



## **IMPLEMENTATION OF ASSET MANAGEMENT PLAN (AMP) AS A PART OF IRRIGATION MANAGEMENT POLICY REFORM: A CASE STUDY FROM YOGYAKARTA SPECIAL REGION, INDONESIA**

**Sigit S. Arif<sup>1</sup>, Erwin T. Sigit<sup>2</sup>, Murtiningrum<sup>1</sup>, Judy Kurniawan<sup>1</sup>, and Basuki<sup>1</sup>**

### **ABSTRACT**

Following the Reform Program started at 1998, the Government of Republic Indonesia issued the presidential decree on Irrigation Management Policy Reform. This decree is considered as the first step to have good irrigation governance in the country. The reform is expected to change the top-down approach applied in the past to the irrigation management with characteristics of efficient, effective, democratic, participatory, transparent and accountable. The new water law and government regulation on irrigation management issued following the policy reform stated in one of their article that the Asset Management Plan (AMP) should be implemented in the country.

The AMP in Indonesia has started since 1995 when The Institute of Irrigation Studies, Southampton University, UK, Gadjah Mada University and the Yogyakarta Irrigation Development Project introduced the AMP program for irrigation infrastructure. Subsequently, in the fiscal year 2000, the World Bank supported application of AMP in all provinces in Java. Unfortunately, up to today, only two provinces, i.e. Yogyakarta and East Java are still consistent in implementing the AMP, although they faced some constraints. During its implementation, the university conducted the training program and provided computer software while the Provincial Irrigation Project supported the implementation fund. This paper aims to discuss implementation of AMP in Yogyakarta Special Region.

Recently about to a dozen of irrigation schemes in Yogyakarta Special Region have implemented the AMP program. Some positive responds came from farmers and the bureaucracy in both the lowest management (field level) and the top management (province and central government). However, the middle management bureaucracy (regency level) is still worried and pessimistic to implement the program. One reason was due to lacking and unclear opportunity to have enough operation and maintenance fund as a part of future investment of irrigation management in regency government level.

**Keywords:** Asset Management, Policy Reform on O&M, Yogyakarta

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1- Department of Agricultural Engineering, Gadjah Mada University, Yogyakarta, Indonesia  
sigit@idola.net.id

2- Head of Irrigation Development Project, Yogyakarta Special Region, Indonesia

## I. BACKGROUND

Following social and political reform started at 1998, the Government of Republic Indonesia issued some steps to reform water resources management in the country. In 1999 a presidential decree has been set out and afterward the new water law was issued in 2004. Article no 2 of the new water law states that water resources management should be more efficient, effective, democratic, participatory, transparent and accountable to precede sustainability of the system. This statement seems relevant to good water governance approach introduced globally during the last several years.

In relation to this issue, the government and some universities try to introduce several new technologies to be applied in water resources management including irrigation management. One of them is the implementation of the Asset Management Plan (AMP) for irrigation infrastructure. The AMP in Indonesia has started since 1995 when The Institute of Irrigation Studies (IIS) of the Southampton University, UK, Gadjah Mada University (GMU) and the Yogyakarta Irrigation Development Project introduced the AMP program for irrigation infrastructure. The first model of the AMP was the adaptation of asset management plan for the UK water supply to the irrigation infrastructure in Indonesia.

The first AMP model has then been developed further by the GMU. Some conceptual modification in its analysis process made it simpler and more accurate. The participatory approach has also been integrated during its development by including farmers' participation in data collection, data analysis, as well as decision-making process.

In 1999 the World Bank through the Java Irrigation and Water Management Program (JIWMP) funded the introduction of AMP in five provinces in Java. However, up to recently, only two provinces, i.e. East Java and Yogyakarta Special Province, respectively are still consistent to implement AMP in irrigation management in their own irrigation area. Some others did not interest to continue to implement the AMP due to several reasons.

This paper aims to discuss the implementation of AMP in Yogyakarta, the strategies, results and constraints during the implementation process.

