

**WORKING WITH PEOPLE IN IRRIGATION SYSTEM
DEVELOPMENT:
A LESSON LEARNT FROM BRANTAS BASIN AND SERAYU-OPAK
BASIN**

Murtiningrum¹, Eko Subekti², Erwin S. Sigit³, Sigit S. Arif¹

ABSTRACT

Since the Colonial Era to the New Order Era, irrigation technology had been dominated by the government due to some reasons. People were limited as users while their participation in development and management were ignored. As a result, people had no sense of belonging to the irrigation system so then the infrastructure degraded rapidly.

Social and political reform in 1998 caused an effort of people empowerment which eventually became the foundation of Indonesian participatory irrigation management. People empowerment provided farmers' understanding on irrigation management therefore farmers became equal partners of the government. Gadjah Mada University (UGM) as an innovator of participatory irrigation management collaborates with the Serayu-Opak Basin and Brantas Basins Managements in participatory irrigation development and management.

The three-party collaboration requires role of each institution. The river basin management provides funds. The university provides innovation and expertise, facilitation, and mediation. People as beneficiaries acts as executor. Participatory method have been employed to executed such programs as (i) introduction of Asset Management Program as a tool for farmers to understand irrigation technology, (ii) SRI cultivation method as a tool of water saving in O&M, (iii) development of O&M model in irrigation systems, (iv) conflict resolution.

In general, the activities resulted in beneficial outcomes. Walk-through survey in Asset Management Program gave farmers understanding on irrigation system performance. Competition of SRI cultivation was an activity initiated by Yogyakarta farmers. The UGM launched SRI bulletin to disseminate SRI technology among farmers. O&M model have been developed in Bondoyudo Irrigation System while conflict resolution have been done in Van der Wijck and Siman Irrigation Systems.

¹ Department of Agricultural Engineering, Gadjah Mada University, Yogyakarta

² Head of Water Resources Management Brantas River Basin Office, Minister of Public Work

³ Head of Irrigation Development of Water Resources Management Serayu-Opak River Basin Office, Minister of Public Work

INTRODUCTION

During the Kingdom Era, before western colonial in Indonesia archipelago, irrigation had already been developed and managed by people. The government did not interfere the irrigation systems. The irrigation systems were usually small in size, so that people could independently managed the system. People had sense of belonging to the system they developed and managed.

During the Colonial Era, some large irrigation systems had been developed to fulfill water requirement of plantations and industries belonged to the colonial government. The irrigation technology and management systems were different from the previous ones. People had no more access to the irrigation technology. People participation in the irrigation management was limited as labor.

After the Indonesian Independence, the Indonesia government controlled the development and management of irrigation systems. For the duration of New Order Era, irrigation systems were developed rapidly. However people participation were limited as users. Their participation in in development and management were ignored.

The ignorance of people participation for a very long time period resulted in the people unawareness of irrigation systems. They had no sense of belonging to the irrigation system. Therefore their participation in irrigation management were low. Along with the government fund and staffs limitation, irrigation infrastructure had degraded rapidly.

Social and political reform at the end of New Order Era in 1998 caused an effort of people empowerment in almost all sectors in Indonesia. This eventually became the foundation of Indonesian participatory irrigation management. People empowerment provided farmers' understanding on irrigation management therefore farmers became equal partners of the government. Furthermore, people were willing to participate in irrigation management intentionally.

Gadjah Mada University (UGM) took part in the irrigation reform both by contributing to the policy and developing appropriate field practices. As an innovator of participatory irrigation management UGM collaborates with the Serayu-Opak Basin and Brantas Basins Managements in participatory irrigation development and management.

Model developed in this collaboration is three-party collaboration, which requires role of each institution. The river basin management provides funds. The university provides innovation and expertise, facilitation, and mediation. People as beneficiaries acts as executor. On the other hand, each party has each own problems. Consequently, the three parties collaborate to solve those problems.

This paper aims to discuss the three-party collaboration model in some cases of irrigation management. Roles of the government, people, and university would be revealed in four cases, namely Asset Management Program (AMP), System of Rice Intensification (SRI), Operation and Maintenance (O&M) model, and conflict resolution.

INTRODUCTION OF ASSET MANAGEMENT PROGRAM

Asset Management Program for irrigation infrastructure in Indonesia was firstly introduced in 1995 by adapting from asset management in domestic pipe system in England (Welch, 1995). For more than ten years, the AMP has been

developed in terms of method and policy to accommodate the interest of farmers and the government. This included people participation, analysis method, and link to Geographic Information System. The current AMP provides tools for developing irrigation asset inventory, relating the inventory to Geographic Information System, deciding rehabilitation priority, and managing budget.

