CHAPTER 3

IRRIGATION MANAGEMENT

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3.1 Irrigation in Indonesia and Its Government Policy

3.1.1 Irrigation in Indonesia

(1) General

The irrigated area has rapidly increased since 1976 (3.9 million ha) to 1997 (4.8 million ha)[1] in order to achieve the self-sufficiency of rice under the strong leadership and support of the Government. According to the Inventory List of MOPW (1998/99), the irrigation area is estimated at 5.3 million ha of Government installed PU irrigation schemes and 1.9 million ha of village irrigation schemes.

Having achieved rice self-sufficiency in 1984, the Government set up a national policy on Operation and Maintenance (O&M) of Irrigation System in 1987. This particular policy was expected to increase the productivity of irrigated areas and to reduce the financial burden on the Government itself. The policy was designed: 1) to increase the efficiency of O&M activities; 2) to turnover the management of irrigation system of less than 500 ha to WUA; and 3) to subject all water users on the larger-government-managed irrigation system to water charges, a system which was later established as IPAIR (ISF). The program did not progress as planned due to several reasons, such as natural conditions and the economic crisis in the late 1990s. Since 1999 the Government has embarked on a program of irrigation management reform, which aims to improve the irrigation management adopting a participatory, instead of a top-down approach, and taking account of the imminent moves toward regional autonomy.

Even though irrigated agriculture is still the most important economic activity for villagers, it has to compete with other activities regarding resources utilization, particularly land and water resources. Land conversion rate, from irrigated areas to non-agriculture usage, has been as high as 30,000 ha/year[2]. It is, therefore, necessary to enhance the productivity of irrigated areas to fulfill the increasing demand of rice in line with the National Food Security Programs.

(2) Irrigation Classification

According to the Indonesian standard of irrigation system design (1986), irrigation systems are classified into the following three categories, according to their technical level:

Items	Classification of Irrigation Systems		
	Technical	Semi-technical	Simple
Primary intakes	Permanent structure	Permanent and semi-permanent structure	Temporary structure
Water measuring and regulating devices	Good	Fair	Poor
Canal system	Completely independent irrigation and drainage systems	Not completely independent irrigation and drainage systems	Irrigation and drainage systems are combined
Tertiary system	Fully developed	Not developed or with low density of tertiary structures	No tertiary system developed yet
Overall efficiency	50 to 60%	40 to 50%	Less than 40%
Scale	No limitation	Up to 2,000 ha	Less than 500 ha

[1] FAOSTAT

[2] Hermanto, et. al. 1996, and Pusposutardjo 1999

Irrigation system are also categorized into PU and non-PU(or village irrigation), based on the construction financing and management. PU irrigation systems were constructed by the former central or local government public works agencies, and village irrigation systems were constructed by village communities.

The irrigated area, based on the above categorizations, is reported as follows:

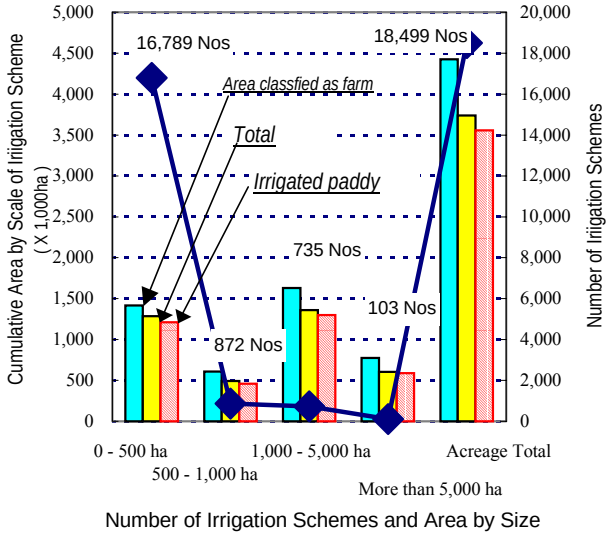
(unit: ha)

Province/Region	PU irrigation systems				Village irrigation systems	Total
	Technical	Semi-technical	Simple	Sub-total		
Western Region	661,587	431,727	349,917	1,443,231	516,054	1,959,285
Central Region	2,140,313	408,173	339,339	2,887,825	984,762	3,872,587
Eastern Region	606,510	280,982	80,813	968,305	460,680	1,428,985
Total	3,408,410	1,120,882	770,069	5,299,361	1,961,496	7,260,857

Source : Pembangunan Pengairan (Cantan 1998-99), DGWRD, MOPW

(3) Irrigation Programs and Schemes in Indonesia

Indonesia achieved its goal of rice self-sufficiency in 1984 after many years of sustained effort towards this goal. The achievement was, however, short lived and since then, and particularly in recent years, it has, from time to time, been obliged to import rice to make good the deficit. In some years imports have exceeded 4 million tons.



Number of Irrigation Schemes and Area by Size

Source : INVENTARISASI DAERAH IRIGASI DENGAN LUAS RENCANA.

MOPW, hereunder referred to as the Ministry before the 1998 reformation, provided an inventory entitled I*nventarisasi Daerah Irigasi Dengan Luas Rencana* as reference material. Information provided in the inventory included areas of each irrigation scheme by scale, by province, but did not include information on facilities. Its main purpose was to provide the information necessary to calculate the O&M budget. From the information provided, it is clear that the O&M budget would be calculated on an area rather than on needs-based budget basis. According to the Inventory there are 18,499 schemes in the country.

According to the 1998 Inventory there are 8,859 schemes in the Study Area with a total irrigated paddy area of 1,911,235 ha. Both in terms of the numbers of scheme and overall area East Java is dominant (average size,: 147 ha/scheme). West Java ranks next by number and area (840 schemes, area: 540,138, ha, average size, 643 ha/scheme).

Besides the 1998 Inventory, PU provided a huge volume of data from the *Pekapitulasi Inventari-Sasi Daerah Irigasi Pemerintah*, (DGWRD DOI-I) which is, hereafter, referred to as the 1991 Inventory. This recorded data for the period from 1991 to 1993 as required by Government Regulation PP No.23/1982, provided the information necessary to plan a program of proper maintenance.

The inventory provides scheme-wise information on facilities and infrastructure and categorizes these into 107 groups. Schemes are summarized on a *Cabang Dinas* basis. No spatial information such as drawings, location maps or general layout plans were included, although as-built mapping is usually available at the local level. The existing volumes of the Inventory provide the initial information and have not been up-dated, even though PP23/1982 requires that they should be up-dated every five years.

Hence all changes which have occurred during the turbulent years since 1997 are not reflected in the inventory. Given the out-dated information and the non-availability of up-to-date mapping it is very difficult to identify the specific problems on particular schemes and to assess rehabilitation requirements. The problem is made worse by the fact that the computer compiled information has been dispersed.

That 1982 Government Regulation states that the provincial government is responsible for updating the Inventory. Only Yogyakarta, among the Study Provinces, provided an updated inventory, where manual changes have been made to the original tabulated records. The accuracy of such valuable information is difficult to verify as insufficient drawings and related maps were available. The situation in the other Study provinces is similar to that at the central level. Field offices at Kabupaten level are also not able to provide up-dated information of irrigation schemes. Hence existing inventories of irrigation schemes basically provide the irrigation scheme name and its command area.

3.1.2 WUAs and Water Resource Development Policies

(1) Legal Basis

The legal regard for water in Indonesia is stated in Article 33 of the 1945 Constitution. This states that any resource that is important to the State and which affects the life of the nation shall be controlled by the state. It then reiterates that land, water, and all the natural resources held therein will be controlled by the State and utilized for the benefit of the good of the people.

Law No.11 of 1974 provides an all-embracing policy for water management. Legal provision is made in respect of ownership, the right of use, control, management, utilization, processing and policing of water and water resources and any natural riches it may contain, for the good of the People. The law contains a framework for the provision of policies on data collection, project planning, water use, pollution control, licensing, and modes of enforcement whereby all beneficiaries are supposed to undertake O&M. Also contained in this legislation is the provision for the establishment of river basin corporations as State Owned Enterprises (SOEs).

Law No.11/1974 is clear that MOPW (now KIMPRASWIL) has both the right and obligation to coordinate the overall regulatory effort in terms of planning supervision, business, preservation, protection and utilization of water and water resources. Government regulation No.22/1982 on Water Management, and the following No.23/1982 on Irrigation, expand the management and planning functions and the implementation methodology originally defined in Law No.11/1974. Under regulations No.22/1982 the rights to drinking water for every person and their livestock are set out as a basic prior right as long as due care and attention is paid to the surrounding environment, without the need for any permit. The rights to water for all other uses, however, are said to require a permit. Authority to issue permits was lodged with MOPW together with the authority to prioritize the use of water by category and coordinate its overall management.

PP 22/1982 also states that the authority and functions of the Ministry may be delegated to the regions through the Minister's office. However, MOPW will retain both authority and coordination responsibilities concerning water and water resource use.

(2) Private Sector Involvement

Water Resource Sector development was opened up to exploitation from the private sector under National Investment Law No.1 of 1967. This is not referred to in Law No.11/1974, but as there is no inclusion against private sector utilization, it is accepted therefore that this law supports the involvement of the private sector in water resource development. This is important for the future of the irrigation sector, as whatever organizations develop at the village level, they are likely to have the legal status of private companies. It will be necessary for them to attain this status in order to register as trading companies for dealing with their input and output marketing and in order for them to establish a bank account. Provision for the further involvement of the private sector in water resources is made under Presidential Declaration No 20/1994 which allows for the licensing of various foreign corporate and contractual structures to have up to 95% equity in water resource development.

Irrigation, as the major primary user of water, is specifically separated from the law for special consideration under regulation No 23 of 1982, which was deemed necessary to supersede the previous outdated regulations provided in Government Gazette 1936 No.489.

Essentially, PP No.23/1982 provides for any irrigation accessory, institution or association to register for a license to the Governor of the Province for approval and legalization. The legal procedure is based on the local government regulation on irrigation. In law this is all required before implementation occurs, in practice this rarely happens. Irrigation, where supply adequately meets the need, is rarely a problem; where supply is restricted, provision in law is made for water to be allocated to standing crops and then reduced or rationed as needs be

Irrigation water use within a tertiary block is under the management of the farming community and provision is made for the community to appoint one or more distribution executors. This provides the necessary framework for the establishment of community or village based institutions to manage irrigation water.

Part 2, Article 20, develops this provision by empowering local government to establish Association of Water Users, organizationally, technically, and financially, and to make such associations 'capable' of handling, construction, rehabilitation, O&M, in the tertiary and quaternary blocks only. This is the basis of the top down method of establishing WUAs in law. It is, however, noted that the 'capability' of such associations is limited in this legislation to below the tertiary level only.

