Scheme, South Sumatra, which enables the achievement of two planting seasons. <u>Consideration:</u> • The success story of PT. Topi Koki company in implementing the polder system for managing tidal swamp areas in the Ogan Kramasan Swamp Irrigation Area, which	As a material for consideration in planning/advanced studies for replication of the polder system in lowland with the condition of solid farmer cohesiveness/cooperative considering needed land consolidation and management Status: **Adopted**: The principles of sustainable wetland development and management have been adopted in the provisions of the Draft Government Regulation on Irrigation.	• Government (MPWH) • Local Government • Private • Farmers • Community	• Finding replication sites with shallow and medium-depth swamps that already have farmers/farmer groups and adequate swamp irrigation infrastructure can be challenging. On the other hand, the involvement of local governments is also necessary to support and nurture farmers/farmer groups.	• Communication with local government and local farmers, involving community leaders and influential local figures, is the key to the success of replication.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		allows for double rice cultivation. • Socio-economic analysis and prerequisites for replication with swamp land revitalization programs.				
4	Opportunity to implement the irrigation Operational and Maintenance Activities Through Public Private Partnership Schemes - Availability Payment (PPP-AP)	Analyze of opportunities for implementing O & M Irrigation with the PPP scheme by using Availability Payment <u>Consideration:</u> • The policy of utilizing Public-Private Partnership (PPP) schemes with Availability Payment (AP) model as an alternative financing for irrigation development and management.	As a material for consideration in planning/further study in the implementation of Irrigation O&M with the Availability Payment PPP scheme. Status: **Adopted**: The study on the potential alternative financing for the operation and maintenance (O&M) of irrigation networks using the Unsolicited Public-Private Partnership	• Government (MPWH) • Private	• In a Public-Private Partnership (PPP) project, the "Level of Service - LoS" is defined in accordance with Regulation of the Minister of National Development Planning (Permen PPN) No. 2/2020 on the Procedures for Implementing PPPs. It refers to the minimum service standards	• There is a need for a more in-depth study regarding PPP-AP (Availability Payment), considering that irrigation services, according to the regulations, are not charged to users, and PPP-AP is usually used in cases where: i) there is no revenue from

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		• Case study analysis of the opportunities for implementing O&M in the Komering, Colo, and Semen Krinjo irrigation areas using the PPP scheme - Availability Payment.	(KPBU) mechanism has been followed up for the Komering irrigation area in South Sumatra and the High Level Diversion in West Nusa Tenggara. The implementation of the Unsolicited KPBU in these two irrigation areas is currently at the market sounding stage.		and operational technical performance standards, which are one of the components of the PPP Preparation Document in the Technical Study.	service users/no end-users that can be charged a fee, such as providing infrastructure used by the government to deliver public services, or ii) the potential revenue is not significant enough to cover the investment of the business entity/financially unviable project, or iii) the infrastructure is provided free of charge to the public, such as non-toll roads.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
5	Irrigation Infrastructure Investment for Agricultural Productivity	Analyzing the efficiency of investment in irrigation infrastructure on the cropping intensity and rice productivity. <u>Consideration:</u> • The importance of considering efficiency or investment optimization in irrigation infrastructure. • Although rehabilitation has been carried out with significant costs and O&M, the performance improvement of the irrigation network system has not significantly increased. • Analyzing the efficiency of rehabilitation and O & M.	Knowing the causes of irrigation infrastructure investment inefficiencies, so that irrigation infrastructure investment allocation can be carried out optimally, which is based on the pattern of business processes in irrigation management Status: **Adopted**: Regulations regarding the management of operation and maintenance (O&M) of irrigation have been stipulated in the Draft Government Regulation on Irrigation.	• Government • Local Government • Farmers	• The budget allocated to central authority irrigation areas is much larger and tends to increase from year to year, while the level of infrastructure damage and the total land area of central authority irrigation schemes is relatively small. In contrast, the budget allocated to regional authority irrigation areas, especially through Special Fund Allocations, tends to be small and continues to decrease, while the level of	• In the draft of the Government Regulation on irrigation, there is a reduction in the area of irrigation under regional authority (provinces and districts).

