

# READINESS OF HUMAN RESOURCES ASPECTS IN THE CONTEXT OF MODERNIZATION OF IRRIGATION IN INDONESIA IN THE MACAN IRRIGATION AREA

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## Abstract

Irrigation modernization in Indonesia is basically an effort to realize a participatory irrigation management system oriented towards fulfilling irrigation service levels in an effective, efficient and sustainable manner in order to support food and water security, through increasing the reliability of water supply, infrastructure, irrigation management, management institutions, and human resources. There are five pillars of modernization of Indonesian irrigation, pillar one availability of water, pillar two of irrigation infrastructure, pillar three of irrigation management, pillar four of irrigation institutions, and pillar five of human actors in irrigation management. The pillars of Irrigation Modernization are interrelated with one another. The most important pillar is the fifth pillar, namely the aspect of human resources; because the main implementers of irrigation modernization are humans. To measure the readiness of irrigation modernization in Indonesia, the Irrigation Modernization Readiness Index (IKMI) activity was carried out. So far, the average IKMI score from several irrigation areas in Indonesia is 58.27 in the sufficient category. To realize the modernization of irrigation, of course, the readiness of the human resources itself is needed. In this study, the human resources studied are agencies, weir operation guards, and Watergate guards in the Macan irrigation area. The current condition is based on the results of questionnaires and interviews on the readiness of the human resource aspect for irrigation modernization in the Macan irrigation area in the average range of 2.25 of the expected target 5. To achieve human capital in the context of irrigation modernization, of course, it is necessary to understand irrigation modernization as a whole; and increase in education, training, and understanding of technology.

**Keywords:** Human Resources, Irrigation Modernization, Macan Irrigation Area

## INTRODUCTION

Indonesia besides being an archipelagic country is also an agricultural country. The area of Irrigation Area in Indonesia currently reaches 7,145,168 Ha (Permen PUPR, 2015). The condition of irrigation networks is 45% in a damaged state, such as high leakage rates, low planting index, higher productive agricultural land conversion, participation of farming communities, and institutional performance of irrigation management is not optimal and much more (SDA Strategic Plan, 2016).

One of the Indonesian government's efforts to realize food security is to promote irrigation modernization. Because food security is very important for human welfare. (Ernawati, 2012). Many countries are carrying out Irrigation Modernization. Broadly speaking, the definition of irrigation modernization is: Modernization Irrigation is a combined strategy of institutional, managerial, and technological change with the objective of changing from a supply to a service-oriented mode of operation (Wolter and Burt, 1997).

At the ICID congress in Mexico in October 2017, the definition of Irrigation Modernization was refined as follows: Modernization Irrigation is the Process of upgrading infrastructure, Operations, and management of irrigation and drainage systems to sustain the water delivery service requirements of farmers and optimize production and water productivity.

Irrigation modernization in Indonesia is basically an effort to realize a participatory irrigation management system oriented towards fulfilling the level of irrigation services in an effective, efficient and sustainable manner in order to support food and water security, through increasing the reliability of water supply, infrastructure, irrigation management, management institutions, and human resources. The aim of irrigation modernization in Indonesia is to realize an irrigation management system that meets the previously determined irrigation level of service in an effective, efficient and sustainable manner.

The goal of irrigation modernization in Indonesia is to support farming productivity in order to increase agricultural production in the context of national food security and farmer welfare. Irrigation modernization consists of five pillars, namely the first pillar Water availability, the second pillar Irrigation infrastructure, the third pillar Irrigation management, the fourth pillar Irrigation institutions, the fifth pillar Humans (human resources) as actors in irrigation management (Kemen PU, 2011). Of the five pillars, the problem of human resources becomes very important, because human resources are the most important factor to mobilize and realize irrigation modernization, the availability of irrigation facilities and infrastructure if not supported by human resources will greatly affect the realization of the success of irrigation modernization (Ernawati, 2021).

