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Analysis of Achievements of Irrigators on Pillar Three of Irrigation Modernization in the Rentang Irrigation Area

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Abstract. In irrigation modernization, there are five pillars namely the first pillar of water availability, the second pillar of irrigation infrastructure, the third pillar of irrigation management, the fourth pillar of irrigation institutions, and the fifth pillar of humans as actors in irrigation management. Each pillar of irrigation modernization is mutually supportive and interrelated. Humans are one of the most important elements as the main actors of Irrigation modernization. Irrigation modernization readiness is measured by IKMI, namely the irrigation modernization readiness index. The Rentang irrigation area is one of the irrigation areas whose IKMI value has been analyzed with an IKMI value of 66.9. This research will examine the achievements of the third pillar of irrigation modernization, namely irrigation management in the Rentang irrigation area. Achievements on the condition of the Rentang Irrigation Area related to the three pillars are majority sufficient. Periodic maintenance and repair, participation, financing system, and cropping pattern is quite good. related to IT-based IT-based OP information management facilities in a good category because indeed the advantages of spanning weirs in irrigation management using computer devices, and water management at the tertiary level are good. For the achievements of POB, POP, PPA, Mantri and interpreters towards Pillar 3 of Irrigation Modernization with a score range of 2.5 -3.5 from the achievement target of 5. A value of 3.5 on Completion of the OP form system and Distribution & distribution of water.

Keywords: *Three pillar; Rentang Irrigation Area; Irrigation Modernization.*

1 Introduction

Irrigation Modernization in Indonesia is basically Irrigation modernization in Indonesia an effort to realize a participatory irrigation management system oriented towards fulfilling irrigation service levels effectively, efficiently, and sustainably in the context of supporting food and water security, through increasing the reliability of water supply, infrastructure, irrigation management, management institutions, and human resources[1]. So far, 17 irrigation areas have

[1] Ministry of Public Work and Housing (MPWH) Pokok-pokok modernsasi irigasi Indonesia (The Principle of modernization of irrigation of Indonesia) 2014

had their IKMI values measured. IKMI (Irrigation Modernization Readiness Index) is a measurement tool developed by the Ministry of Public Works (PU) in since 2011. IKMI is used to measure irrigation modernization readiness in Indonesia. The Rentang Irrigation Area is one of 17 irrigation areas whose IKMI value has been analyzed with an adequate rating, in the range of 66.90[2]. The IKMI assessment cannot be separated from the evaluation of the five pillars of irrigation modernization which consist of the first pillar of water availability, the second pillar of irrigation infrastructure, the third pillar of irrigation management, the fourth pillar of irrigation institutions, the fifth pillar of humans as actors in irrigation management[3].

One pillar with the other pillars is interrelated. The most important factor for driving and realizing irrigation modernization is human resources, because the availability of irrigation facilities and infrastructure without the support of human resources will greatly influence the realization of the success of this irrigation modernization. Because even though it cannot be denied that the role of humans is the most important factor because humans will always be the main role[4]. All the pillars of irrigation modernization are directly related to the human role, especially the third, fourth and fifth pillars.
In this study, the third pillar of irrigation modernization will be studied, namely irrigation management. Irrigation management cannot be separated from irrigators. In this research, the irrigators that will be studied are POB, PPA and Matri in the Rentang irrigation area. By examining the extent to which the role of human resources, especially POB, POP. PPA and Mantri who will be correlated with the third pillar of irrigation modernization. The results of this study in outline are the achievements of POB, POP, PPA and Mantri/trainees towards Pillar 3 of Irrigation modernization in the Rentang Irrigation area.

2 Method

The method used in this study is a qualitative method with a phenomenological approach. This study analyzes and describes an individual phenomenon that occurs in this case the Weir Operation Guard (POB), Door Operation Guard (POP), Water Gate Guard (PPA) and Mantri/Executor. By gathering information through interviews with the Weir Operation Guard (POB), Door Operation Guard (POP), Water Gate Guard (PPA) and mantri in the Rentang Irrigation Area. In

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[3] Ministry of Public Work and Housing (MPWH), 2018, Draft Pedoman Teknis Modernisasi Irigasi

[4] Ernawati, E., Soekarno, I., Siswanto, J., & Suryadi, Y. (2021). Aspek Sumber Daya Manusia yang Kompeten Sebagai Pendukung Utama Urban Farming. *Jurnal Keteknikan Pertanian Tropis Dan Biosistem*

addition to the interviews, questionnaires were also distributed to several Water Gate Guards (PPA) and Mantri with questions related to the modernization of the three pillars of irrigation, namely the Irrigation Management System.