The responsibility for construction of main irrigation structures is outlined in Chapter VII Articles 25 -27 with the local government whilst, under article 26, the construction of village systems and those below the tertiary level shall be undertaken by the community of water users. Here again a distinction is made between the responsibilities of Government and the community with the defining limit set as the tertiary network. Responsibilities for O&M are defined under Chapter VIII where the interface between Government and community is precisely identified, as 50m downstream from the division structure. Responsibility for irrigation networks above this level is defined (Article28-3) as being those of the 'owner'. In this case the owner is the state as defined in the Constitution. The situation is, however, confused by the preamble to this condition, whereby the irrigation networks are referred to as 'belonging

to' the corporation, associations and individuals.(Definition of the corporation referred to is given in preceding legislation, Regulation No.6/1981). Furthermore Article 35 clearly states that financing of O&M will be borne by the local government, and that communities may be required to share the financing burden. Following this, the furtherance of Water Management Policy was projected in MOPW regulations of 1989,1990 and 1991.

(3) River Basin Frameworks

No.39/PRT/1989 River Basin Territories provides legislation for the hydrological division of the country into river basins. It follows the main instrument of water basin organization, which is provided under UU No.11/1974. Regulation No.39/1989, which, in turn, refers to No.22/1982 (Arrangement of Water Resources). This, together with the above referred No.23/1982 on Irrigation laws, produced the basis for Ministerial Decree No.416/MENKES/PER/1990 on requirements and supervision of water quality. Two important MOPW regulations followed this, No.45 PRT 1990 Water Quality Control and No.48 PRT 1990, The Management of Water and Water Resources within River Basins; these were signed into law in the same year. The latter document delegates responsibility for the management and operation of 73 basins, whose watersheds lie entirely within existing Provincial administration boundaries, to the appropriate Provincial Government, whilst providing for continuing technical advisory supervision from central authorities.

A major MOPW Government Regulation on Rivers No.35/1991 was produced a year later following the River Basin Territories legislation. It provides clear statements on a range of issues governing river use, authority, management, maintenance, planning, construction, protection and environmental aspects. It continues, however, to place responsibility and authority with central government and not with river board authorities.

The policy of the latter regulation is to determine the management authority and institution responsible for management for river basins. It is only the No.48/1990 regulation that places clear authority with the Regional government bodies of the MOPW. The following MOPW regulation No.49/PRT/1990, makes provision for the procedure and conditions for granting licenses to Government agencies, institutional bodies, associations and individuals. These regulations, therefore, provide a basis for the granting of water use licenses to WUAs; they do not, however, provide guidance on how the license can be quantified, neither is any provision made to target WUAs as the main bulk users of water. Rather, these regulations were interpreted at the regional level as a way to license 'commercial enterprises'. A further obstacle to the licensing of WUAs was the complicated 'paper pathway' and the cost of the process; no assistance was given to the grassroots levels in these matters. A primary obstacle also comes from the WUAs themselves in their attitude of, "why pay for a right that, in their own mind, is a birthright" and "water is a gift from God". From the farmers' point of view, this not only represents their way of thinking, but also reflects their close relationship with this resource.

(4) Provincial Water Management Committee

Regulation No.67/PRT/1993 specifies both function and task of the Provincial Water Management Committee, which is responsible to the governor and acts as a forum for 'mutual agreement' in the coordination of water resources within the province. It also acts locally in assisting the governor to implement water basin management coordination within the province. Functions were specified as:

- priority planning for water use and water resources;
- priority planning for water use in relation to conservation, development and utilization;
- the management of water and water resource utilization;

- management of waste effluent and other waste discharge;
- management of irrigation facilities and other facilities situated on or around the water resource, and;
- management of problems arising from any of the above.

Tasks of the committees were specified as:

- collection of, processing of, and preparation of materials for the determination of Government and provincial policy in keeping with the National Policy on Water Management;
- advising the Governor on solutions to problems related to water supply implementation;
- providing supervision on implementation of coordination problems as determined by the governor, and;
- providing periodic reports on their activities whenever required to do so.

(5) Water Management and Irrigation (Government Regulation No.22 and 23 of 1982)

Government regulation No.22/1982 on Water Management and the following No.23/1982 on Irrigation expand the management and planning functions and the implementation methodology originally defined in the Law No.11/1974. Under Regulation No.22/1982 the rights to drinking water for every person and their livestock are set out as a basic prior right as long as due care and attention are paid to the surrounding environment, without the need for any permit. The rights to water for all other uses however are said to require a permit. Authority to issue permits was lodged with MOPW together with the authority to prioritize the use of water by category and coordinate its overall management. PP No.22/1982 also states that the authority and functions of the Ministry may be delegated to the regions through the Minister's office. However, MOPW will retain both authority and coordination responsibilities concerning water and water resource use.

Essentially, the law provides for any, irrigation accessory, institution or association to register for a license to the Governor of the Province for approval and legalization. The legal procedure is that based on the local government regulation on irrigation. In law this is all required before implementation occurs, in practice this rarely happens. Irrigation where supply adequately meets the need is rarely ever a problem, where supply is restricted, provision in law is made for water to be allocated to standing crops, and reduced or rationed, as needs be. Irrigation water use within a tertiary block is under the management of the farming community and provision is made for the community to appoint one or more distribution executors. This provides the necessary framework for the establishment of community or village based institutions to manage irrigation water.

(6) Irrigation Operation and Maintenance Policy (IOMP)

The two main regulations regarding this aspect are INPRES No. 2/1984 on 'Guidance to Water Users Associations (WUA)', Irrigation Operation and Maintenance Policy (1987), and INPRES No. 42 PRT/1989 on 'System of Turnover of Small Scale Irrigation Systems and Management Authority to WUA'. These were the basic regulations which provided guidelines for the establishment of WUAs in a tertiary unit or village irrigation area; the introduction of efficient O&M, special maintenance and an irrigation service fee (ISF); and the turnover of responsibility for O&M to WUAs of small-scale schemes. Irrigation schemes were divided into three categories depending on their condition and management responsibility: A, B and C. WUAs were established through a top-down approach to the village administration, and the involvement of actual farmers and water users was minimal. The turnover program has suffered from the lack of clear follow-up guidelines for Government agencies, and many schemes have reverted back to their original condition and require extensive rehabilitation. The collection of the ISF to cover O&M costs through the local government revenue service (*Dinas*

Pendapatan Daerah – DISPENDA) proved to be very difficult and was disbanded in the mid-1990s, but has since restarted in some pilot areas with the funds being managed at WUA level.

(7) Turnover of Irrigation Systems

This concerns the handover of responsibility for the O&M of irrigation schemes from the Government to the WUAs[3], starting with irrigation schemes smaller than 500 ha. Initially the program targeted irrigation schemes were grouped together into large 'blocks' and turned over to WUAs en-masse. There was, however, usually a considerable delay before turnover was actually carried out, due mainly to the time it took to arrange turnover ceremonies between the former MOPW and provincial governments and between provincial and kabupaten level governments. A more phased and selective approach is now being used to transfer responsibilities from Government to WUAs.

(8) IPAIR Regulations

In 1992 important but flawed legislation was released from the Ministry of Home Affairs. Two MOHA regulations on Irrigation Service Fees No.6/1992 and No.19/1992 indicated the Government's determination to raise revenue from the water users to provide funds for maintenance above the tertiary turnouts and place more responsibility on the farmers to care for the supply system.

Responsibility for the collection of the ISF was placed on the local revenue service (DISPENDA) whose task was to raise the revenue directly form the WUAs. The amount to be collected complicated the issue, as it was individually assessed by the *Bupati,* having, in theory, taken regard of a number of location specific factors, such as the socio-economic condition of the area, the condition of the existing water supply and the actual calculated requirement. While it is appreciated that the essence of this legislation was to strike a fair payment system, the factors involved required detailed assessment. It was undertaken with little or no consultation with the water users, whether they were commercial licensed users or the farmers' associations. The added cost, time and complications to what was going to be an already difficult task virtually condemned it from the start. In addition to this, it also allowed for part of the payment to be used to cover administration and cost of collection. Here was a potential pathway for the funds to be absorbed before they could be used for maintenance. Overall, the enforcement of this 'top-down' procedure was fraught with difficulties from the start. Following an initial and expensive three-year attempt to implement the law it has now been abandoned under the latest Autonomy for local government law, No.25/1999, Fiscal Balance Central to Regional Government.

During this same period a new MOHA Regulation, No.12/1992 on the Establishment and Development of Water User Associations was released. This regulation is based on numbers of previous laws regarding village structure and responsibilities and the classic Presidential Instruction No.2/1984 on Guidance to the Water Users Association. The MOHA regulation was released to improve and clarify the status of WUAs; it is evident, however, that it was really timed to enforce the regulations of WUAs, one of which is the obligation to pay a service fee for maintenance.

3.1.3 Water Management Policy Reform and WATSAL

(1) Water Management Policy Reform

Water resources policy was reviewed under the 6th five year plan by the Bureau of Water Resources and Irrigation of BAPPENAS, which concluded that implementation of the guidelines set out in the policy

[3] With the irrigation system itself remains an asset of the Government.

were 'deficient', as defined below[4]. It concluded that:

- policy reorientation lagged behind investment in infrastructure development
- there was inadequate development of legal and institutional arrangements for water resource allocation and management
- there was a serious development constraint arising from water quality and environmental degradation
- a lack of clear regulations and procedures caused the private sector participation policy to be non-operational

Following a series of consultations in the form of seminars and discussions funded by the Ford Foundation, a statement was made to the effect that a "new agenda for water resources policy and program reform was required". During the same period IBRD and ADB had independently concluded, through their own investigation programs, that further assistance was required to support the development of reform in water resources sector, and recommended a program that closely matched the BAPPENAS agenda. Consequently a $300 million water sector adjustment loan (WATSAL) was proposed by the IBRD, conditional on specific indicators being achieved within an agreed timeframe. A Policy Matrix was developed jointly by the IBRD and BAPPENAS; following this, the WATSAL task force was established by decree issued by the Minister of Planning (November 1998)

Further to this, owing to the multi-ministerial involvement in the reform, a Presidential Decree was issued on January 9, 1999 creating a Coordination Team from nine concerned Ministries (*Tim Koordinasi*) whose duties were based on the following principles;

- Management would be based on beneficial and sustainable principles for the welfare of the nation and its living environment,
- Consideration should be given to all habitat conservation and environmentally sustainable needs for all natural resources and living creatures,
- Where possible, corporate basin management organizations such as state owned enterprises (SOEs) and regional owned enterprises (BUMD) should be utilized,
- Public, community and NGO participation in basin management institutions should be promoted.

The specific aspects to be reviewed and requiring reformed policies were, a) improved water pollution control regulations, b) Irrigation Management Policy reform, c) ISF reviewed in terms of self-financing capacity, d) WUA Empowerment, and e) curtailment of the million hectare swampland project expenditures (*Gambut*). These aspects and the various issues they encompass were used to define the reform objectives, address policy, legislative, and institutional readjustments focusing on food security, sustainable water use, and improved water related environments. These considerations were defined in the four part WATSAL program.

Apart from more thorough and up-to-date supporting legislation and regulations, the expected outcome is a new National Water Resources Policy, comprising

- improved policy, institutional , regulatory ,and management information frameworks,
- improved river basin and water quality management institutions,
- improved irrigation management institutions and arrangements

Water management, as defined under Government Regulation No.22 of 1982, comprises a strategy based on 'river basin management'. Since that time a number of pilot forms of River Basin Management

[4] IBRD RRP of 23/4/99 /WATSAL

have been set up under Management corporations established under a MOPW decree on the formulation of River Basin Water Coordination Committees (Balai PSDA) (Regulation 67/PRT/1993).