Because after all, it is undeniable that the role of humans is the most important factor because humans will always be the main role in the modernization of irrigation (Ernawati, 2019). For the value of the irrigation modernization readiness index for the human resource aspect, the value obtained tends to be small compared to the other four pillars (Indratmo, 2019).

The concept of human capital and strategic management of human resources is considered a key element in increasing organizational assets; because it is a sustainable competitive advantage (Pasban, 2016). Unfortunately, the quality of human resources is a problem. Indonesia requires massive efforts so that the modernization of irrigation in agriculture can work (Arsani, 2020). Based on this, this research will examine the Readiness of Human Resources Aspects in order to realize the Modernization of Irrigation in Indonesia. The irrigation area that will be studied is the Macan irrigation area which is part of the Jatiluhur irrigation area.

The readiness of the Human Resources Aspect is based on Human Capital, which is to provide an understanding that humans are organizational assets that can be developed as an organizational portfolio. Where Human Capital is defined as a collection of knowledge, skills, and capabilities possessed by employees to provide solutions. Human capital is an important factor in organizations; because it can make a big contribution to the progress and development of the organization (Lantip, 2017). The aspect of human resources contributes greatly to the readiness of irrigation modernization in Indonesia, especially in the Macan irrigation area.

## **METHOD**

The method used in this study is a method with a qualitative descriptive approach, which is a problem formulation that guides research to explore or photograph social situations that will be studied thoroughly, broadly, and deeply. By digging for information from the actors who are directly involved in the modernization of irrigation, among them field officers and agencies related to irrigation modernization.

Interviews and questionnaires to 98 dam operation officers and sluice gate officers and 50 agency employees. This interview and questionnaire outline the readiness of human resource aspects for irrigation modernization including staff procurement, training, and improvement, competency, certification, career planning, incentives, empowering farmers, associations of water-using farmers, weir operation officers, watergate officers, Mantri, Empowerment of Water-Using Farmers Associations/Water-Using Farmers Association Association/mother of Water-User Farmers Associations, regeneration and understanding of technology.

## **ANALYSIS AND DISCUSSION**

### **Aspects of Human Resources**

The aspect of human resources plays a very important role in strengthening human resources themselves within the department or agency as the organization's business partner (Túlio 2020). Human capital is an important factor for organizations that want to achieve competitive advantage (Crook, Todd, Combs, Woehr, & Ketchen, 2011; Kraiger, Passmore, Santos, & Malvezzi, 2015). In the modernization of irrigation, human resources will be developed more to the development of human capital.

Human capital development demands human development so that they can achieve their nature as meaning givers, as sources of levers and organizational drivers to create prosperity for all parties. (Tjakraatmadja, 2006). Because after all, it is undeniable that the role of humans is the most important factor because humans will always be the main role, especially in the modernization of irrigation (Ernawati, 2019).

Human resources are expected to be professional, and professional human resources from the operational burden that is part of it allow value-added strategic activities from the human resource professional (Newell, 2013; Shrivastava, Shaw, 2003). Human resource strategy is understood as a deliberate plan to add value to the organization by supporting the overall objectives of the strategic organization (Boxall, Purcell, 2011).

### **Irrigation Modernization in Indonesia**

Modernization of Irrigation is outlined in Government Regulation No. 20/2006 which contains irrigation as a legal rule that is used as the basis for all activities and efforts to develop and manage irrigation. In PP 20/2006 it is stated that five elements of the five pillars of irrigation, namely water supply, and infrastructure the five pillars of irrigation management, institutions, and people are part of an understanding of irrigation modernization.

Modernization is not always related to the use of sophisticated equipment but more emphasis

on understanding or increasing knowledge to achieve all goals (PUPR, 2014).