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
					infrastructure damage and the total land area is much greater than that of central authority irrigation areas.	
6	Development Model for Water Demand and Irrigation Distribution Using Remote Sensing and Dynamic Models	Develop a model to improve the accuracy of calculating irrigation water needs by utilizing satellite imagery technology and the Standing Crop Information System (SISCrop) and identify patterns of use of paddy fields, cultivated commodities, and potential for drought and flood disasters in Manganti Irrigation Scheme, Jragung Irrigation Scheme, and Rentang Irrigation Scheme.	Compatibility analysis of rice field raw land maps and Irrigation Scheme maps, cropping patterns and schedules, agricultural land water balance, water demand management planning. Status: **Adopted**: The framework for the utilization of remote sensing in irrigation management has been accepted by the Ministry of Public Works and	Government • MPWH, • Ministry of Agriculture, • National Development Planning Agency, • Ministry of Agrarian and Spatial Planning	• The accuracy level of the paddy plant growth phase model needs to be improved to generate a model that corresponds to the field reality. • Collaboration among ministries and institutions in data and information sharing interoperability needs to be enhanced.	• Continuous improvement of modeling is needed for: i) analysis of agricultural land use and planting patterns in irrigation areas; ii) analysis of irrigation services; iii) analysis of irrigation water needs (projections and historical data); and iv) analysis of

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		Consideration: • Improving food data and irrigation water requirements is crucial, as accurate and reliable data will lead to more precise decision-making and policy formulation, particularly in terms of rice production data. Furthermore, with the issuance of Presidential Regulation No. 39 of 2019 on One Data Indonesia, the government's data governance policy aims to produce accurate, up-to-date, integrated, accountable, easily accessible, and shareable data among central and regional agencies.	Housing, through the River Basin Organization.			drought and flood potential. • Enhanced collaboration among relevant ministries/institutions in data sharing and utilization.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		• Steps are being taken to improve the calculation of harvested area, production, and rice productivity in order to obtain more precise rice production data. Currently, the calculation of rice production data is conducted by the Central Bureau of Statistics (BPS) using the Area Frame Sampling (Kerangka Sampel Area or KSA) method, which has been implemented since 2018. The use of the KSA method replaces the previous subjective method of eye estimation for measuring harvested area.				

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
7	Learning Development of Agricultural and Irrigation Digital Literacy Implementation for Farmers in the Context of Preparing the Closed Loop Model	Application of digital literacy to farmers based on platform applications on ICT grants from ADB which are equipped with soil NPK nutrient sensors, and local weather sensors, to provide access to information to farmers as an initial step in preparing for the closed loop model in Banjarnegara and Kebumen Regencies (Central Java). Consideration: • Preparations are being made for collaboration with the Assistant Deputy of Horticulture Development, Ministry of Coordination for Economic Affairs, through the Close Loop agribusiness	Providing an understanding of the importance of using digital information to farmers, in the framework of closed-loop preparation. Status: **Adopted**: The framework for digital literacy in preparation for the closed-loop model has been accepted by other stakeholders, including local government, farmers, banking institutions, and off-takers.	• Horticultural Farmer • Local Government • Bank • Off taker	• Farmers need proper education and training in using digital technology to enhance agricultural production and improve irrigation management efficiency.	• The design of a learning framework on the use of applications and digital tools for agricultural planning and irrigation management, along with practical training for farmers to apply the knowledge and skills acquired in agricultural practices. This prepares farmers to enter a more modern and efficient era of agriculture through a closed-loop model that improves

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		partnership program, which includes introducing digital literacy to farmers.				productivity and efficiency in farming.
8	Effect of Irrigation O&M in Selected IPDMIP Locations	Analyzing the efficiency of irrigation infrastructure investment at IPDMIP activity locations on (i) opportunity costs funded by farmers in the form of Planting Index (IP) and rice productivity (ii) irrigation infrastructure rehabilitation activities (iii) optimal implementation of O&M activities (iv) farmer participation in O&M implementation (v) estimated O&M costs (vi) potential O&M alternative financing through the PPP	• Opportunity Cost of O&M on IP and production • Results of identification of Provinces and Regencies with efficient investment in irrigation management Variables that affect investment efficiency in irrigation management. Status:	• Local Government • Farmers • O&M Officer	• Key variables that need to be considered in the implementation of optimal O&M are WUA participation, commitment of local government, and inter-authority cooperation. However, these factors must be supported by the commitment of the local government,	• Cooperation between companies and farmers can serve as an opportunity for alternative financing for O&M. This can be seen in the case study in the irrigation scheme authority of Kediri district, which demonstrates a mutually beneficial relationship