3 Analysis and Discussion

3.1 Irrigation Modernization

Irrigation modernization in Indonesia has indicators including increasing water productivity (kg GKG/m3 of water), increasing irrigation services (adequacy, reliability, fairness, and speed of service), increasing irrigation efficiency, reducing OP costs, increasing OP costs (OM cost recovery). Increased financial sustainability, reduced disputes and reduced environmental degradation1The implementation of Irrigation Modernization goes through a long process and is carried out in stages. Because modernization is a continuous and sustainable process, as well as realizing the goals of Irrigation Modernization, namely the fulfillment of irrigation service levels in an effective, efficient and sustainable manner in order to support food security.

The first stage is to measure the readiness of irrigation modernization using the IKMI (Irrigation Modernization Readiness Index). IKMI as a measuring tool developed by the Ministry of Public Works since 2011 to measure the readiness of irrigation modernization. Before going to IKMI there are several stages that must be passed including Irrigation Asset Management (PAI) and IKSI Study of Irrigation System Network Performance Index (IKSI)[5]

The value of the IKMI Irrigation Modernization Readiness Index can be used to formulate priorities and the next stages of irrigation modernization.

Table 1 Calculation results of IKMI values in Rentang

No	Indicator	IKMI Value
1	Water Availability	12,40
2	Irrigation Infrastructure	17,25
3	Management system	9,45
4	Management Institution	14,60
5	Human Resource	13,20
		66,90

Source: IKMI Reports in Rentang 2015

[5] Ernawati Research and Proposal Human Resources Improvement Model That Are Competent In The Framework Of Irrigation Modernization Irrigation Areas Rentang And Irrigation Areas Jatiluhur Irrigation Area,Institut Teknology Bandung, 2019

Based on the results of IKMI calculations for the DI Range management system, the value is lower, 9.45

3.2 Irrigation management

Irrigation management irrigation management will be oriented towards the rights and obligations of the community in order to be able to access local resources in an equitable manner to support food sovereignty policies as well as other agriculture, is open, participatory, accountable, efficient, effective, easy to operate, accurate, supports management towards real time, real allocation, real losses basis. To be able to guarantee its implementation, it must be supported by information and communication technology (Information Communication and Technology / ICT).

3.3 Rentang Irrigation Area

Rentang Irrigation Area is one of the national rice barns with a service area of 87,840 ha covering three regencies with the following areas: Majalengka Regency covering an area of 1,094 ha, Cirebon Regency covering an area of 20,571 ha and Indramayu Regency covering an area of 66,175 ha. The Rentang irrigation area has a Rentang weir which is located in Jatipuh District, Majalengka Regency. The weir divides water into two main canals, namely: through the Left Span tapping gate is SI Cipelang with a maximum discharge of 62.20 m3/second. Through the Right Span tapping door is SI Sinduparaja with a maximum discharge of 79.40 m3/second[6]. Rentang weir is one of the weirs in Indonesia where irrigation management uses a computer device

Figure 1 of Rentang Irrigation Area Map

[6] IKMI Report Rentang Irigation Area, 2015

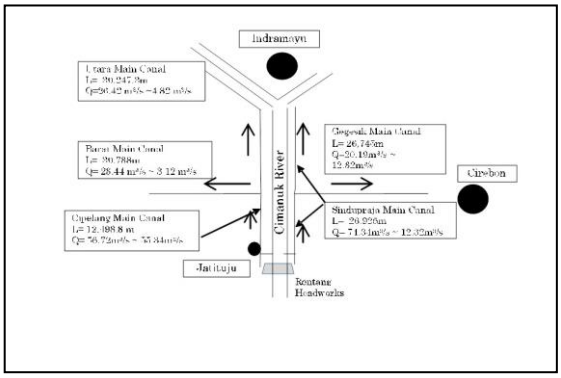

Figure 2 of Rentang Irrigation Area Map

3.4 Questionnaire and Interview

To gather information by distributing questionnaires and conducting interviews with 48 irrigators in the field (13 POB, 6 POP, 9 PPA and 20 paramedics/trainees) by gathering information through interviews and questionnaires related to the pillar irrigators. three. The following is a recapitulation of the results of the interviews and questionnaires to (POB, POP, PPA and Matri/Juru

Table 2 Achievement of Irrigation Area Conditions Rentang of pillar 3

No	Component Pillar three	POB, POP, PPA, Mantri /Juru
1	Water needs	Adequate
2	distribution of water	Adequate
3	Assessment period and door operation	Adequate
4	Calculation of water loss	Deficient
5	Completion of the blank system: 12 O blanks, and 10 P blanks	Adequate
6	Water Productivity	Adequate
7	Allotment of Irrigation Water	Adequate
8	Monitoring of water management: adequacy, reliability, fairness, flexibility, quality of water quality	
9	Water flow control system	Adequate
10	Water delivery system	Adequate
11	Periodic maintenance and repair	Pretty good
12	Emergency Response	Adequate
13	Participation	Pretty good
14	OP facilities - Transportation and communication tools - OP's fieldwork equipment - Uniform	Adequate
15	Equipment, means of IT-based OP information management system	Adequate
16	Water management at the tertiary level	Adequate
17	Financing System	Pretty good
18	Planting pattern	Pretty good