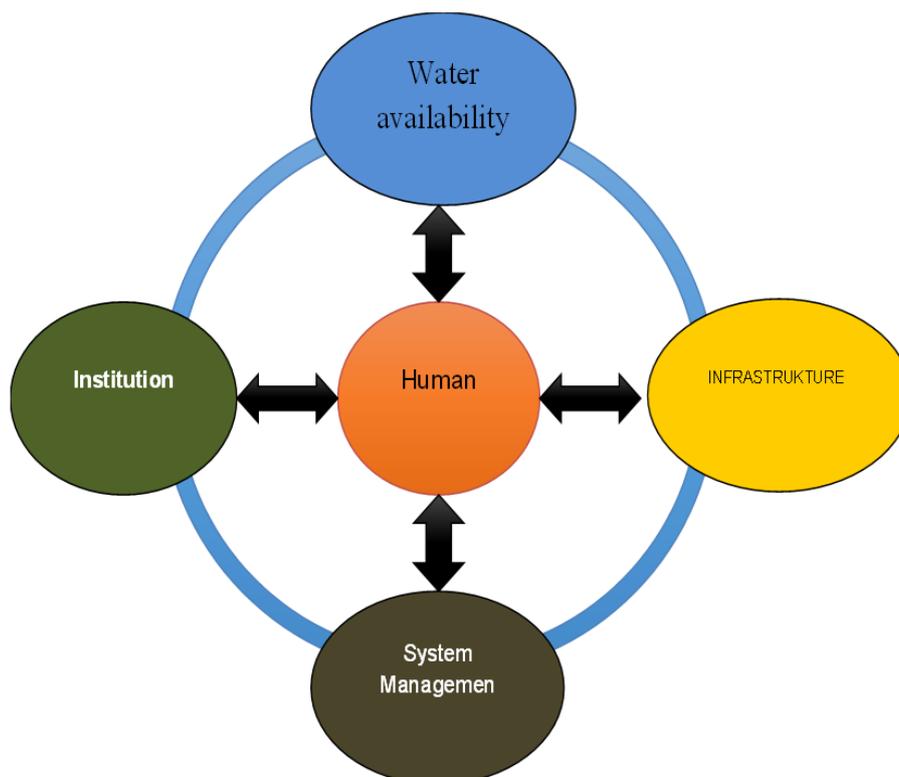
### Stages of Irrigation modernization In Indonesia

Irrigation modernization consists of five pillars namely pillar one availability of water, pillar two infrastructure/irrigation infrastructure, pillar three irrigation management system, pillar four managing institutions, and pillar five human resources as irrigation actors. There are several stages to realize the modernization of irrigation in Indonesia.

Based on the Circular of the Ministry of PUPR No. 01/SE/D/2018 Concerning Technical Guidelines for Irrigation Modernization Before carrying out irrigation modernization, the irrigation areas to be modernized have already gone through the stages of PAI (Irrigation Asset Management) assessment, IKSI (Irrigation System Performance Index) and IKMI (Irrigation Modernization Readiness Index).

### Aspects of Human Resources in irrigation modernization

The aspect of human resources plays an important role in the modernization of irrigation. The linkage of each pillar is largely determined by the 5th (five) pillar, namely human resources. Because the irrigation system is one form of technology that is carried out optimally and is determined by the role of humans (Ernawati, 2020).



**Figure 1: The concept of linkage of the five pillars of a human-based irrigation system**

The components of the human system as actors of irrigation modernization consist of:

- a) The status or position of the perpetrator
- b) training, certification, competency
- c) recruitment system and career planning
- d) actor intensive system

Aspects of Human Resources in the context of irrigation modernization In several irrigation areas in Indonesia for the fifth pillar, namely the aspect of human resources, the value is still not maximized. Like the table below.