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		scheme in East Java (Jombang and Kediri) and Banten (Serang and Pandeglang) Consideration: • This study elaborates on the influence of irrigation infrastructure O&M at the IPDMIP activity locations on (i) the opportunity cost borne by farmers in the form of Crop Index (IP) and rice productivity, (ii) the rehabilitation of irrigation infrastructure activities, (iii) the implementation of optimal O&M activities, (iv) farmer participation in O&M implementation, (v) estimation of O&M costs, and (vi) the	**Adopted**: Regulations regarding the management of operation and maintenance (O&M) of irrigation have been stipulated in the Draft Government Regulation on Irrigation.		which can be realized through programs to strengthen WUA institutions and enhance the capacity of farmers in conducting O&M. Additionally, the limited O&M budget and field human resources involved in O&M activities can be addressed through cooperation in sharing human resources and funding among different authority areas.	between sugar milling companies and farmers in the implementation of O&M. Furthermore, corporations that initiate joint land consolidation and leverage the price difference of agricultural input factors in the market compared to the price within farmers' associations also present a potential alternative for O&M implementation, as observed in Jombang district.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		potential for alternative O&M financing through the PPP scheme.				
	B. Policy Paper/Brief					
1	Policy Paper: One Management Irrigation System (Single Management Irrigation) I and II	The concept of one irrigation management unit which includes primary, secondary, and tertiary irrigation networks to achieve efficient management with key factors: Ministry of Public Works and Housing as coordinator, availability of database data which is always updated and accessible to stakeholders, roles sharing between stakeholders. Consideration: • The emergence of the Single Management Irrigation (SMI) policy is	Recommendations for implementing the policy of one-unit development and management of irrigation systems. Status: **Adopted**: The principles of single management irrigation have been adopted in the Draft Government Regulation on Irrigation.	• MPWH • Ministry of Agriculture, • Coordinating Ministry for Economy • Local Government	• The principles of implementing SMI include: (i) in the implementation of integrated development and management of irrigation systems (primary-secondary-tertiary as a unified system), the institution will establish relationships with local governments and other stakeholders involved in irrigation	• The policy of Single Management Irrigation, or the integrated development and management of irrigation, is stated in the Draft Government Regulation on Irrigation.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		due to the lack of harmony or connectivity between the primary and secondary networks with the tertiary network, which results in water delays in the rice fields.			management (rolesharing); (ii) irrigation management database: (one map policy, planning & implementation database for irrigation); (iii) coordination between ministries/agencies is collaborative, with one ministry/agency acting as the coordinator; (iv) coordination between the central government and between the central government and	

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
					local governments; and (v) the budget for implementing integrated development and management of irrigation systems is provided by the government in accordance with the authority of the Irrigation Area.	
2	Policy Paper: Farmer Participatory Concepts in the Development and Management of Irrigation Networks	The concept of a model for implementing farmer participation activities in irrigation management through organizing farmers, coaching and training, as well as developing a transparent and accountable management system.	Recommendations for the implementation of the cooperation/participation model between WUA farmers and the Government/Local Government for irrigation management. Status:	• Farmers • Government (MPWH).	• The consistency of the central and regional government in implementing participation with farmers/WUA in the development and management of irrigation (planning,	• The regulation regarding the participation of farmers/WUA in the development and management of irrigation has been included in the Draft Government Regulation on