This regulation specifies both the functions and tasks of the Provincial Water Management Committee, which is responsible to the governor and acts as a forum for 'mutual agreement' in the coordination of water resources within the province. It also acts locally in assisting the governor to implement water basin management coordination within the province. Functions are specified as,

- Priority planning for water use and water resources,
- Priority planning for water use in relation to conservation, development and utilization,
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The tasks of the committees are specified as,

- Collection, processing, and preparation of materials for the determination of Government and Provincial policy in keeping with the National Policy on Water Management,
- Advising the Governor on solutions to problems related to water supply implementation,
- Providing supervision on implementation of coordination problems as determined by the governor,
- Providing periodic reports on their activities whenever required to do so.

Ministerial Decree No.179/1996 issued by the Ministry of Home Affairs proscribes the organizational structure, the status, task and function for a number of *Balai* to be established under JIWMP in all provinces of Java. It establishes the *Balai* as 'technical implementation units' (UPTD) under the Provincial PU Service, Provincial Water Resource Development Service (PSDA). A program of support for the establishment of these *Balai* is currently being undertaken by the BWRM (Basin Water Resources Management Project), which is operating under JIWMP supporting WATSAL.

The task and function of these *Balai* will vary according to the need of the basin(s) that fall within their management. It is envisaged, however, that they should have the capability of managing the resource base of all water related aspects, from coastal zone management to watershed management, according to the specific need. An institutional guideline to determine the tasks, functions and operation is due to be produced to assist the administration of these offices. Many activities under these offices will appreciably differ from one office to another according to their geographical setting, requiring a different management approach. Management procedures and administration however can be similar, irrespective of the overall approach. Some *Balai* are situated with the River Basin Management Authority areas (PJT and POJ) and their operational procedure will, necessarily, have to be reviewed as part of the overall WATSAL agenda.

Capacity strengthening under the WATSAL agenda is vital for the proper functioning of these *Balai* and institutional coordination, through PPTPA to PTPA, is necessary to maintain effective purpose and function. The devolution of irrigation management to the district levels through the imposition of Law 22/99 will require the Provincial *Dinas* and *Cabang Dinas* to examine their institutional roles and responsibilities. Criteria need to be developed to determine the relationship of *Balai* to PPTPA to PTPA and the share of responsibility in the execution of the workload. The division of assets, infrastructure for O&M, jurisdiction in water resources management and the coordination of management all need critical examination.

One of the important tasks of the *Balai* will be the assessment of the hydrology of the water resource and the consequent allocation management. Monitoring, measurement, allocation approach, licensing requires special consideration in each *Balai* area. There may well be special needs in both material and training requirement resulting from such reviews. The approach to allocation of water resources to irrigation needs special consideration and must involve a participatory approach.

(2) WATSAL

WATSAL, which is currently available to provide a balance of payments assistance to support a structural adjustment program of policy, institutions, regulations, legal and organizational reforms in the management of water resources and irrigation sector. The program is designed to cater to four objectives;

- Facilitating efficient environmentally and socially sustainable water resources development and management by improving national policy, institutional, regulatory and decision support frameworks.
- Strengthening of the institutional and regulatory framework for integrated and equitable river basin management.
- Establishing effective regulatory institutions and implementation arrangements for water pollution abatement and regional water quality management.
- Improving the performance and sustainability of irrigation systems by establishing an institutional framework for transparent and accountable delivery of irrigation services and participatory fiscal support to democratic farmer organizations empowered with governance and financial authority to manage irrigation networks under their control.

The loan disbursement, set to occur in three trenches, is conditional on the four, above mentioned, objectives being actioned. Following some reassessment of the conditions the second tranche of $100 million is about to be released (BAPPENAS letter to KIMPRASWIL April 27, 2001). Owing to slippage in the revision of certain government regulations for tranche 2 (for example of Water Law No.11/1974), it was clear that meeting some conditions within the time allowed would not be possible. Some of these conditions have now been relaxed and moved into tranche 3 and a further year to complete the conditions has been granted. The loan adjustment should now complete in 2002.

A WATSAL taskforce (POKJA WATSAL) has been established to oversee and coordinate the various activities being undertaken. Presently, four working groups N1 - National Policy, N2 - River Basin Planning and Management, N3 - Water Quality and IR – Irrigation, are working towards the fulfillment of the loan conditions (Fig. 3.1.1 and 3.1.2). Some of the programs within these work groups are being funded through monies unspent under the Java loan for the North Java Flood Control program.

On May 24, 2000 the Minister of Economy Finance and Industry issued a KEPMEN (No.25/M EKUIN/05/2000) on Perfecting Working Groups for the Reformation of the Water Resources Sector. This instruction specifies the steps to be taken to attain the monitorable indicators identified in the Policy Matrix for Water Resources as set out in KEP 261/K/9/1998. It identifies a dual team structure, with a Leadership team comprising mainly of Deputies and Director Generals, and an Implementing Team comprising mainly of named personnel from various Departments, Ministries and State Ministries. Both teams are under the leadership of BAPPENAS and report directly to the Minister of Economy, Finance and Industry.

(3) Public and Private Sector Development

Government Regulation No.6/1998 proscribes the background to a cost recovery policy and mechanism

for recovery, in terms of contributions for O&M only. Guidelines are also provided for creating public corporations to manage water infrastructure and recover their costs through water charges. It also included pronouncements on principles such as abstraction licenses, beneficiary participation in O&M financing, and water management by river basin corporations. This regulation was, at that time, far reaching in its conception and policy determination; the development of these policies into acceptable procedural guidelines and the implementation of such measures through pilot schemes and national adoption programs has, however, been fraught with administrative difficulties.

(4) Irrigation Management Policy Reform

Throughout the Fourth, Fifth and Sixth Five Year Plan periods there was consistent regulatory pressure upon farmers and their associations to improve their formal institutional framework, organize and register their association in law. This, it was argued, would improve the recognition status, and effect the constitution of a public company. It would empower the associations to register for ownership of bank accounts and to trade in the name of their association with limited liability. The top-down pressure was, however, mainly viewed as further control of communities; the inevitable eventual outcome of such measures was non cooperation. This culminated during the mid nineties in the failure of the ISF program and the realization that government could well be faced with continuing and huge O&M costs.

The irrigation sector has a key central role to play in national food security, and is currently estimated to be supporting around 78% of the domestic rice production. It also represents a huge national investment in both physical and institutional development terms. Long before the failure of the ISF program, Government was aware of the huge cost of maintaining and improving this strategic asset. Their top-down policies of the late seventies, tempered during the 1980 with some sensible legislation and regulatory frameworks for irrigation and water basin management, has brought considerable development success. The attempts to organize farmers into associations, or legal entities, in order to impose managerial and financial responsibility on them has, however, met with an 'expected' failure.

A National Workshop on Irrigation Management Policy Renewal (13 April 1999) was addressed by the President who stated that the water management approach must shift from a 'supply based orientation' to an integrated approach, considering the empowerment of the farmers through WUAs, and the transformation to autonomous and self reliant economy. He further argued that Government must persist with their Irrigation Management Policy Reform, through the following measures:

- Restructuring the institutions of irrigation water management for better farmer participation, with better regulation and farmer empowerment programs,
- Empowering WUAs by adopting social and local culture aspects and better environment consideration enabling farmers to establish legal associations as registered companies,
- Turning over irrigation water management to farmers gradually, selectively and democratically, however Government will continue to technical support and financial assistance,
- Finding financial sources for irrigation infrastructure that can be collected, managed and utilized by the association itself,
- Sustainably maintaining the water resource and preventing land conversion from irrigated area to other uses so that irrigation system can be sustained.

These five issues, accepted by the National Workshop and used as the basis for discussion, were defined as;

Policy 1 : Redefinition of tasks and responsibilities of irrigation management institutions,
Policy 2 : Development of the WUA Institution,

Policy 3 : Delivering irrigation management to the farmers,
Policy 4 : Irrigation management Fee (IPAIR) and irrigation management financing,
Policy 5 : Irrigation system sustainability.

Government policy makers must now have a better understanding of the decision making environment in which they operate, the potential and capability of private sector development, and also the right to self determination of those who are active players in this field. In World Bank terminology the policymakers must now think in terms of 'enabling' (empowering) communities and give up thinking in terms of the central government as a 'provider'. Ever increasing demands will be made on water resources in the future and large savings through greater efficiency of irrigation water use will be expected. Emphasis must be placed on greater efficiencies of allocation and use, rather than water resource development as a purely physical exercise.

Presidential Instruction No.3/1999 provides the authority to MOPW, as Chairman of the Policy Coordination Team (*Tim Koordinasi)* for River Utilization and Watershed Sustainability, to effect all necessary water and irrigation management updating. Under this mandate the Minister is empowered to coordinate the preparation of laws, regulations and actions required to effect these measures. A totally new approach to Water Management is embodied in new thinking guided by five principle changes as set out below;

- Water, previously regarded as a 'social good' is now regarded as an 'economic entity,'
- Water management, previously undertaken on the basis of 'supply management' should now be exercised as 'demand management,
- Water resource development, previously undertaken on the basis of 'project orientation' must now be implemented as 'integrated development' with other resources,
- Water planning and sustainability, must be based on the 'supply concept' rather than the 'user concept',
- Central government must develop policy in terms of 'enabling strategies' rather than a strategy based on 'provision.

Irrigation management policy will include;

- The farmer as decision maker.
- Empowerment of farmers and farming community responsible for irrigation practice through WUA.

WUAs will be,

- autonomous
- self reliant
- socio-culturally aware and environmentally orientated
- democratic and having a legal status as a business unit.

Turnover to the farmer business unit will be done in stages, selectively, and democratically using the principle of 'one irrigation system one management unit'; where this not possible, a joint WUA – Government (more likely 'local government' now) body responsible both managerially and financially will be formed. Whilst the concept of one irrigation system –one management unit, is sound at the small scale level, say less than 500 ha, when irrigation systems get much larger than this, the interaction between the organizational responsibility and operational control become complicated.

(5) Kabupaten Irrigation Committee and Water Councils

Under WATSAL it is proposed for *kabupaten* irrigation committees to become sub-committees of the

river basin water management committees (*PPTPA*), and WUAs of irrigation schemes will be represented on the PPTPA together with other water use stakeholders. This was proposed in the past under existing legislation on *Panitia Irigasi* but never actioned, as there was no enabling process to empower WUA representatives to take up such positions.

The completion of WATSAL conditions will produce a new framework of water resource management policy and the accompanying necessary legislation that will provide the condition and institutional pathways for WUA's to be empowered and take up their rightful representation.

A system of Water Councils is to be established, at National, local and river basin level (*Dewan National SDA, Daerah SDA and Wilaya Sungai SDA).* These will interface with PPTPA or as they will possibly be known as *Kommisi Irigasi* representing the water users both private and public. Methodologies for invoking penalties, licenses, local byelaws, financial and managerial controls will be evolved.