Source: Analysis Result

Table 3 Achievements of POB, POP, PPA paramedics and interpreters towards Pillar 3 of Irrigation Modernization

No	Substance Pillar 3 Agencies in Rentang	Target	Achievement
1	Water Needs	5	3
2	Distribution and distribution of water	5	3,5
3	Assessment period and door operation	5	3
4	Calculation of water loss	5	3
5	Completion of the OP blank system	5	3,5
6	Water productivity	5	2,5
7	Allotment of Irrigation Water	5	3
8	Monitoring Water management: adequacy etc	5	2,5
9	Water flow control system	5	2,5
10	Water delivery system	5	2,5
11	Periodic maintenance and repair	5	3
12	Emergency response	5	2,5
13	Participation	5	3
14	OPs facility	5	3
15	IT-based OP information management system equipment	5	2,9
16	water management at the tertiary level	5	3
17	Financing system	5	2,5
18	Planting pattern	5	3

Source: Analysis Result

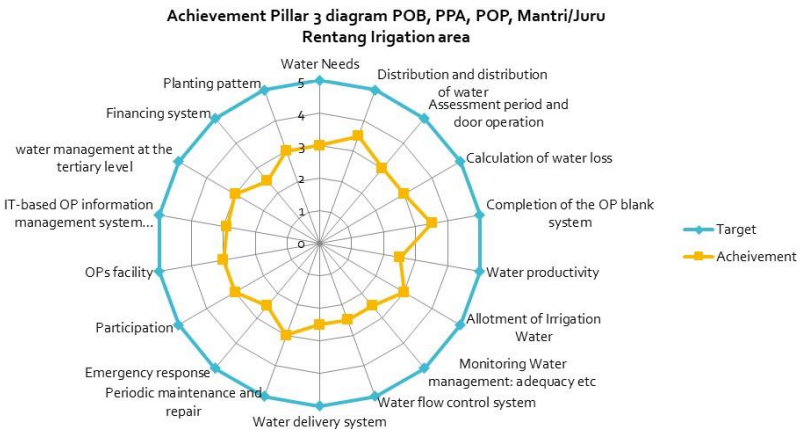

Figure 2 Achievement pilar 3 Diagram Rentang Irrigation Area

4 Conclusion

Achievements to The Condition of the Range Irrigation Area related to the three majorities are sufficient. Periodic maintenance and repair, participation, financing system, and planting pattern are quite good. related to the equipment of the OP information management system based on IT category is good because it is indeed the advantage of Bendung Rentang in irrigation management using computer devices, water management at the tertiary level is good. For the Achievement of POB, POP, PPA, Mantri and Interpreters towards Pillar 3 of Irrigation Modernization with a value range of 2.5 -3.5 of the achievement targets 5 Improvement of the OP blangko system improvement and division and provision of water. For maximum achievement, it is necessary to understand irrigation modernization as a whole for each irrigator so that it is properly planned and what priorities must be carried out. In managing irrigation, cooperation between fellow irrigators, both agency and officers in the field, is needed, even P3A, GP3A and IP3A.

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References

[1] Ministry of Public Work and Housing (MPWH) Pokok-pokok modernsasi irigasi Indonesia (The Principle of modernization of irrigation of Indonesia) 2014

[2] Ernawati Research and Proposal Human Resources Improvement Model That Are Competent In The Framework Of Irrigation Modernization Irrigation Areas Rentang And Irrigation Areas Jatiluhur Irrigation Area,Institut Teknology Bandung,2021

[3] Ministry of Public Work and Housing (MPWH), 2018, Draft Pedoman Teknis Modernisasi Irigasi

[4] Ernawati, E., Soekarno, I., Siswanto, J., & Suryadi, Y. (2021). Aspek Sumber Daya Manusia yang Kompeten Sebagai Pendukung Utama Urban Farming. *Jurnal Keteknikan Pertanian Tropis Dan Biosistem;*, **9**(1)(2021). https://doi.org/10.21776/ub.jkptb.2021.009.01.01

[5] Ernawati Research and Proposal Human Resources Improvement Model That Are Competent In The Framework Of Irrigation Modernization Irrigation Areas Rentang And Irrigation Areas Jatiluhur Irrigation Area,Institut Teknology Bandung, 2019

[6] IKMI Report Rentang Irigation Area, 2015