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		Consideration: • In accordance with the tagline and title of the IPDMIP program, irrigation management is carried out in an integrated and participatory manner. • Farmer participation in irrigation management, including rehabilitation, operation, and maintenance activities, is essentially regulated in Law Number 17 of 2019 concerning Water Resources. This law provides a mandate and direction that communities benefiting from the development of water resources, including irrigation, can participate in water resource management,	**Adopted**: The implementation of farmer participation in irrigation management has been included in the Draft Government Regulation on Irrigation.		rehabilitation, and O&M).	Irrigation, and the technical rules for implementing participatory approaches will be regulated in the Minister of Public Works and Public Housing Regulation.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		including irrigation management. Furthermore, the mandate to implement farmer participation is also regulated in the Minister of Public Works and Public Housing Regulation No. 30 of 2015 concerning the Development and Management of Irrigation Systems (PPSI).				
3	Policy Paper: Synergy, Synchronization, and Institutional Consolidation of Farmers in Irrigated Land	The idea of consolidating farmer/farmer organizations at the tertiary level (Farmers Group and WUA) and the need to optimize synergy, synchronization, and consolidation of farmer institutions in managing irrigated land in order to	Recommendations for synergizing, synchronizing, and consolidating farmer institutions in irrigation management at the tertiary irrigation level, between farmer organizations, in cultivating farmers, and	• Farmers and WUA • Government (MPWH & Ministry of Agriculture) • Local government	• Farmers' cooperatives promote the implementation of consolidating fragmented land into a single entity and consolidating agricultural management by farmer groups	• To strengthen institutions and promote the concept of sustainable farmer cooperatives, it is recommended that the Government issue a synergistic regulation in

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		increase farmer productivity and welfare. <u>Consideration:</u> • Until now, the policy aspect for the implementation of farmer institution development in agricultural development and irrigation management has not been fully implemented and has not considered the principle of sustainability. Policies between Ministries/Agencies have not been integrated and synergized to support the sustainability of farmer institutions.	consolidating irrigated agricultural land. Status: **Discontinue**		(FGs) and water user associations (WUAs) under one farmer institution in the form of a farmers' cooperative. This facilitates the realization of effective and efficient agricultural cultivation. Agricultural mechanization on a business scale that meets economies of scale is also increasingly necessary to ensure the sustainability of farmer institutions.	addition to Ministerial Regulations and Government Regulations, in the form of a Presidential Instruction. This Presidential Instruction should regulate: 1) the concept of cooperatives and land consolidation, as well as the management of farmer groups, water user associations, and other farmer institutions; 2) opportunities for farmer institutions in irrigation network operation

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		• Farmer cooperatives promote the implementation of consolidating fragmented land into one entity and consolidating agricultural management by farmer groups and P3A (Water User Associations) consolidated under one farmer institution in the form of a farmer cooperative.				and maintenance (O&M) activities; and 3) integrated capacity building for farmer institutions by several Ministries/Agencies.
4	Policy Paper on Increasing Farmer Participation (WUA) in the Management of Irrigation Networks through the Provision of Grants	The concept of implementing the provision of grant aid to farmers/WUA in irrigation management to encourage the participation of farmers/WUA such as irrigation network operations, maintenance of irrigation networks, reports	Recommendations for providing grant aid by the government/local government to farmers/WUA in irrigation management. Status:	• MPWH, • Ministry of Agriculture, • Local Government , • Farmers/WUA	• Based on the experience of previous projects, farmer/WUA participation activities with incentives/grants for irrigation management will cease upon the	• There needs to be commitment and consistency from both the central and regional governments to continue implementing farmer/WUA participation in

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		of damage to irrigation networks by farmers Consideration: • One of the main factors that can boost farmers' motivation to participate in irrigation management, particularly in O&M activities, is providing "grant funding" to farmers/WUA to assist and stimulate farmer/WUA organizations in the participation process in irrigation networks within their working areas. • Providing grant funding to farmers/WUA aims to enhance farmers' capacity and increase their participation in	**Adopted:** The regulation regarding farmer participation in irrigation management through the block grant mechanism has been included in the Government Regulation and will be further specified in the Minister of Public Works and Housing Regulation.		completion of the project/program.	irrigation management as mandated by legislation.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		irrigation management. Therefore, the aspect that needs to be considered in implementing the grant funding is also to enhance the social capital of farmer/WUA institutions.				
C. BOOK						
1	FII Proceedings (Indonesian Irrigation Forum)	Results of presentations and discussions to gather various stakeholders in the irrigation sector, including the government, academics, practitioners, and the public, to discuss issues related to irrigation management in Indonesia Consideration: • As input for the preparation of the Technocratic Draft of the National Medium-	As a source of reference, a vehicle for sharing information, media knowledge sharing, as well as a means of increasing coordination and synergy between stakeholders. Status: **Adopted**: The outcomes of the discussions on various issues in the Indonesian Irrigation Forum serve as inputs for	• Central Government • Local Government • University • NGO • Consultant • Bank (Finance Institute) • Private • Farmers	• The main challenge in water resources management is the increasing demand with a relatively fixed and even declining supply in some cases, which is a challenge that needs to be addressed promptly. This means that	• Based on the issues in water resources management, the interconnection between water, food, and energy, commonly referred to as the Water-Food-Energy Nexus, is an approach aimed at creating sustainable development by