**Table 1: IKMI Value for Human Resources**

No	Irrigation Area	IKMI value Human resources
1	Irrigation area Wadaslintang	39
2	Irrigation area Bondoyudo	72
3	Irrigation area Batang Anai	36
4	Irrigation area Rentang	66
5	Irrigation area Jatiluhur	64
6	Irrigation area Irigasi Saddang	50
7	Irrigation area Serayu	72
8	Irrigation area Mrican	68
9	Irrigation area Cikeusik	53
10	Irrigation area Komering	68
11	Irrigation area Sekampung	66
12	Irrigation area Kedung Putri	53
13	Irrigation area Pamukkulu	50
14	Irrigation area Cisadane	54
15	Irrigation area Jurang Batu	63
The average value of IKMI Human resources		<b>58.27</b>

Source: Ernawati draft laporan Penelitian dan kemajuan 3

### Macan irrigation Area

The Tiger Irrigation Area is an irrigation area located in Bendungan village, Pegaden Barat sub-district, Subang district, West Java, Indonesia. The Macan irrigation area is part of the Jatiluhur irrigation area which irrigates 10,427 hectares of agricultural land. The Macan irrigation area has one weir, 9 junctions, and 16 secondary canals with a channel length of 122,465 km (Perusahaan Jasa Tirta II, 2020).

### Questionnaires and interviews

The aspects of human resources related to irrigation modernization in this study that will be discussed are officers in the field and agencies related to irrigation modernization. To find out how far the role of the human resource aspect in irrigation modernization, it is necessary to describe the five pillars of irrigation modernization.

The elaboration of the five pillars of irrigation modernization for irrigation modernization readiness is as follows:

- 1) Procurement of employees
- 2) training and competency improvement
- 3) certification
- 4) career planning
- 5) Providing incentives
- 6) Farmers, Water User Farmers Association (P3A), Weir Operation Supervisor (POB), Water Gate Guard (PPA), Mantri
- 7) Empowerment of Associations of Farmers Using Water (P3A), a combination of Farmers Using Water (GP3A), Main Association of Farmers Using Water (IP3A)
- 8) Regeneration
- 9) Understanding of technology

The description cannot be separated from

- 1) Status or position of the perpetrator
- 2) training, certification, competence
- 3) recruitment system and career planning
- 4) Incentive system

### **The current condition of the Human Resources aspect of the Macan Irrigation Area**

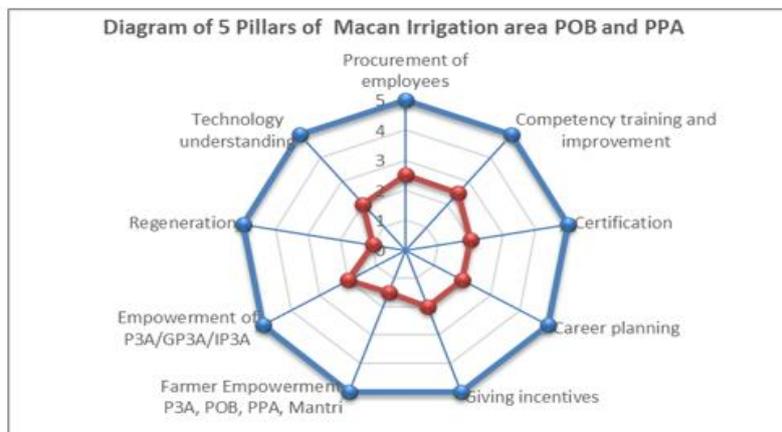
The current condition for aspects of human resources in the Macan irrigation area, based on the results of questionnaires and interviews from field officers consisting of POB (Weir Operation Officer and PPA (Sluice Gate Officer) can be seen in the following table:

**Table 2: Recap of Questionnaire answers and POB and PPA interviews in the Macan Irrigation area**

No	Substance	Target	Achievements
1	Procurement of employees	5	2
2	Competency training and improvement	5	2
3	Certification	5	2
4	Career planning	5	2
5	Giving incentives	5	2
6	Farmer Empowerment, P3A, POB, PPA, Mantri	5	1,5
7	Empowerment of P3A/GP3A/IP3A	5	2
8	Regeneration	5	1
9	Technology understanding	5	2