The development of AMP has been done step by step in some irrigation systems in Serayu-Opak River Basin and Brantas River Basin, such as Kalibawang, Bondoyudo, Molek, and Sampean Baru Irrigation Systems. During the implementation of AMP in the systems, many inputs have been contributed to the AMP development.

The AMP has helped government official to communicate with farmers. Since the development of large size irrigation systems, people have had no access to irrigation technology. Irrigation technology belonged to the government. Farmers' understanding were limited to their own area while its connection to larger areas was remain unknown. In developing AMP database, farmers and the government officials are taken part in walk-through survey for data collection. This becomes means for farmers to understand the system where they belong to.

Better communication and dialog are also created among farmers, government officials, as well as university researchers. During the AMP data analysis and budget management, different interests from each parties are discussed to find a resolution which can satisfy them all. In this case the university acts as facilitator and provides alternatives from model simulation.

SRI CULTIVATION METHOD AS A TOOL OF WATER SAVING

System of Rice Intensification (SRI) is considered as a method of rice cultivation with higher production and more efficient in resources use. This is achieved by changing management of plants, soil, water, and nutrients. One advantage of SRI cultivation is water saving and, accordingly, this reduces irrigation water requirement in an irrigation system. Furthermore this results in easier Operation and Maintenance (O&M) of the system

SRI was introduced in Indonesia in the late 1990 in a limited research area. It was then disseminated widely in early 2000. SRI have been practiced in some scattered areas. Many farmers still hesitate about the its result while some others find difficulties in changing their cultivation habits. On the other hand, farmers who practiced SRI and experienced better rice harvests have disseminated the SRI cultivation. Method of the dissemination were training from farmers to farmers, demonstrating the SRI cultivation in their ricefields, and SRI competition. In Kulon Progo and Godean, Yogyakarta farmers organized themselves in groups as a mean to support to each other.

The Brantas and Serayu-Opak River Basins Managements found that the SRI practice could improve efficient water use, especially agriculture which consume a large amount water for irrigation. However, they challenged with difficulties to communicate to farmers in disseminating the SRI method. Changing the rice cultivation method is not only changing the way of working, but also shifting the mind set because cultivating rice is a part culture for Javanese.

The researchers from Gadjah Mada University have recognized the problems and took part in the effort of SRI dissemination. In cooperation with farmers, some demonstration plots were developed to show SRI practices to farmers. The

demonstration plots were located in four districts of Yogyakarta Province and two districts of Central Java Province in Serayu-Opak River Basin as well as six districts of East Java in Brantas River Basin.

To support existing SRI farmers' groups, the university and River Basin Management facilitate SRI forum. The SRI forum has a wider scope than previous SRI farmers' group because it relates among groups. For example Yogyakarta SRI forum consists of farmers from four districts in Yogyakarta Province and Bondoyudo SRI forum consists of farmers from Lumajang and Jember District who access irrigation from Bondoyudo System.

To publish the benefit of SRI method, an SRI news bulletin has been launched. The bulletin contains SRI-related news such as events, researches, demonstration plot, and figure profile. The bulletin has been distributed among SRI-related people as well as others who interested in SRI. For a wider expose, SRI is also publish through some local newspapers.

In addition to those efforts, the university have conducted some researches. This consisted of determination of crop water requirements, energy requirements, water management in tertiary level, dynamic modelling for SRI cropping system, and mathematical model for crop growth. The on-going research are root growth model and methane gas emission. In these research the university leads the method, the River Basin Managements provides fund, and farmers carried out daily observation while they were cultivating the rice.

DEVELOPMENT OF O&M MODEL

Since the launched of Government Regulation No. 20/2006 on Irrigation, the irrigation management in Indonesia need to be modified. The need of modification arise due to some reasons. First, the objective of irrigation is not only to achieve rice self-sufficiency, but also to realize people welfare. Second, irrigation management shifted from production management, which is top-down and centralistic, to provision management. Third, water resources are getting more limited therefore water has economic value besides social value. Fourth, the development of information technology has changed people in general. In addition, irrigation management was also affected by the new Laws on Regional Autonomy because it is related to authority of each government level.

According to the new regulations, the government has the authority to manage the main system which consists of primary and secondary irrigation system. The government has the authority to manage more-than-3000-ha irrigation systems. River Basin Management Office is a Central Government body to implement the water resources management authority, including irrigation, throughout a river basin. Serayu-Opak River Basin Management Office manages areas from Serayu River to Opak River in the southern part of Central Java and Yogyakarta Provinces while Brantas River Basin Management Office manages area of Brantas Basin in East Java Province.