The governance of the water resource through the use of these tools (Councils representing the supplier and *Kommisi* representing the users) will need to take account of the new order of stakeholder interests consistent with regional development plans. A responsibility for standards of service delivery on the one side and cost recovery on the other enforces social harmony.

Programs involving the definition of the complex mix of aspects within the sphere of influence of the WUAs authority and the local government responsibility are due to start during 2002 with the EU supported programs of 'Good Governance' following the completion of the WATSEL conditional terms the start of National Water Resources Management Program (NWRMP). The expected outcome of such programs is the hope that satisfactory levels of functioning performance can be achieved. A number of key issues need to be clarified during the operation of these programs for example:

- can clear legal and administrative precedents be effected for the structural establishment of *Dewans* and Balai PSDA.;
- what are training needs requirement for *Dewan*?
- what is the functioning line authority of a *Dewan*, should it have one?
- will Balai PSDA be able to coordinate its relationships such that joint management will facilitate the collection and return of field level data to higher administration levels, and
- levels of fund sharing obligation between Balai PSDA and WUAs consistent with the law UU 22/1999 and the legality of agreements, (INPRES No.3/1999) discerning levels of authority.

3.1.4 Irrigation Management Turnover System

(1) Irrigation O&M Turnover under IOMP

INPRES No.2 of 1984 on 'Guidance to Water Users Associations and the consequent No 42 PRT/1989 System of Turn Over of Small Scale Irrigation Systems and Management Authority to Water Users Association, are the basic regulations effecting the establishment of WUAs and their function in accepting the 'turn over 'of management authority of small scale schemes (below 500 ha) to the WUAs. The scope of this 'turnover' is detailed as;

- the turnover of assets of small scale irrigation comprising structures and canals built by Government,
- the jurisdiction, duties and responsibilities of operation and maintenance registered in the Inventory book of the Public works Irrigation areas, under the condition that such operation continues to be supervised, directed and monitored by Government agencies.

The criteria for 'turn over', were based on the following factors;

- the usage of the irrigation water,
- the physical condition of the irrigation systems, which must be in good condition,
- the institutional condition of the WUA,
- the WUA must be registered by the Bupati,
- the WUA must be qualified organizationally, technically, and financially to take on the duties and obligations.

This was the basis for 'conditional turn-over' and one which included so many unclearly defined conditions that it is easy to disqualify many WUAs. The legislation further required all schemes to be classes as A, B, or C according to their physical condition and the capabilities of the WUA organization. For each successful handover, the inventory required adjustment; specific handover documents were also needed for each scheme. This involved considerable field work, for little achievement in terms of the area of irrigation actually transferred to farmer management.

It was evident, from the rate of turn over achieved and the high cost of the work involved, that this methodology was over cautious. Many registered WUA were, in fact, non-existent in the field and many small schemes required rehabilitation before they could be considered in good enough condition to be accepted by the farmers. The financial requirements (payment of IPAIR) had proven to be expensive to collect and impossible to manage transparently. It was obvious that a different and more radical methodology was required. The opportunity arose with the change of government and the impact of the monetary crisis. Participatory methods of involving farmers and working together (local agency staff, facilitators and farmers) had been applied on a number of projects beginning with HPSIS (High Performance Sedarhana Irrigation System Project) in the late 1970's and there have been a number of chances to develop bottom- up expression and grass roots development.

Projects developing participatory methods also introduced other approaches. Partnerships in project development between Government, Universities and NGO's became a common union. Socio-technical approaches integrated through top-down and bottom–up development afforded the people a voice for their aspirations and the Government chances to modify their strict, narrow engineering approach. Policy changes introduced over the last five years are evident in the regulations and guidelines produced. Participatory approaches have been incorporated in Government and donor funded projects. Changes have been noted in the cooperation between the irrigation field staff and how projects work with farmers and the change of emphasis from construction projects to more socio integrated work has also helped achieve the new relationship.

(2) Irrigation Management Turnover (PPI: *Penyerahan Pengeloloaan Irrigasi*,) or (PKPI: *Penyerahan Kebijakan Pengeloloaan Irrigasi*)

In 1996 a new project, the Irrigation Development and Turn Over (IDTO), a component of the JIWMP (Loan 3762-IND), set out to determine more participatory methodology in preparing WUAs and Federated WUAs to accept responsibility and management for their irrigation schemes. After some teething problems related to the selection of sample sites, the project has developed a methodology which closely parallels that previously used in the top-down systems applied in PID and PIK turn over. The main difference in the present case is the use of PPKP *(Pemahaman Partisipasi Kondisi Pedesaan*) or PRA (Participatory Rural Appraisal) at the block levels, where farmers are given the chance to voice their opinions before being they are encouraged to form a WUA (ref. Table 3.1.1). The participatory methodology has only been developed during the last two years, and is still in a development phase. The flow chart for developing WUA and Federations of WUA for turnover of irrigation management (PPI) is given in Fig.3.1.3. The form of the current program was inspired by the INPIM conference of 1996, and

developed further in discussions concerning the WATSAL loan. The IDTO of JIWMP is now viewed as being a contributing factor to the loan conditions, facilitating conceptualization during national workshops on WUA development methodologies.

Initially, turnover proceeded much along previous lines, with a strong training component for irrigation (project) staff and farmer representatives. Since 1998 the training component has increased and since 1999/2000 the budget has increased for activities such as post-project guidance involving an annual inspection of systems by project support staff. Further increases to the budget have been made to incorporate WUA/WUAF formation and strengthening. During the researching of the participative methods it was reported that there was a strong tendency for both Government officials and farmers to concentrate on farmer requests for Government assistance and little assessment of the capability of farmers to provide services and finances for themselves.

PPI program will develop its approach even further in the next year using a phased transfer of authority and responsibility for irrigation management from government to 'enhanced' WUAs. Standard turnover practices still include inventory and institutional profiling, strengthening and training in preparation for turnover and post-turnover performance monitoring, all practices previously used under the government formulated system practiced by the staff of PTGA.

Apart from the conciliatory reference of PPKP at the block level, very little change is noted between present and past methodology. The method involves a top-down approach, expensive design, little real involvement of farmers, little apparent regard to local area autonomy and little or no direct involvement of MOA.

Whilst it is beginning to achieve a selective and steady turnover to farmer federations, its high cost and the fact that it has been untested outside Java causes some concern with regard to its applicability at the national level.

(3) Federations Cooperatives and *Kelompok Tani (KT)*

One problem that has been recognized for many years is that of the relative positions of WUA with *Kelompok Tani*(KT) the farmer group organization. The KT was originally developed from traditional farmer organization structures in villages in Java, and West Sumatra. It, therefore, had a basis of acceptability and was village based. The WUA organizational structure was superimposed over this often with little recognition that within most KT there already existed a water management sub section, or a former traditional water user organization. The WUA was therefore viewed as being imposed, without recognition of existing or former traditional structures and was often irrigation tertiary block rather than village based. Such organizational development may even run counter to village community ethics if proper acknowledgement is not given during the preparation period.

Originally, the establishment of WUA was an irrigation driven initiative with little acknowledgement of Dinas *Pertanian* initiatives. In certain provinces, KT took a firm hold as the preferred system, having been introduced much earlier than WUA; West Sumatra being a case in point. The current IDTO of JIWMP is focusing towards the strengthening of WUA (seen as a tertiary unit) to Federations of WUA (*Gabungan* P3A) organized to manage and control a secondary canal, to *Induk* P3A, which combines Federations or *Gabungan* into a one management, one scheme organization.

Whereas there have been considerable supporting regulations provided for the establishment of WUA in

law through the registration of articles of association (AD/ART), little provision has been made for the establishment of Federations and none for *Indu*k WUA. It is likely that the size of Federated WUA, based on a secondary supply system, will often exceed the size of one village and this will involve a new dimension of cultural establishment. It is being suggested that such a unit could be established in law through the use of Cooperative laws. INPRES No.18/1998 the only regulation on cooperatives issued since '*reformasi*', may well have to be reviewed to assist in the establishment of 'New Cooperatives'. At the same time serious thought should be given to understanding whether Federations, *Induks* and 'New Cooperatives' are the way forward. They may well be for those farmers reliant on the 8 million ha of irrigation development in Indonesia, but what about other farmers, upland, livestock, estate crop, fishery, and forest, would they fit into the framework of 'New Cooperatives'. Should irrigation development beware of conceiving new sectorial institutions that potentially ignore existing cultural precepts and other rural communities.

The Ministry of Agriculture, *Directorate Bina Rehabilitasi dan Pengembangan Lahan,* under the former structure of *Direktorat Jeneral Tanaman Pagan dan Hortickultura* has reviewed this potential use of cooperative laws in a new document *Pemberddayaan Anggota Kelompok Tani/P3A Menuju Koperasi and* supported it with a paper on the integration of KT with WUA, *Penyerasain Kelompok Tani dan P3A.* Here, for the first time, is an initiative that appears to have a cultural as well as an institutional basis. It is claimed that this document is not a top-down model but the result of many discussions with farmers (KT) and the result of listening to what the 'grass roots' is saying.

3.2 Review of Irrigation Management Studies and Project

3.2.1 Previous Irrigation Management Studies and Projects

(1) Irrigation Sub-Sector Program (ISSP-I and II of IBRD)

The ISSP-I Project was implemented over a three year period from February 1988 to March 1991 under the IBRD Loan 2880-IND, with total amount US$ 340.8 million including Indonesian fund. The ISSP-II project constituted a second sub-sector project continued after the first and was implemented between 1991/92 and 1995/96. Both projects were designed to support the implementation of IOMP(1987) by improving the condition of irrigation systems, ensuring adequate O&M funding, improving the quality of O&M, strengthening institutions involved with O&M, transferring responsibility of O&M of smaller systems to beneficiaries, implementing an irrigation O&M cost recovery process and introducing basin water management. They cover nine (9) provinces, i.e. West and South Sumatera, Lampung, West, Central and East java, Yogyakarta, and South and Central Sulawesi. Their achievements are summarized as follows:

	Total Area (ha)	Coverage
Potential Irrigated Area	3,427,224	100.0 %
Special Maintenance Construction	1,071,203	31.3 %
Efficient O&M	2,609,270	76.1 %
Turnover	202,888	5.9 %

Source: Final Report, Irrigation O&M and Turnover Component ISSP-II, DGWRD

As shown in the above table, about one third of the potential irrigation area in nine provinces was included under the Special Maintenance program and 76% of the potential irrigation area achieved the efficient O&M condition. Small irrigation schemes, covering about 6% of irrigated area, transferred their O&M responsibilities to WUAs. Referring to the turnover area, of the total 316,720 ha turned over by 1997 throughout the country, the ISSP project contributed 64%.

The experience gained during the implementation tended to reaffirm the desirability of an integrated approach to rehabilitation, turnover, and ISF.[5] A similar project, financed by ADB, entitled the Third Irrigation Sector Project (INO 860/861) was also implemented, and overlapped with ISSP-I.