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		Term Development Plan (RPJMN) 2020 - 2024. Specifically, this forum is also Indonesia's initial step in implementing the 3rd World Irrigation Forum in 2019 by the Indonesian National Committee - Commission on Irrigation and Drainage (KNI - ICID). • Integrated water resource management becomes easier to implement when viewed from the perspective of the common needs for food security, water, and renewable energy. Based on this, the interconnection between water, food, and energy (Water-	the formulation of the Medium-Term Development Plan in the water resources sector.		competition for water is growing, and it needs to be regulated in a way that can meet the needs of all parties. • As the population grows, it indirectly leads to an increase in the demand for food, water, and energy.	integrating water, food, and energy.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		Food-Energy Nexus) is an approach aimed at creating sustainable development by collaborating water, food, and energy.				
2	Sustainable low land Development and Management Book	Definition of low land irrigation, approach to development and management of low land in a sustainable manner with a zoning approach in Indonesia <u>Consideration:</u> • This book provides a detailed description of swamps in Indonesia, including the definition and types of swamps, the history of swamp development in Indonesia, swamp management and policies, swamp zoning,	As a reference and guide for policymakers, researchers, and practitioners in the development and management of low lands in a sustainable manner. Providing information and a better understanding of lowlands and their function as important ecosystems for the survival of humans and the environment as well as the latest technologies and methods in low land management.	• Government • Consultants • University • Observers/Researcher	• In the previous period, the regulations regarding the development and management of swamps were separately stipulated in the Government Regulation on Swamps. However, in the current period, the regulations regarding swamp management are incorporated into the Draft	• The regulations regarding the development and management of swamps, which are only stipulated in several articles in the Draft Government Regulation on Irrigation, will require more detailed technical regulations to be established in the Ministerial Regulation of Public Works and Public Housing.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		concepts of swamp development in Indonesia, management of water in peat swamps, and the socio-economic aspects of communities in swamp areas.	Status: **Adopted**: The recommendations in the book on the development and management of sustainable wetlands have been included in the Draft Government Regulation on Irrigation and will be further elaborated in the Minister of Public Works and Housing Regulation.		Government Regulation on Irrigation	
D. Input on Draft Government Regulation (RPP) Irrigation (Covering area of irrigation between in draft Regulation and Exist Regulation)						
1	Review of Government Regulation 20 of 2006 concerning Irrigation and Regulation of the Minister of MPWH as Implementation Arrangements	The review was carried out by comparing the Government Regulation 20 of 2006 concerning Irrigation with the MPWH Ministerial Regulation (Ministry Regulation No.12/2015 concerning Exploitation and Maintenance of Irrigation	As a reference material and input for the preparation of the Draft Government Regulation concerning Irrigation, the issues of concern. Status: **Adopted:** Several topics that were not included in	• MPWH, • Ministry of Agriculture, • National Development Planning Agency, • Related Ministries/Institutions	• Institutional and managerial aspects in irrigation development and management involve numerous institutions or organizations, both at vertical	• The regulation regarding **Irrigation Management** Institutions, which consist of: i) Government agencies (Central and Regional) responsible for