Source: analysis results

**Figure 2: POB/PPA achievement diagram for Human resources Macan Irrigation area**



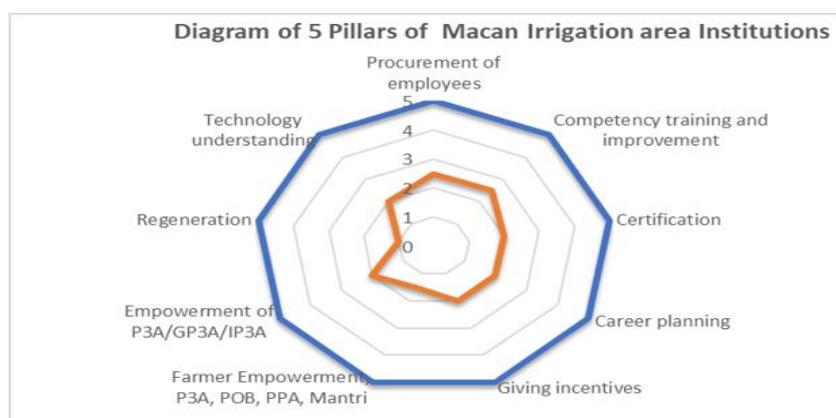
The current conditions for the human resources aspect of the institution as a result of the questionnaires and interviews are as follows:

**Table 3: Recapitulation of answers to questionnaires and interviews at the Macan irrigation area institutions**

No	Substance	Target	achievements
1	Procurement of employees	5	2,5
2	Competency training and improvement	5	2,5
3	Certification	5	2
4	Career planning	5	2
5	Giving incentives	5	2
6	Farmer Empowerment, P3A, POB, PPA, Mantri	5	1,5
7	Empowerment of P3A/GP3A/IP3A	5	2
8	Regeneration	5	1
9	Technology understanding	5	2

Source: analysis results

**Figure 3: Institution achievement diagram for Human resources Macan Irrigation area**



**Table 4: Based on the results of questionnaires and interviews**

No	substance	Ideal Target	Achievement Targets		Average Target	Description
			Instance	POB & PPA		
1	Procurement of employees	5	2,5	2	2.25	Rarely done, still constrained by the rules of the acceptance process related to competence, structure, employment status, wages
2	Competency training and improvement	5	2,5	2	2.25	Very rarely done
3	Certification	5	2	2	2	Very rarely
4	Career planning	5	2	2	2	Not executed yet
5	Incentives Giving	5	2	2	2	Very little/none
6	Farmer Empowerment, P3A, POB, Mantri	5	1,5	1,5	1.5	Very less
7	Empowerment of P3A/GP3A/IP3A	5	2	2	2	Very less
8	Regeneration	5	1	1	1	Does not interest the younger generation
9	Technology understanding	5	2	2	2	Very limited

Source: analysis results

## CONCLUSIONS AND RECOMMENDATIONS

Readiness Aspects of human resources to support irrigation modernization in Indonesia, especially in the Tiger Irrigation Area are still not fully prepared, there are several obstacles faced. With an average achievement in the range (of 1-2.25) of the achievement target 5. The obstacles faced related to the procurement of employees, both agencies and field officers, among others, are still constrained by the rules of the acceptance process related to competence, structure, employment status, and wages. Training and competency improvement are rarely carried out. Training on irrigation modernization is still carried out in stages. Certification is very rare. Career planning has not been fully implemented. There are very few incentives or even nonexistent. Empowerment of Farmers, Associations of Water User Farmers (P3A), Empowerment of Weir Operation Guards (POB), Water Gate Guards (PPA), and Mantri are still lacking. Empowerment of Water-User Farmers Associations (P3A), Water-User Farmers Association (GP3A), and Water-User Farmers Associations (IP3A) are still lacking. Regeneration in agriculture does not seem to interest the younger generation, so there is a shortage of regeneration. Understanding of technology is still very limited. To achieve human capital in the context of irrigation modernization, of course, it is necessary to understand irrigation modernization as a whole by irrigation actors both in agencies and in the field, increase in education, training, and understanding of technology.

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