Operation and Maintenance (O&M) is a form of daily management of irrigation system. To accomplish the O&M of irrigation system, the River Basin Management Office found some constraints. First, the River Basin Management Office had no field staffs. Second, the existing O&M procedure are partly unapplicable with the regional autonomy due to boundary difference between administrative area and hydrologic area.

The development of O&M model consisted of some steps. The basic step is understanding the legal aspects specifically understanding the contents of law on water resources, government regulation on irrigation, and law on local autonomy. The understanding on legal aspects would lead on understanding among institutions related to irrigation management and each role. From these understanding, it would be uncomplicated to develop a management institution in irrigation system level. The system level institution need to be equipped with appropriate human resources, equipments, and technology. Because the O&M model would be applied in an existing irrigation system, the next step was resource inventory. This means taking note of the existing resources including human resources, natural resources, and available technology. Afterwards, the next step was the development of O&M procedure complete with its achievement criterias as well as monitoring and evaluation procedure.

The O&M model development was applied in Bondoyudo Irrigation System and Kalibawang Irrigation System. Bondoyudo was one irrigation system under authority of Brantas River Basin Management and located in Lumajang and Jember Districts. The O&M model for the system was developed by establishing discussion forum to achieve agreement among farmers, district governments, provincial governments, and Brantas River Basin Management. On the other hand, in Kalibawang System, which is under authority of Serayu-Opak River Basin Management, the O&M was carried out by Kulonprogo district government.

In the two systems, O&M model was built based on dialog among stakeholders with university facilitating. Therefore the O&M model encourage stakeholders participatory.

CONFLICT RESOLUTION

Irrigation is a system with complex interrelated sub-systems. Many interests related to irrigation system because water is a common pool resource. Although water in irrigation system is mainly intended to supply crops, other users are also utilize it. All users should respect the management so that water can be utilized optimally.

Unfortunately, some users do not realize that water is limited resources which is necessary for all. They are only interested in fulfilling their own need. This may result in conflicts among water users in irrigation system.

In Van der Wicjk Irrigation System, water was considered adequate to fulfill crop water requirement in its 4260-ha area. The soil was fertile and suitable to grow crops. Therefore, its area become rice-producing area which support food production of Yogyakarta and its surrounding. However, farmers are mostly unaccustomed to use water efficiently.

Recently, the development of fish ponds has generated conflicts among water users. In Van der Wicjk Irrigation System grew several freshwater-fish restaurants which also attracts tourism. Fish ponds provided more income to farmers but they also consumed more irrigation water. Consequently, conflicts among water users are inevitably. The conflicts involved farmers of rice and freshwater fish as well as upstream-downstream water users. The fact that upstream and downstream farmers are farmers of two different districts, Sleman and Bantul, had worsen the problem. Fish ponds were generally developed in upstream areas to abstract water easily. The water abstraction used illegal means such as holes in canal banks besides official offtake gates. Furthermore, this reduce water availability for downstream farmers.

To resolve the conflict, dialog is very important. The university, as a neutral party, take a role to initiate a dialog among parties related to the problems. Dialogs were then continued among rice farmers, freshwater-fish farmers, Bantul and Sleman Districts Governments, as well as Serayu-Opak River Basins Management. People provides fund and local wisdom while the governments provides funds activity facilities such as walk-through survey and rehabilitation. Initiated by the university, the parties have established a local forum as a means of discussions. The conflict has not curenly resolved completely but the intention to understand to each other has already arisen. This is expected as a starting point to the conflict resolution.

A similar case happen in Siman Irrigation System. Conflict had arisen between upstream and downstream farmers also rice and freshwater fish farmers. The position of freshwater fish farmers were stronger because they were supported by businessman with large capital and local government office of fishery. In this area, two local government offices, agriculture and fishery, were also in conflict.

Siman Irrigation System is under authority of Brantas River Basin Management. Therefore the river basin management in collaboration with Gadjah Mada University organized a forum of stakeholders in Siman Irrigation System. The forum consisted of farmers and government representatives. The forum became a means to communicate among stakeholders. The university act as neutral facilitator. The dialog, which was not smooth in the begining, has gotten better from time to time. Although the final resolution has not been achieved yet, the conflict has decreasing significantly.

It is concluded from the above cases that in finding solution for a conflict, dialog is urgently required.

REFERENCES

Welch, James, 1995, Asset Management for Irrigation Infrastructure in Indonesia, thesis, Southampton University, England.

Anonimous, The System of Rice Intensification, <http://ciifad.cornell.edu/sri/>