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		Networks, Ministerial Regulation No. 14/2015 concerning Criteria and Determination of Irrigation Scheme Status, Ministerial Regulation No. 16/2015 concerning Exploitation and Maintenance of Lowland low land Irrigation Networks, Ministerial Regulation No. 17/2015 concerning Irrigation Commissions, Ministerial Regulation No. 21/2015 concerning Exploitation and Maintenance of Pond Irrigation Networks, Ministerial Regulation No. 23/2015 concerning Management of Irrigation Assets, and Ministerial Regulation No. 30/2015 concerning the Development and Management of Irrigation	the previous Government Regulation have been accommodated in the Draft Government Regulation on Irrigation, such as Institutional Management of Irrigation, Human Resources, and Information Technology.	• Local Government , • Farmers/WUA • Community • Private	levels and across horizontal sectors. • Farmers' Associations (WUA) as irrigation customers or water users have diverse conditions. Most WUAs do not have: i) the allocation of water quantity under their authority, ii) a comprehensive list of their members, and iii) a clear delineation of the agricultural lands under their authority. Currently, irrigation water users are not well-documented in	irrigation; ii) Farmers' Water User Associations; and iii) Irrigation Commissions. • The regulation regarding human resources (HR), both at the central government and regional level, where in the previous Government Regulation on Irrigation did not regulate HR. • Accurate data collection of irrigation water users (water irrigation users) is necessary.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		Systems). The goal is to see the linkages to irrigation regulations, accommodate comments/inputs, and recommendation. <u>Consideration:</u> • Comparing the Government Regulation (GR) No. 20/2006 on Irrigation with the Draft Government Regulation (DGR) on Irrigation, to identify the new provisions stated in the articles of the DGR, such as swamp management, human resources, and information system.			terms of: i) the total land area served, ii) the number of WUAs served, and iii) the number of individual farmers served within an irrigation system.	
2	Minutes of the KNI-ID/ INACID Discussion Forum: Discussion on Irrigation Issues as Input	Collect and compile the ideas from experts, bureaucrats (government), and practitioners for input	As input to the Draft Government Regulations on Irrigation in	• MPWH, • Ministry of Agriculture	• The Irrigation Modernization policy consists of five pillars, which	• The approach to irrigation modernization policy needs to be

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	to the Draft Irrigation Government Regulations (Forum on Draft Irrigation Government Regulations)	on the drafting of Irrigation Government Regulations which are implemented by 3 (three) FGD which concern the issues as follows: 1) availability and distribution of irrigation water; 2) irrigation water efficiency; 3) institutions and human resources; 4) irrigation modernization; and 5) conversion of irrigated agricultural land <u>Consideration:</u> • In general, this discussion forum aims to gather ideas and thoughts from experts, observers, and practitioners in irrigation, particularly members of the Indonesian National Committee on Irrigation	accordance with each issue. Status: **Adopted**: The policy of Irrigation Modernization, which emphasizes efficiency and level of service in irrigation management, has been regulated in specific articles within the Draft Government Regulation on Irrigation.	• Local Government • INACID (National Irrigation Organization) • Expert • Consultant • NGO	include: water availability, irrigation infrastructure, irrigation management, irrigation management institutions, and human resources. • The challenge for irrigation is to meet the water needs of agricultural crops with various commodities (multi-commodity). • Conversion of agricultural land. • Regulations regarding the institutional management of	regulated in the Draft Government Regulation on Irrigation, while its technical implementation is regulated in the Ministerial Regulation of Public Works and Housing. • The shift in agricultural cultivation concept from being primarily focused on staple food (rice/field) or rural development to urban farming. Therefore, irrigation areas or agricultural lands that have undergone land

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		and Drainage (KNI-ID/INACID), as input for the preparation of the Draft Government Regulation on Irrigation.			irrigation and human resources need to be established.	use change still have the potential to produce agricultural products through redesigning to identify various commodities that can be cultivated on the land. • The Draft Government Regulation on Irrigation needs to regulate role sharing among irrigation stakeholders, including defining the rights and responsibilities of farmers within a participatory framework that integrates the