(2) Integrated Irrigation Sector Project (IISP-I, ADB)

IISP-I started in August 1990 and was completed in January 1999 under ADB Loan No. 1017/1018(SF)-IND. The project was designed to accelerate agricultural development in the provinces of DI. Yogyakarta, Central Java, South Sumatera, West Sumatera and Southeast Sulawesi, with a view to increasing farm productivity, creating employment opportunities and improving the living standards of poor farmers. The project was aimed at improving rice productivity, broadening the agricultural production base, creating rural improvement opportunities, and balancing regional development. The executing agencies were DGWRD, DGPARA, DFCH, DGRLR and DGRD. The project consisted of the following six components;

- irrigation development, including rehabilitation and upgrading (R&U) of irrigation and drainage schemes, introduction of efficient operation and maintenance (EOM), handover of O&M responsibilities from central to provincial agencies and WUAs, and institutional strengthening, (on seven subprojects),
- introduction of ISF,
- agricultural development through tertiary development units (TDUs) for testing water management techniques, improving seed farms, land development, and strengthening of WUAs,
- soil and water conservation,
- women in development,
- strengthening of coordination and monitoring.

The proposed and actual achievements regarding irrigation development, WUA development and ISF programs are summarized as follows:

Category	Works			Achievement
Irrigation Development	Rehabilitation and Upgrading			102,035 ha
	Efficient O&M			112,361 ha
Development of WUA	No. of villages			1,035
	No. of tertiary units			3,301
	No. of WUAs			1,152
ISF Collection	Year	Area (ha)	Actual (Rp million)	Achievement (%)
	1993/94	33,364	200.7	70.8
	1994/95	44,604	227.4	68.2
	1995/96	53,423	252.2	59.0

A similar project, again financed by ADB, the Nusa Tenggara Agricultural Development Project (Loan No. 952-INO[SF] and 953-INO) was implemented from January 1989 to September 1995; its project performance audit report mentioned the following:

- Sustainability of irrigation projects would be better ensured if timely and adequate maintenance could be provided. This would avoid early physical detention and production shortfalls requiring costly rehabilitation works resulting in less than optimal economic return.
- WUA need adequate support from skilled community organizers to help the officers develop their skills and confidence to play more effective roles in managing water distribution and in maintaining the system.
- For farmers to accept the concept of paying ISF, they need to be introduced, at the outset of the Project, and set at a level that is realistic in terms of the actual costs of providing effective O&M.

[5] Staff Appraisal Report for JIWMP, May 1994

(3) IDTO within the Java Irrigation and Water Management Project (JIWMP)

JIWMP(IBRD Loan No. 3762-IND), started in 1995 and included six main components, 1) basin water planning, 2) basin water management, 3) hydrology, 4) irrigation development and turnover (IDTO), 5) irrigation service fee (ISF), and 6) General coordination advisory. The IDTO component aims to determine a more participatory methodology for WUAs and WUA federations to accept responsibility for the management of their irrigation schemes. Since INPRES No.3/1999 *pemahaman partisipasi kondisi pedesaan* (PPKP) or participatory rural appraisal (PRA) has been used at block level to give farmers a chance to voice their opinions; the overall approach is, however, still top-down in structure and may not be applicable to regions outside Java.

The current, on going JIWMP-IDTO project, is carrying out PPI program at 24 pilot irrigation schemes as field laboratories. Those schemes are located at 7 kabupaten and 4 provinces as following:

Province	Kabupaten	No. of schemes	Total area (ha)	No. of WUA
West Java	Cianjur	2	6,525	9
	Ciamis	5	5,302	24
Central Java	Wonogiri	3	2,276	5
	Magelang	5	4,189	8
Yogyakarta	Kulon Progo	2	3,129	52
East Java	Mojokerto	3	2,478	7
	Jombang	4	3,095	7

(4) Farmer Managed Irrigation System Program (FMISP)

The FMIS project is being implemented under an ADB loan in the provinces of North and South Sulawesi and NTB for the period 1996-2003. The project scope includes design and construction, O&M, training of Government staff, and WUA formation and development. The objectives of this project are to;

- Rehabilitate and improve farmer managed irrigation systems,
- Strengthen district and sub-district services,
- Strengthen WUA and local irrigation organization,
- Provide project management support.

The target is to improve about 1,059 schemes with total area of 90,000 ha, with an average scheme size is 84 ha, located as follows:

Province	Area (ha)	No. of Schemes	Average size (ha)
West Java	60,000	678	88
Yogyakarta	2,000	118	17
NTB	5,000	85	57
South Sulawesi	20,000	155	130
Central Sulawesi	2,000	13	153
North Sulawesi	1,000	10	107
Total	90,000	1,059	84

The bottom-up and participatory approach using technical assistance from PPL, *Pengamat* and *Juru,* resulting in the following activities and expected outputs:

Key result	Activities	Expected Output
1. Irrigation construction	Site selection, technical design, construction	Permanent irrigation construction, buildings, facilities
2. Irrigation O&M	Data collection, installation of water level control kits, planting pattern x water allocation system, water	Effective and efficient water usage, fair, equal and appropriate water allocation, seasonal planting patterns

	control and sedimentation cleaning	
3. Training	Training for Kabupaten and Kecamatan officers in water resources development and agriculture, training for farmers(ref. Fig.3.2.2)	Training and extension works, technical assistance
4. Institutional building	WUA promotion, staged development	Year-1: WUA initiation, irrigation technical design, register at Kecamatan. Year-2: irrigation construction, register at Kabupaten Year-3: O&M training and implementation, register at local Court, widening WUA functions

Using self-managing vision, rural village irrigation technology and a locally adapted approach to WUA empowerment, the project is expected to achieve the following long-term objectives:

- Enhancement of irrigation and agricultural field officers' and farmers' capacities,
- Enhancement of irrigation development and O&M,
- Improvement of irrigated land productivity and farmers' incomes (see Fig.3.2.1 for the implemented project framework).

(5) Assessment of Options for Sustainable Irrigation Development in Indonesia, (ADB TA 2679-INO)

The report of this study provided an understanding of the intricate problems of irrigated agriculture development, including the national food security of Indonesia, the counter-measures taken during the New Order, the prevailing paradigms, and the remaining challenges which need to be addressed during the reform of the irrigation sub-sector development policy. The key challenges included the following:

1) Prices and yields

- Farmers have to make a reasonable return on production inputs to enable them invest to in a better farming production system. One indicator is the ratio of farm-gate price and market fertilizer price.
- In the early 1980s the ratio was very high and boosted productivity. In the late 1980s the ratio dropped and remained at below 1.5. In 1996, 97 and early 98, the ratio decreased to 1.3 and as a result, farmers' investment in inputs fell. Food and even fruit were imported in large quantities.
- In April 1998 a Government subsidy of about Rp.5.3 trillion was provided, and farmers were obliged to sell their rice to Dolog through KUDs. The subsidy benefited the urban people and reduced farm-gate prices, to the detriment of the farmers.

2) Irrigation

- Water is historically seen as a free good for agriculture; there is, therefore, a need to improve efficiency and productivity of water resources in rural areas.
- Accordingly, cost recovery must play an important role in encouraging farmers to use water efficiently.
- Agricultural policy regarding crop diversification away from rice.
  * IOMP was considered to make irrigation systems self-sufficient by establishing a link between irrigation water users and service providers. But the success of the PIK turnover has not reduced the need for government subsidies for O&M, while the ISF program has been very unsuccessful.
  * The current IOMP program fails to recognize the central role of farmers in irrigation management as it does not empower WUAs to assume responsibility for managing their irrigation systems.
  * Most water users are reluctant to pay ISF because they do not receive quality service.
  * Increasing non-agricultural landuse, especially in Java, has removed large areas of good irrigated paddy land.
  * In run-of-river systems of irrigation with no storage capability, there are often high fluctuations between the wet and dry seasons.

* The effectiveness of decentralization depends very much on the degree of overall financial autonomy and accountability.
* On-going investments need to be reviewed, restructured, or cancelled; and new investment must be evaluated in the light of the need to restore rice output and to widening the rural employment base. Once again, this emphasizes the need for more efficient and productive uses of water resources.

(6) PTGA (*Program Pengembangan Tata Guna Air*, Water Use Development Program[6])

Constraints and problems of Irrigation O&M as faced by MOPW and the DG of Water Resources Development (DGWRD) in particular, are made more difficult by the fact that there are a very large number of small-scale schemes located throughout the vast areas of the country. Correspondingly, a PTGA was initiated in 1983/1984 by DGWRD, on a project basis.

The purpose of the Project was the enhancement of agricultural production through the optimization of water use in tertiary, pumped and village irrigation systems.

The objectives were to provide:

- Adequate orientation and the promotion of a similar perception on water use amongst the related Government agencies and amongst farmers organizations in relation to the development of tertiary and pumped irrigation systems at village level.
- Enhancement of Irrigation Committee and WUA functions and related Government agencies' coordination.
- Improvement of irrigation laws and regulations at Provincial and Kabupaten levels.
- Improved skills, knowledge and attitude of water user farmers in the management of tertiary, pumped and village irrigation schemes.
- Preparation of a long-term plan to develop an Irrigation Extension Unit at Provincial Dinas PU level, and to define the scope of works.

In 1983, DGWRD established PTGA Executing Agency (*Badan Pelaksana Proyek Tata Guna Air*) in Jakarta, with regional centers in Cirebon, (PTGA Region I), Surabaya, (Region II) and Ujung Pandang (Region III). In 1988 PTGA was changed to PIPTGA (Proyek Induk Pengembangan Tata Guna Air, *a Central Project of PTGA*) in Jakarta covering 11 Provinces including West and South Sumatera, Lampung, West, Central and East Java, DI Yogyakarat, South Kalimantan, South Sulawesi, and NTB. In 1991/92 the coverage was increased to 23 provinces with the inclusion of Aceh, North Sumatera, Riau, Jambi, Bengkulu, West and Central Kalimantan, North, Central and Southeast Sulawesi, Bali and NTT.

Water User Groups that were targeted and sponsored under this methodology were recorded, as SB *(Sudah Berkembang*) but often owing to poor follow up practice this establishment was more of a paper record than a practical one. A series of follow up legislation starting with INPRES No.3/1999 aimed at attaining greater farmer participation was unfortunately too late to obtain the required result. PPTGA was established under the organizational structure of *Proyek Irrigasi* at the provincial levels.

Currently, owing to the reorganization at Central level and proposed reorganization at Provincial level, PTGA which, is still centrally funded, is caught in an institutional gap. *Proyek Irrigasi* at the Provincial levels, previously under the line management of *Kantor Wilaya (Kanwil),* is to be disbanded as the emphasis moves away from construction programs in irrigation. New guidelines on the methodology of PPKP (*Pemakaman Participatif Kondisi Pedesaan* = PRA) are still awaited at the district levels and as

[6] N. Darismanto, M. Eng, 2000

such PTGA is unsure of its field program. It is conceivable that the PTGA will under the new regional autonomy be required to work more closely with or possibly be integrated with the successful KDP/PPK scheme (Kecematan Development Program/*Program Pemgembangan Kecamatan*). It appears that little attention has been paid to this already well established system of assisting programs identified by the village levels. This program is well funded and provides existing routes for assistance for village lead development. It would appear that with the correct guidance to province and districts under regional autonomy initiatives this program could provide a pathway for WUA, Federation and even *Kooperasi* development.