## II. DEVELOPMENT OF CONCEPT AND STRATEGIES

### 2.1. CONCEPT DEVELOPMENT

Actually, the concept of AMP in infrastructure management is relatively a new concept. Following development of infrastructures, people want to sustain and improve the service of infrastructure performances and its management to which it has grown accustomed and value for money is demanded. New methodologies are needed to overview the objectives, options, benefits, and competitive needs and to resolve this into a comprehensive strategy for investment. Based on the idea of privatization process of water industry in England and Wales in 1989, the IIS of Southampton University, UK recommended adopting the AMP concept into irrigation management (**Davies, 1993**). There are some key similarities between irrigation management and water industry, besides some differences between them. In 1994, the IIS collaborated with the

Department of Agricultural Engineering of the GMU, Yogyakarta, Indonesia started to implement the AMP concept in Papah Irrigation Scheme in Yogyakarta (IIS-ODA, 1995 and Welch, 1995). Concept of the early of AMP is shown in Figure 1.

In its early implementation, the AMP for irrigation management in Indonesia met some difficulties. The main constraint was that the different characteristics of irrigation management from UK water supply management. The irrigation in Indonesia has very low excludability compare to water supply. Therefore some adjustments had made to deal with irrigation management condition.

After its early introduction, the AMP has developed considerably since 1998 in accordance the increase of demand on transparency and accountability on irrigation infrastructure management. Improvements took place since 1995 to today can be classified into development of policy, concept, method, and software.

In accordance to the increase of demand on good irrigation governance, the AMP became a tool to provide transparency and accountability in irrigation management. During the policy reform, the implementation of the AMP was in line with spirit of reform in irrigation management therefore the AMP was legally mentioned in the Government Regulation no 77/2001 on Irrigation Management.

Besides it contributed for better infrastructure maintenance and rehabilitation, the AMP implementation provides a tool for dialog between Water Users' Association (WUA) and the government. This placed the AMP as an important component toward good irrigation governance as aspired by the policy reform on irrigation. In line with the further development of water resources policy in Indonesia, the asset management was getting more strategic position. Law no. 7/2004 on Water Resources stated that the asset management must be applied into water resources infrastructure.

From the early concept, some detail changes and improvements have taken place. The idea of privatization has been removed while the participation of Water Users' Association has increased. The cost model has built based merely on current survey result and neglected the historical cost data.