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
						community with the government in irrigation development and management.
3	Irrigation OM Discussion Report (Input Forum for Draft Government Regulations on Irrigation)	Provide input on the Draft Irrigation Government Regulation for the issue of i) Farmer Participation and Empowerment; 2) institutional and human resources; 3) implementation of irrigation operations and maintenance; and 4) tertiary network management <u>Consideration:</u> • The topics were categorized into three categories: i) New Proposals or Issues; ii) Emphasis or Affirmation (as benchmarks); and	As input to the Draft Government Regulations on Irrigation in accordance with each issue. Status: **Adopted**: Empowerment of farmers in the development and management of irrigation, particularly in operation and maintenance (O/M), is regulated in the Draft Government Regulation on Irrigation.	• MPWH, • Ministry of Agriculture	• Adequate funding support for irrigation operation and maintenance activities. • So far, farmer participation has been included in several legislations, but there is no specific sentence or article in the legislation that explicitly requires or obligates the state budget policy to fund farmer participation.	• Budget policy for meeting irrigation O&M needs. • Regulation/guidelines for the mechanism of participation with farmers through the provision of block grants. • Redefining the boundaries of tertiary irrigation areas (tertiary blocks) as stated in the Minister of Public Works and Housing Regulation No. 33/2007 on

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		iii) General Matters, which encompass existing knowledge or practices commonly carried out in irrigation operation and maintenance. • Institutional and human resources, where there are still many regulations related to irrigation that cannot accommodate the needs of irrigation management institutions and the human resources themselves. • The implementation of irrigation operation and maintenance is a complex issue. • In Chapter IV of Law No. 17/2019 on Water Resources, it is			• The tertiary irrigation network is not explicitly mentioned in Law No. 17 of 2019 on Water Resources, so it requires clarification in the Irrigation Draft Government Regulation regarding the obligations and roles of P3A (Water User Association).	Empowerment of P3A (Farmers' Water User Association) is needed.

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		explained that in developing and managing an irrigation system as a unified system in an irrigation area. Referring to Chapter IV of the Water Resources Law, it emphasizes the authority of irrigation operation and maintenance (OP) in the tertiary network as if it is the full responsibility of the government. • The formulation of strategies to improve the implementation of Farmer Participation in irrigation management through direct input or sharing of experiences from Irrigation Operation and				

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		Maintenance (OP) Officers and discussions by Irrigation Experts.				
4	Minutes of Input Forum Draft Government Regulation Concerning Irrigation: Discussion of Authority Issues, Irrigation Modernization, and Irrigation Single Management	Provided input on the preparation of the Draft Irrigation Government Regulation from: Consultant Team of IPDMIP loans and SIMURP Loans and Regional Apparatus Organizations included in the loan, with issues of: 1) authority; 2) irrigation modernization; 3) irrigation management; 4) SMI; 5) institutional; 6) irrigation participation <u>Consideration:</u> • Single Management Irrigation and Irrigation Modernization are new issues that must be carefully considered in the drafting of the	As input to the Draft Government Regulations on Irrigation in accordance with each issue. Status: **Adopted**: The policy of Single Management Irrigation is a new approach in irrigation management and has been included in the Draft Government Regulation on Irrigation.	• MPWH • Ministry of Agriculture • Local Government • Farmer • Consultant	• The development and management of irrigation systems are carried out as a unified entity through the Integrated Irrigation System (SMI) that includes the primary, secondary, and tertiary irrigation systems. • The implementation of irrigation modernization is initiated in selected irrigation areas at various	• The policy of single management irrigation entails that the development and management of irrigation systems, starting from the primary, secondary, and tertiary networks, are the responsibility of the government (central and regional). • The policy of single management irrigation entails that the

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		Government Regulation on Irrigation. • The proposed new formulation in the draft Government Regulation on Irrigation relates to the changes in the authority of irrigation area management between the central government, provinces, and regencies/cities.			levels of authority (central, provincial, district/city) by utilizing funding from foreign loans.	development and management of irrigation systems, starting from the primary, secondary, and tertiary networks, are the responsibility of the government (central and regional).
5	Minutes of Irrigation RPP Forum - Discussion of low land Management Issues	Provide input on RPP Irrigation from HATHI members, bureaucrats, and hydrological engineering practitioners, especially the regulation of development and management of low lands concern the issues as follows: 1) low land management; 2) low land irrigation authority; 3) definition; 4) distribution of	As input to the RPP on Irrigation in accordance with each issue. Status: Adopted: The results of the discussions on the principles of wetland development and management have been incorporated into the Draft Government Regulation on Irrigation,	• MPWH, • Peat Restoration Agency, • Ministry of Agriculture • Ministry of Forestry and Environment • Low land observer/researcher	• Management of wetland water, environment, and wetland regulations	• The need for guidelines on the development and sustainable management of wetland areas.