The Study Team has obtained the first two examples of guidelines *Pedoman Penyerahan Pengelolaan Irigasi* one from Kabupaten Mojokerto and one from Kabupaten Jombang both in East Java province. These documents, although the first to be produced, show little consideration towards local conditions and appear to be copies of the example prepared by Central Government.

One of the problems that should be recognized and given some thought, is that of the future of PTGA. PTGA is a project-orientated institution, currently financed from centrally operated funds. In the future project-orientated work should be reduced and future projects may be organized around the Dinas Offices. Under the IDTO approach to WUA establishment, PTGA in some provinces has grown in importance and stature and become an integral part of WUA set-up procedure. When IDTO as a project ceases to exist then the PTGA may also cease to exist, if there are no more projects to support it. The only place institutionally where it can be placed is within the structure of Dinas PU where it will become sidelined and ineffectual in attempts to justify it's own existence in terms of annual budget.

Far better if center could offer some policy advice to the regions on reorganization. It could be suggested that PGTA as the only real active agency dealing directly with WUA set-up, should be maintained for its valuable expertise. The question is how can this be achieved? Within the sector of water resource management, Basin water management has gained prominence. *Balai* PSDA a structured organization are being created and trained to manage this resource on the basis of "one *Balai* one basin". These *Balai* are the instrument through which the authority to allocate and distribute water are carried out. PTGA is one government organization with responsibility towards WUA set-up and sustainability. It is the only active government agency that represents the water users.

At the present time these two bodies have little coordination or cooperation, however one is the provider of water and one represents the users of water. A closer examination of matching the relationship of these two bodies, placing emphasis on gaining the sustainability of PTGA through establishing it as an independent agency, not as a unit within Dinas, should be undertaken. It is suggested that the advanced PTGA models in East Java (Modjokerto and Jombang) would be worth investigating first. Consideration should also be given to the fact that it is probable that downsizing in some of these organizations will become necessary. Ways and means to achieve this and potential alternative employment roles for those staff members who are shed from the organization should be sought.

3.2.2 Other Related Studies/Projects/Programs

(1) P3DT III (Pembangunan Prasarana Pendukung Desa Tertinggal III, Pilot Proyek)[7]

Village Infrastructure Project - Phase III, is a pilot project designed as a continuation of VIP I and II for 2000/2001- 2001/2002 under a cooperation agreement between Government (BAPPENAS – Bureau for Dati II and Rural Development) and the OECF, Japan (presently JBIC).

The importance of the project lies in its objectives which expect to cover village administration boundaries, simple mechanisms for infrastructural (including irrigation) planning, financing, construction, utilization and maintenance utilizing a participatory method.

In the long-run, the project objectives are to:

- catalyze village development using a strategic infrastructures prioritization system,
- support village social-economic development,
- strengthen village community's capacity and self-reliance,
- enhance institutional administration capacity at *desa* and kecamatan levels.

The expected results would be the:

- Establishment of Strategic Kecamatan Development Plans.
- Provision of village infrastructure and facilities, involving:
  - Inter-village development infrastructures: village roads, bridges, jetties etc (Category 1).
  - Economic infrastructure: village and simple irrigation systems, tertiary canals, seedling centers, etc (Category 2)
  - Post harvest infrastructure, rural markets, storage, drying floors, etc (Category 3)
  - Public facilities, toilets, clean water supplies, etc (Category 4).

The project covers five provinces, North and West Sumatera, West Kalimantan, NTB, and South Sulawesi.

(2) Kecamatan Development Program (KDP) (PPK: *Program Pengembangan Kecamatan*)

Concerning the aim of empowering WUA to a point where farmers are able to manage the budget by themselves, the on-going KDP (Kecamatan Development Program),or PPK, can provide some useful experience, particularly in regard to the channeling of Government budget directly to community. In the current post-DPU era and the development of regional autonomy, PKK could be an appropriate vehicle with which to continue PTGA and WUA activities.

PPK began in 1998 with World Bank funding. It uses a participatory approach to assist a variety of programs identified by villages and has, in general, been successful. The main characteristics of the program are:

- the use of *kecamatan* level councils to review and fund village proposals;
- collective village decision-making on the use of funds allocated to the *kecamatan* through public voting;
- high priority given to transparency via consultations, public information boards, local media and technical assistance;
- opportunities for villages to synchronize activities on a local need basis;
- trained community development facilitators operating at *kecamatan* level;
- infrastructure and economic investment open menus that involve a balance between loans and

[7] Third Village Infrastructure Project (VIP III, a pilot project). Source: PETUNJUK PELAKSANAAN P3DT FASE III TA 1999/2000, Tim Koordinasi P3DT Pusat. See also flow-chart summarizing this project scheme in Figure 2.3.3.4.

grants;
- local people participatory planning and implementation.

PPK is designed to help village communities to learn how to make democratic decisions regarding the selection of a particular project and to carry out, by themselves, its planning, implementation, operation and maintenance. The program approach is as follows:

- The program is addressed to poor communities
- The community is entrusted to select projects in accordance with their needs.
- To provide access of information to all people in the village, without discrimination, about democratically selecting the proposed projects.
- Community involvement in carrying out planning, implementation, operation and maintenance of the projects.
- Fair competition in selecting proposed projects.
- Community contribution in the implementation of KDP.

PPK currently covers 727 kecamatans, 110 kabupaten in 20 provinces. Allocated budget at each kecamatan is about one billion Rupiah and is managed directly by the community.

After the process of selection of the proposed projects has been completed by the community at kecamatan level, selected projects and their proposed budgets are documented. The Project Manager and UPK approve and send the documents to KPKN. The budget from KPKN is sent to a local bank at kecamatan level, from where the Chairman of LKMD and UPK collects the budgets to implement the projects. Community meetings are held regularly to discuss, supervise, monitor and evaluate the implementation of the projects, including the disbursement of budgets.

The process shows that,

- It is administratively possible to channel Government budgets directly to the community.
- It is possible to confine the roles of the Project Manager and other government agencies (KPKN and Bank Indonesia) to ones which just serve the community by channeling funds, without them interfering in the identification and implementation of projects.
- Regular community meetings are essential for projects to succeed.

3.2.3 Irrigation Management Turnover and WUAs

The IOMP policy of 1987 states that, "….for smaller systems with an area of less than 500 ha located within one village, the responsibility for O&M may be entrusted to the WUA for that particular village. In this way, the responsibility assumed by the community can be further developed, while reducing the number of schemes managed by the Government, and more attention can be paid to large and medium scale systems which cannot be managed by the community.". Reference ADB 1998.[8]

The purpose of the turnover program was to reduce the demands on Government resources (financial and manpower), so that these resources could be reallocated to other areas of need. It was also hoped that the turnover would generate a degree of responsibility within the farming community for irrigation system investment.

Government policy, regarding the turnover program, was to:

- turnover schemes of 500 ha or less to WUA,
- improve (rehabilitate) the systems before turnover,

[8] "Assessment of Options for Sustainable Irrigation Development in Indonesia", Final Report, ADB 1998.

- give responsibility to the government for those activities beyond the WUA's capability.

Apart from the turnover of small-scale schemes under 500 ha, numbers of tertiary unit systems from within large-scale technical and semi-technical systems have also been turned over to WUA. It was also expected that privatization of the irrigation systems and that private sector involvement might occur within the irrigation sector.

Up to 1996/97, some 317,000 ha of irrigated land has been turned over to the beneficiaries.[9] Some benefits have been achieved through the turnover program and researchers (Bruns, Helmi and Soenarno), the World Bank (1996) and the ADB (1998) have reported successful accomplishments when assessed against the criteria of there being significant improvements in O&M after turnover, increased cropping intensity, improved system performance through more equitable water distribution from head to tail of a system and increased rice production. Favorable outcomes were being reported up to mid 1997. It is difficult to ascertain if these successes, should be classified as being sustainable or short term. The real success of the turnover program must be measured in terms of the sustainability of the irrigation system over the long term that is achieved through the farming community accepting responsibility for the implementation of EOM programs.

The turnover policy of rehabilitating before turnover has not reduced Government financial inputs to O&M because the turnover program has focused on a program of rehabilitation which, in many instances, has not included farmer participation in the turnover activities. The original turnover policy and the proposed implementation strategy requested effective farmer involvement in all turnover activities. Instances of farmer non-involvement were recorded by ADB, 1998 - "less than one-third of the sample farmers interviewed in turnover systems in NTB and North Sumaera reported that they participated in construction planning meetings with government officials". Additionally many farmers interviewed in North and West Sumatra and West Java turnover schemes reported that they did not know about the turnover program for their irrigation schemes or what their roles were in the turnover process. ADB also reported that even WUA officials, in some instances, were not consulted on the process of turnover. Again, the process of farmer participation was neglected in order to speed up the process of rehabilitation and turnover.

As of 1999, World Bank reported that the turnover program had achieved only one-third of its target and questioned the success and efficacy of the WUA that had accepted turnover schemes because of the neglect of WUA development programs and the lack of a post-turnover support program for WUA. Instead of developing a sense of farmer ownership, independence and empowerment, the turnover concept was used by the construction and project arms of DPU - *Pengairan,* to justify more Government funding for irrigation scheme rehabilitation. This policy created negative incentives for both regional governments and farmers. Funding, management and the implement of maintenance programs were deferred. Hence maintenance was deferred in favor of periodic rehabilitation.

The basic philosophy of the turnover program is sound but the area of concern is the policy of rehabilitation before turnover. The goals and objectives of the program are in line with the overall principles of INPRES No.3/1999, i.e. farmer based development and self-reliance for farmers and WUA. Participation of farmers in the design, construction phase of the turnover program will give farmers a sense of ownership and hence the turnover program could be the catalyst by which sustainable irrigation

[9] (DGWRD, *Bina Program, PPS, 1997*).

management is achieved.

The continued implementation of the turnover program will more than likely achieve its objectives if a policy of turnover to WUA before rehabilitation is implemented. Rehabilitation can, therefore, be reviewed with WUA and farmer participation in conjunction with the review and establishment of WUA and farmer contributions. Beneficiaries would be involved as owners of the scheme in determining design and construction priorities and quality assurance.

The policy of one irrigation scheme - one management will require major inputs to farmer and WUA facilitation within the larger irrigation schemes as agreement and farmer participation is sought at the field level, the individual WUA level and at the WUA Federation level.

3.2.4 Irrigation Service Fee (ISF) Program

Government policy for O&M cost recovery was proposed, projected and implemented through the ISF (Irrigation Service Fee) program. This began in 1989 with a pilot phase in five provinces; a set of guidelines was issued in 1994 covering the process and procedure of ISF application. The ISF concept required the end user to pay the fee for services rendered, with payment being collected by the WUA for onward payment to the respective Government department. An incentive of the ISF program was that farmers would be given a voice on irrigation management through GOI/WUA cooperation in determination of O&M requirements, budgets and priorities.