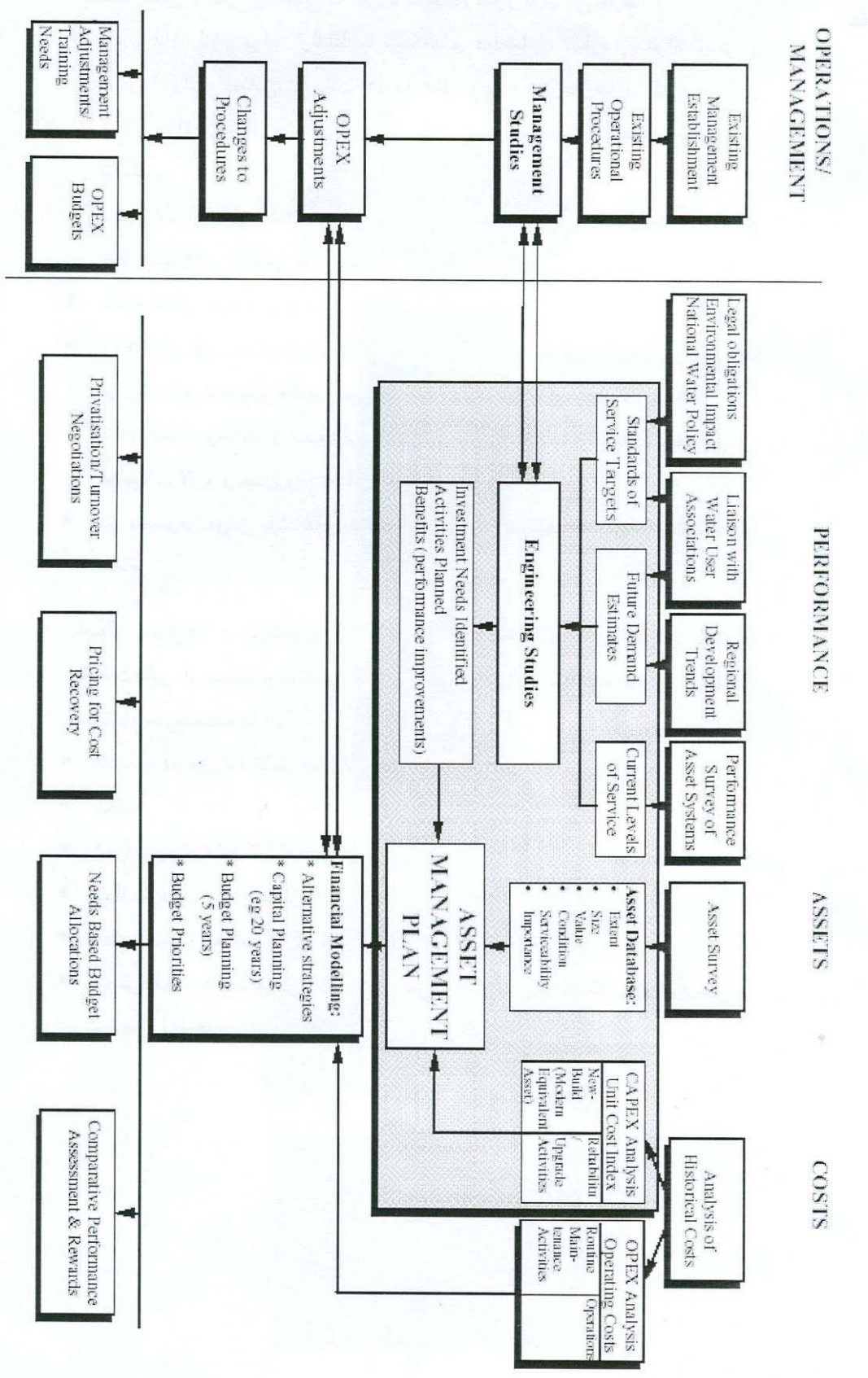


Figure 1. The early concept of Asset Management Plan (ISODA, 1995)

## 2.2. METHOD DEVELOPMENT

Besides the concept development, the AMP method has considerably developed. This includes method of data collection, computation, and linkage to other components of irrigation management.

Data collection and decision making in the asset management has essentially change from pure engineering judgment to combination among engineering, social, and historical aspects (**FTP-UGM, 2000**). Participatory approach has been applied to accommodate farmers' opinion and experiences. This furthermore combined with the engineering assessment made by the government officers. Besides in the asset inventory process, this combination also takes place decision-making of infrastructure maintenance and rehabilitation while calculation process are fully computerized.

Other important method improvement was the determination method of priority of rehabilitation and maintenance works. The asset rehabilitation and maintenance are prioritized based on facet serviceability and condition, service area, and asset importance (**FTP-UGM, 2001**).

The asset management for irrigation infrastructure is a part of irrigation management. Therefore, functions of irrigation management were then attached to the main AMP program. As the responds from users' feedback, the AMP has been linked to module of operation, information, institution, water availability, and irrigation scheme prioritization (**FTP-UGM, 2002**).

## 2.3. SOFTWARE DEVELOPMENT

The early version of AMP program had been developed in very simple spreadsheet computation (**Davies, 1993 and IIS-ODA, 1995**). The next generation has been programmed in a software application (**Adelina, 1996**). Only certain operators can operate these early versions.

Since 1998, the big improvements are made in the user-friendliness of the AMP program. The software has been developed in the database application with more advance algorithm and better appearance (**FTP-UGM, 2000 and FTP-UGM, 2001**). The user-friendliness in data entry, data validation, as well as result display has improved significantly. This user-friendliness helps users in farmer and regency level to use the program.

The integration of Geographic Information System (GIS) and photo viewer were the next improvement (**FTP-UGM, 2003**). The integrated GIS can show the asset and area position as the computation result. Furthermore, the photo of each asset can be shown easily. These software improvements are important for the executive in regency or province level to assist them allocates the maintenance and rehabilitation fund easily.