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		types of irrigation; 5) SMI; 6) community participation; 7) low land irrigation institutions; 8) development of low land irrigation; 9) regulation of low land drainage; 10) peatland management; 11) implementation of low land irrigation activities; 12) monitoring and evaluation of low land irrigation; 13) low land irrigation information system; 14) climate change; 15) licensing and supervision; 16) management of low land irrigation network assets; 17) peat hydrology unit; 18) reliability of low land irrigation water; 19) environmental aspects. <u>Consideration:</u>	and the technical details will be further regulated in the Minister of Public Works and Housing Regulation.	• Local Government • University • Consultant		

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		• Proper regulation of development and management is highly needed to ensure the sustainability of swamp ecosystem functions, while optimizing the potential benefits of swamp land as cultivation areas.				
6	Minutes of the Irrigation RPP Forum at the DIY Committee Meeting	Provide input and aspirations from stakeholders regarding the Draft Government Regulation (RPP) on Irrigation that is being prepared.	As input for the RPP on Irrigation in accordance with each issue	Government (MPWH, RBO, Irrigation Commission)	• The limitations of funding and poor quality of operation and maintenance (O&M) lead to a rapid decline in the function of irrigation due to the deterioration of irrigation networks. This eventually requires rehabilitation of the irrigation system, which is more	• In the Draft Government Regulation on Irrigation, the authority limits based on government levels will be regulated as follows: i) district authority, previously encompassing areas less than 10,000 ha, will
		Some of the inputs and aspirations expressed included expanding irrigation schemes, improving the quality of irrigation infrastructure, managing water resources, developing irrigation	Some of the inputs generated include clearer and more measurable definitions and criteria for irrigation OPs, more effective and efficient irrigation management systems, and more	Local government		

No	KMC Products	Brief Description and Consideration	Outputs/Results and Adopt/Understudy/ Discontinue	Beneficiaries	What of the current Issues	Next Step
		technology, and increasing the role of farmers in irrigation management. <u>Consideration:</u> • The advancement of communication and information, as well as the improvement of human resources capacity in irrigation management, are currently potential strengths that can be further optimized in the development and management of irrigation. The limited financial capacity of local governments is one of the constraints in the effort to enhance the allocation of funding for irrigation operation and maintenance	focused and sustainable financing. Status: **Adopted**: The framework for the management of O&M in irrigation under regional authority and the utilization of information technology has been accepted by relevant stakeholders, and it will be further detailed in the derivative Government Regulation on Irrigation.		costly than regular operation and maintenance. • Nearly 60% of the total area of irrigation in Indonesia is under the authority of local governments. However, the fiscal limitations of local governments result in low budget allocation for the management of irrigation within their jurisdiction.	now be limited to areas less than 500 ha; ii) provincial authority, previously ranging from 1,000 ha - 3,000 ha, will now range from 500 ha - 2,000 ha; and iii) central authority, previously covering areas larger than 3,000 ha, will now cover areas larger than 2,000 ha.

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		(O&M) activities, especially in irrigation areas under the authority of local governments.				

Table 2.3

The Cost Project Financing of Grant IFAD

Category	Grant Allocation (EUR)	Project Cost (EUR)	%
1. Equipment and Material	140.000	66.515,83	47,51
2. Consultancies	650.000	633.270,79	97,43
3. Workshop and Training	260.000	297.690,97	114,50
4. Operating Costs	360.000	379.526,11	105,42
Total	**1.410.000**	**1.377.003,70**	**97,66**

Component	Grant Allocation (EUR)	Project Cost (EUR)	%
Comp. 1 sub comp. 3	1.410.000	1.377.003,70	97.66
Total	**1.410.000**	**1.377.003,70**	**97,66**