Initially, ISF implementation appeared successful in terms of rates of collection. World Bank reported that, in 1994, in some 70 % of districts where ISF was implemented, collections were recorded in excess of 80 % (World Bank, ISSP-II Implementation Completion Report, Jan 1996). Since 1994, the ISF program has not maintained the same level of success and by 1996, ISF collections had decreased or in some instances had ceased completely. The World Bank reported the deterioration and poor performance of the ISF program (World Bank, JIWMP Aide Memoire, November 1996, Annex B) and the ADB concurred in 1997 (ADB, IISP-II Loan Review Mission, 1997).

The ISF tariffs that were imposed ranged from between US$4 to 8 per annum; when compared to the realistic estimated cost of O&M, even assuming a 100% collection rate, this would only finance a small part of the O&M cost of secondary and primary infrastructure. Although ISF implementation failed for bureaucratic reasons, if collections had continued, substantial reductions in Government's contribution to O&M would not have been possible, unless farmers had been willing to pay considerably more towards the realistic cost of O&M. It is questionable that they would have been willing to do so.

The objective of ISF to decrease Government's contribution to O&M was not achieved. Even during the time when ISF was functioning, annual government budgets for O&M continued to remain high, ranging from $50 to $75 million, (ADB, 1996). The World Bank reported (1999) that "the ISF program has been very unsuccessful: instead of increasing beneficiary contributions and reducing the Provincial government's fiscal burden, ISF revenues have been insignificant (ISF is perceived by farmers as an additional tax and hence refuse to pay) while O&M subsidies have increased".

The pre September 1998 methodology of ISF policy implementation and collection in Indonesia has failed (refer table below). The concept is, however, one which has been attempted in many countries, and which has met with varying degrees of success, in both developing and developed countries. Beneficiaries paying for the cost of irrigation scheme O&M is a necessity to accommodate decreased

government O&M expenditure. The following tables supply further evidence of the failure of ISF policy to achieve its objectives.

ISF Collection in West Java Province 1994 to 2000.

Year	No. of Kabupaten	No of WUA	Area (ha)	Targeted (Rp'000.)	Unit Rate (Rp/ha)	Realization (Rp '000.)	Realization (% target)	Actual allocation for maintenance (Rp .million)
1994/1995	7	2,000	168,854	2,087,009	12,400	846,878	41%	482,567
1995/1996	13	2,284	250,055	2,572,462	10,300	429,199	17%	309,351
1996/1997	16	2,290	251,716	3,245,045	12,900	850,802	26%	677,522
1997/1998	20	3,115	267,300	3,420,054	12,800	690,952	20%	648,963
1998/1999	20	1,250	278,307	2,358,974	8,500	178,621	8%	200,000
1999/2000	20	2,665	261,923	2,423,298	9,250	176,379	7%	200,000

Source: West Java Provincial Water Resources Development Service, 1999

The ISF program failed because ISF was channeled into general revenue, its use was non-transparent and the funds collected from a particular scheme were not necessarily used to benefit that scheme. Furthermore, farmers did not see improved O&M services and this did little to foster farmer confidence in the proffered incentive that farmers would be given a voice in irrigation management.

On September 14, 1998, the Director General of PUOD issued a Decree whereby kabupaten authorities were required to inform WUA of the ISF amounts collected within their irrigated area; and to transfer these amounts to active WUA bank accounts for use by WUA for the O&M needs of irrigation networks under their jurisdiction.

The purpose of this decree was to encourage farmers to pay the ISF and to assure WUA that ISF proceeds were not to be regarded as general revenue. This decree went a long way towards restoring the credibility of the ISF principle. It will take some time for farmers to overcome their past misgivings, but if the principle that irrigation systems need to be self-financing can be reinstated, then the empowerment of WUA maybe strengthened and enhanced.

Under the reform policy, INPRES No.3/1999, the concept of ISF collections became the sole responsibility of WUA. Each WUA would collect from the water user beneficiaries within the designated area of the WUA irrigation scheme and those funds would be allocated for O&M works for that scheme only.

3.2.5 Rehabilitation and Up-grading

The general concentration on contracts and projects produced the ingrained practice of preferred periodic rehabilitation of irrigation schemes rather than implementing a program of routine O&M and the IOMP objectives did not change this practice. Follow-up monitoring and evaluation (M&E) programs have continued to deliver a dismal outlook towards sustainable EOM and irrigated agriculture being achieved under previous Government policy. The ADB (1996) reported, "In spite of the large public expenditure in irrigation system development, production growth rate of all major food crops including rice has declined….".

Examples of this "preferred periodic rehabilitation" have been reported in the ADB Report[10] where it documents some examples. For instance some irrigation schemes have been rehabilitated twice in 5 years or three times in 10 years.

[10] Consortium for International Development report, "Assessment of Options for Sustainable Irrigation Development in Indonesia – ADB TA 2679-INO", Final Report, Volume II of III.

In addition to the ADB comments, the World Bank has stated the following:

- With respect to Indonesia's irrigation infrastructure and IOMP effectiveness, "a de facto provincial deferred maintenance culture has led to at least one third of the three million ha of Government designed irrigation schemes being rehabilitated twice in the last 25 years".
- "Apart from production losses, deferred maintenance results in scheme rehabilitation investment that is 6 to 7 times higher in present value terms than that required if maintenance were to have been satisfactorily undertaken".

Provincial governments, who have a shortage of funds, do not allocate sufficient funds to yearly maintenance programs because, in the past, the Central government has always assisted with externally funded rehabilitation projects or programs.

Continued rehabilitation is the expensive option; such costs can be reduced and delayed for years in the environment of yearly and productive EOM programs. Where farmers are not financially involved or participants of the decisions on maintenance and/or rehabilitation, a system of continuous rehabilitation creates a Government dependency in the minds of farmers – no maintenance means Government's continued assistance through rehabilitation construction".

Government policy with regard to the hand-over of irrigation infrastructure O&M responsibility to the beneficiaries (water users), states that, ".. irrigation infrastructure must be in a good working condition before official turnover to WUA". This policy has also reinforced the farmers' mindset of Government dependency. This is discussed under Section 3.1.4; Turnover program (PIK - *Penyerahan Irigasi Kecil*) where both the ADB and World Bank recommendations are that there should be rehabilitation before turnover, thus creating the need for farmer participation in the rehabilitation process.

3.3 Operation and Maintenance of Irrigation Schemes

3.3.1 Government Assistance for Irrigation O&M

(1) Requirement of Irrigation Efficient O&M

Irrigation infrastructure development, both new and the rehabilitation and upgrading (R/U) of old, during the 1970s and early 1980s increased the area of productive rice land and assisted Indonesia in achieving self-sufficiency in rice production by 1984. The security of water allowed farmers to adopt more intensive cropping and to secure better dry season cropping through irrigation and with the addition of drainage systems, reduced the incidence of flooding and thus also improved wet season cropping. Self-sufficiency in rice was, however, short-lived and soon after the country was again in deficit, unable to keep pace with the demands of the increasing population.

Having achieved rice self-sufficiency in 1984, Government shifted attention towards the industrial sector away from agriculture, and O&M became a heavy burden. Hence the moves towards the hand-over the O&M responsibility from the Government to the beneficiaries and the initiation of projects aimed at this policy during the mid and late 1980s.

Towards the end of the 1980s several donor agencies, including World Bank and ADB, reported on the Government's lack of commitment and motivation for financial and managerial inputs to O&M for irrigation scheme infrastructure. It was seen that this directly influenced the stability and efficiency of irrigated agricultural production and was a contributory factor to the loss of rice self-sufficiency. It was recommended that the implementation and development of efficient O&M (EOM) programs would help

to ensure the long-term sustainability of irrigation systems and irrigated agriculture.

(2) O&M of Irrigation Scheme

Irrigation system consisting of two categories, those operated and maintained by Government as public works and those run by farmers' organizations. Systems operated and maintained by Government include those with technical irrigation, semi-technical irrigation and simple irrigation. Within a system is the main system and the tertiary system, from viewpoint of function of water conveyance and operation and maintenance works. The main system consists of facilities of water source, intake, primary canal, and turnouts for tertiary canals. Department of public works of each concerned provincial government handles O&M for those facilities. Blocks irrigated from the tertiary turn-outs are referred to as tertiary units, and these normally range in size from 50 to 150ha. Operation and management for the unit is left to the water users' association.

Task Demarcation on Construction & O&M of Irrigation System

Description	Construction		Management		Guide on Irri.sys. Operation
	Primary Facilities	Tertiary canal & develop fields. *	Primary Facilities	Tertiary canal	
Technical	By Public works	By local community / WUA	Prov. Gov't / P.C.*	By local community / WUA	By Irri. committee
Semi-Technical	By Public works	By local community / WUA	Prov. Gov't	By local community / WUA	(Prov.-level, Kab.-level & Kec. Level)
Simple	By Public works	By local community / WUA	Prov. Gov't	By local community / WUA	
Village Irrigation	By local community / WUA	By local community / WUA	By local community / WUA	By local community / WUA	By local community / WUA

Note : Source : Meneg PU
* History and Legalization :
During from '78 to '84, task of construction of Tertiary canal / field was by Dept-1 of PU
By Presidential Instruction No.2 / '84 on Guidance of WUA (P3A), the task was handed over to local community or WUA as present.
P.C. : Public Corporation

Irrigation Committees at each layer of administrative hierarchy (Provincial level, Kabupaten level and Kecamatan level) are responsible for the tasks of providing cropping plans, coordination on utilization of irrigation water and utilization. The Kecamatan Irrigation Committee is lowest level committee in the administrative organization and has the task to define irrigation management plan consisting of cropping schedule, water distribution plan and also agronomy. Their scope is limited to technical aspects only, and this does not include administrative matters. This committee has no responsibility with regard to identifying the necessity of rehabilitation or upgrading of irrigation facilities; this is the Provincial PU's task. Committee members are generally the senior officers within the Kecamatan level administration. The higher level Committees' main tasks are to coordinate or to solve problems if lower committee cannot handle the situation. Finally the results are reported to the Provincial Governor. Farmers themselves are not listed.

Member of Irrigation Committee by Administrative Hierarchy in Local Government

Prov. Irri. Committee	Kab. Irri. Committee	Kec. Irri. Committee
a Province Governor	a Head of Kabpaten (Bupati)	a Head of Kecamatan (Camat)
b Head of Province PU, W.R.D.	b Head of Kab. PU	b Head of Kec. PU
c Head of Provin. Agriculture development	c Head of Kab. Agriculture	c Head of Kec. Agriculture
d Head of Justice	d Head of Justice	d Heads of Villages
e Head of Police	e Head of Police	e Police
f Pemda Tn-1 (Provincial Admi.)	f Pemda Tn-2 (Kab. Admi.)	f Agri. Extensio worker (PPL)

Note : Source ; Meneg PU

(3) O&M Clarification

For discussions on O&M, it is necessary to have a clear definition of the terminology and the allocation of responsibilities: the following table provides some details

Farmers are take care of or maintain irrigation facilities by themselves for those aspects listed in the

Minor or Daily Routine Works column. By gathering together groups of farmers, mainly at the quaternary level, most farmers can handle these tasks on their own alongside their other tasks of water distribution and management. Most farmers manage these activities, whether or not a WUA exists or operates. Government has generally been responsible for those works listed in the major or periodical works column.