## III. LESSON LEARNED OF THE AMP IMPLEMENTATION IN YOGYAKARTA

Yogyakarta, besides East Java, was the first province implementing the AMP. Adaptation of AMP from water industry into irrigation management was conducted in Papah and Pendowo Irrigation Systems (**IIS-ODA, 1995; Welch, 1995; Adelina,**

1996). The initial version of AMP has been developed continuously based on the results of its implementation.

So far the AMP has been implemented in more than thirty irrigation systems throughout Java Island since 2000 with the support from the World Bank. Most of the improved concept, method, and software have been developed in this period. During the AMP implementation, Gadjah Mada University conducted the training program for field implementers and provided computer software while the provincial irrigation project supported the implementation fund.

However, without funding support from outside, some provinces had discontinued its AMP implementation. Up to today, only two provinces, i.e. Yogyakarta and East Java are still consistent in implementing the AMP, although they faced such constraints as providing funding source for irrigation system maintenance as shown by AMP results.

Due to its long history in AMP implementation from its early introduction to recently, it is interesting to learn from Yogyakarta experiences of AMP implementation. The activities in each irrigation system started from introduction, training, implementation, and evaluation, which absorbed resources from the government budget. This reveals the intention of the province government to improve performance of irrigation management.

Recently about to a dozen of irrigation schemes in Yogyakarta Province have implemented the AMP program (Arif et. all., 2001). Review of the activity provides some lesson learned.

The development of irrigation infrastructures needs costly investments therefore good maintenance is definitely required. Poor maintenance results in poor irrigation performance and increase of its rehabilitation cost. However so far the maintenance cost requirement is manually calculated and selected based on proposals. Consequently there is a chance for subjectivity to exist. The AMP provides tool to objectively calculated and prioritized maintenance and rehabilitation works. As a result, the top management in province and central government appreciate the AMP as the tool for maintenance planning which is accountable and transparent.

The AMP has been introduced and trained to the middle management in regency level, field management, and farmers, besides to the top management. Feedbacks came from the field activities and decision making to improve the AMP method and software. In general the AMP has been accepted as a new form of technology.

Although the AMP has been proven as an objective and accurate tool to determine maintenance plan, in middle management or regency level do not use the AMP to plan their maintenance budget. This is due to the uncertainty of the available budget for the operation and maintenance of irrigation system in regency level. Available budget is mostly lower than the result of AMP calculation, which means the available O&M budget is actually inadequate. Therefore they prefer to use the manual method of O&M budget calculation.

In the field level, the AMP receives a positive respond from field officers and farmers. In accordance to their responsibility, the field officers experienced that the AMP make their daily task easier. To increase the effectiveness of the AMP to assist their task, the ability of field officer need to be improved. For farmers, who in the past were neglected

from the irrigation management in main level, the AMP provides more understanding on the wider perspective of irrigation management beyond the tertiary level. The AMP also provides tool for farmers to participate in the irrigation operation and maintenance. It also becomes instrument of negotiation from farmers to the government on the priority of maintenance and rehabilitation works as well as their budget sharing.

In accordance to the polycentric theory, a single authority cannot make the decision-making in water resource development and management, including irrigation. The AMP provides the tools for stakeholders to take part in irrigation management decision-making. To increase the effectiveness of this function, the institution implementing AMP and procedure of stakeholders' participation should be better prepared.

#### IV. CONCLUSION AND RECOMMENDATION

The Asset Management Plan for irrigation infrastructure has been developed to provide tools for better irrigation management to achieve good irrigation governance. It presents the instrument for better maintenance and rehabilitation plan as well as for negotiation among stakeholders of irrigation management.

The province level management responds the AMP implementation positively because it becomes among tools to reach more transparent and accountable irrigation management. The lower level management and farmers are also optimistic about the AMP because it helps them in their maintenance planning. However, the regency management shows pessimistic responds because of the difficulty in providing O&M irrigation budget.

In the future, it is necessary to prepare institution of the AMP implementation so it performs better as planning tool. The AMP implementation should also be in line with the adequate O&M irrigation budget to achieve better irrigation performance and furthermore sustainable irrigation system.

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