Descriptions \ Classification		Major (or periodical works)	Minor (or routine works)
Operation	Works to operate	Operation works with special techniques or knowledge's for proper conditions. * Dam operation * Intake weir operation * Large scale pump station	Works of operation available with ordinary persons like elementary educated farmers. * Small diversions' operation * Small gate operations * Pump on-off operation * Small diversions' operation
Maintenance	Works to keep facilities in working condition during their design life	Periodical works for large scale/sophisticated facilities to keep in proper conditions, also from view points of avoiding social securities to be occurred by facilities' failure to communities. * Facility monitorings (dam body, primary canal, river intakes) * Earthdam surface grass cutting * Large metal gate paintings, oiling * Large metal gate paintings	Works with ordinary natures in daily activities in field. * Grass cutting, weed removal * Minor embankment repair * Minor greasing oiling * Trash removal from canal and pond
Repair	Works to recover facilities damaged by disaster or serious accidents.	Works to repair facilities to avoid functional disorders ro harms to be occurred if not conducting the works, which shall be conducted with professional engineering. * Repair damaged parts of facilities of primary, secondary or tertiary canal * Repair major permanent facilities like concrete bridge, revetment, intake weir and etc. * Repair wide range collapsed canals/embankments	Works to repair minor breakdowns or defects like exchanging few bolts & nuts, with non or small expenses. * Changing alignment of quarterly canals.
Note: Classification of "Major" and "Minor" do not indicate physical scale, but magnitude or special or professional knowledge or technology requirement. Also distinguishing with fund requirement. So "Minor" class indicates works which is manageable by ordinary. Commonly used "Rehabilitation" seems to indicate "Repair" and "Reconstruction" in the above table.			

(4) O&M Policy Direction and Allocation of Responsibility

In 1987 the Government issued a Policy Statement for Irrigation Operation and Maintenance (IOMP), concerning O&M funding, institutional strengthening and the cost recovery of O&M programs. Several projects, with the objective of achieving sustainable irrigation infrastructure through EOM and thus supporting IOMP, were designed and implemented as described in Sub-chapter 3.2, including the following:

- World Bank projects – the Irrigation Sub-Sector Projects (ISSP-I & ISSP-II) and the Java Irrigation Improvement and Water Resources Management Project – Irrigation Development and Turnover Component (JIWMP-IDTO).
- ADB projects – Third Irrigation Sector Project (TISP) and the Integrated Irrigation Sector Projects (IISP-I & IISP-II).
- Other agencies (JICA, Aus-Aid etc) - Construction projects included proposals for the introduction of O&M, Water User Association (WUA) formation, strengthening and development and training activities.

These projects were designed to:

- improve the condition of irrigation systems through R/U,
- ensure adequate O&M funding,
- improve the quality of O&M,

- strengthen institutions involved with O&M,
- transfer responsibility for O&M of smaller schemes to the beneficiaries,
- implement an O&M cost recovery process, the Irrigation Service Fee (ISF),
- introduce the principle of river basin/catchment water management.

O&M requirements of irrigation systems were divided into areas of responsibility, as follows:

- Main irrigation and drainage system infrastructure.
  O&M of the main irrigation system infrastructure, the head-works, primary and secondary canals and drains inclusive of all structures, remained the responsibility of MOPW. This area of responsibility extended to 50m downstream of the tertiary turnout.
- Tertiary unit irrigation and drainage system infrastructure.
  O&M of the tertiary unit infrastructure (design guideline of some 50ha to 100ha) remained the responsibility of the farmers through the democratically or traditionally elected WUA. Responsibility included the maintenance of the tertiary canal and drain plus all quaternary canals, drains and structures. Water distribution or operation was the responsibility of the WUA through the farmer elected/chosen foremen and gate-keepers – (*Ulu-ulu, Ili-ili or Ketua Blok).*
- Small scale irrigation schemes less than 500ha.
  O&M of small-scale irrigation schemes up to 500 hectares (farmer constructed, village constructed, pump scheme or schemes constructed by Government and where ownership has been handed over to the village or farmers) would be the responsibility of a WUA. WUA formation would be the responsibility of the farmers within the irrigation area and whose area of responsibility is defined by the boundaries of the irrigation scheme.

The above division of responsibilities was the beginning of continued Government policy aimed at the end user, in the majority of cases farmers, supplying both labour and finance for the upkeep of irrigation infrastructure. It was also the first attempt to implement policy focusing on the large-scale turnover of irrigation areas (tertiary unit and small-scale schemes) to the farmer end users.

Numerous programs and projects were implemented to speed up the implementation of O&M policy, as follows:

- Efficient Operation and Maintenance (EOM) of main system irrigation,
- WUA formation and development,
- Irrigation infrastructure R/U,
- Irrigation system turnover (*Penyerahan Irigasi Kecil or PIK*),
- Needs Based Budget (NBB) methodology for O&M – proposed and implemented in 1992,
- Training programs directed at government staff at all levels and also to WUA and farmers.

Implementation of these projects commenced in 1987 and continued through the 1990s, with additional projects coming on stream during the period. Most projects achieved reasonable success during their implementation period, but once completed, there was little sustainability; farmers failed to implement adequate O&M and system condition rapidly deteriorated.

Two additional factors contributed towards the problem; these included insufficient Government funding for the O&M of those parts of the irrigation systems which remained its responsibility and an apparent resistance by some within MOPW to the IOMP objectives.

There are many references, primarily from the World Bank and ADB, detailing the probable causes for the lack of success of IOMP. In ref ADB [11] it is stated that 'IOMP has not lived up to expectations and its overall results with respect to ISF, institutional strengthening of WUA and improved maintenance have been less than planned'. The issues still remain the main ones which need to be addressed; as follows:

[11] Participatory Irrigation Management in Indonesia: Lessons from Experience and Issues for the Future", ADB.1996

- Government funding and management of O&M programs,
- Cost recovery of O&M budget,
- WUA formation and development,
- O&M and WUA training programs,
- Extension and follow-up government services to WUA,
- Institutional and bureaucratic competency.

Since the Presidential Instruction No.3, 1999,[12] there has been a change in Government's irrigation management policy that impacts on farming communities, on WUA and on the achievement of EOM for irrigation systems. Past policy related to the turnover of irrigation management responsibilities to WUA at the tertiary unit level, the village irrigation level and small-scale schemes of up to 500 ha. The Instruction specifies that – 'The regulation of Irrigation Management in stages, selectively and democratically to the WUA by the principle of: one irrigation network (system) for one management unit, and for irrigation networks (systems) not yet delegated (turned over) to the WUA, their management and financing shall be conducted jointly by the Government and the WUA through joint management until they (irrigation network) can be fully delegated (turned over) to the WUA.

This policy reform envisages the implementation of a system of turnover whereby the farmers and other beneficiaries, through their WUA, would be responsible for the O&M of all irrigation infrastructure inclusive of both secondary and primary canals and structures. This policy applies to all irrigation systems be they traditional, simple, semi-technical or technical.

Successful irrigation management turnover, requires the acceptance of the farming community and hence the participation of the farmers at all stages of the irrigation turnover activities. The new policy stresses farmer participation in the turnover activities, to empower (i.e. strengthen, develop, educate, legalize) farming societies, through their democratically and independently established WUA, to manage, maintain and operate irrigation systems. From 1987, the policy was that WUA would to be empowered through farmer participation but, in fact, the formation and development of WUA has generally been a top-down process with little farmer and community participation.

From experience gained from O&M programs, WUA development and turnover, during the 1990s, it appears that Government has realized that Irrigation Management Turnover has to be a slow and deliberate process. Hence, published guidelines relating to the reformed irrigation management policy state, 'that it should be conducted selectively, gradually, democratically and must consider the capacity of the farming community and local existing WUA'. New irrigation policy application promotes the bottom-up approach from the farmers/water users and instigates a 'top-down' approach from Government in relation to guidance and direction, stemming from farmer community requests.

Implementation of the policy of one irrigation system - one management, through end user participation, allows the end-users to implement management systems that take account of their local community, cultural, religious and traditional concepts and to combine them with the appropriate technology. From this the farmer community will, hopefully, be able to achieve the requirements and needs of the end-user and, at the same time, satisfy Government requirements regarding sustainable agriculture. The associated top-down approach is to assist, strengthen, develop and empower the formation and growth of the management structure beginning with the participation of the end-user at the farmer level.

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[12] Presidential Instruction, No 3, 26 April 1999, Irrigation Management Policy Reform. (Ref: "General Guidelines for Irrigation Management Delegation (PPI), 30th August 1999".(BAPPENAS), Department of Internal Affairs (DEPAGRI), Department of Public Works (DOPW).

The implementation of the new policy of irrigation management reform still has to consider the measures mentioned above. The above issues were part of previous Government policy and still remain the backbone for the achievement of successful EOM. It is, therefore, necessary to consider the past history of IOMP as the successful implementation of the new policy will only be achieved if the lessons of the past are taken into consideration.

(5) Government Funding and Management for O&M Programs

As of March 1997, the Government policy with respect to O&M financing was according to Ref:[13]:

- to phase out subsidies for O&M
- to phase out *Anggaran Pendapatan Belanja Negara* (APBN) central government financing and subsidization of the Provincial Government's budget, *Anggaran Pendapatan Belanja Daerah* (APBD),
- to decrease or discontinue the use of loan finance,
- to finance an increasing proportion of O&M financial budgets through ISF,
- to channel all Government O&M financing through BANGDA, in the Ministry of Home Affairs, for onward distribution to BAPPEDA, at Provincial and Kabupaten level. This might include any future loan financing (if any) of O&M.

The policy direction for O&M funding is still applicable under the new policies of decentralization and autonomy (1999) even though the source of funding may alter according to how the provinces and regional governments raise their revenues. It is not firmly established to what extent the Central Government will financially assist; in 2000 it appears that approximately Rp 30,000 /ha will be provided from this source.

Up until the policy changes of 1999, it was proposed that future O&M funding would be channeled through the APBD with ISF being the source of funding. (Refer Section 3.2.4). It should be noted, when compared to the realistic costs of O&M discussed below, that past and current ISF tariffs fell well short of the full requirement.

Prior to 1992/93 when the Needs Based Budget (NBB) concept was formulated and introduced for the planning of yearly O&M, budget planning mechanisms were unclear. The responsibility for budget planning and the implementation of O&M programs lay with the Provincial Irrigation Service (*Dinas Pengairan Provinsi*), where average per hectare estimates were prepared. Following the introduction of the NBB system, as used by the World Bank funded ISSP Projects, a system was implemented aimed at delivering more accurate budget estimates.

This system followed a procedure of a walk-through of the irrigation system by the technicians (*Juru Pengairan*), a determination of requirements and a calculation of costs. This was submitted to the Sub-District Irrigation Office (*Ranting Dinas*) for assessment and following compilation, on-forwarded to the District Irrigation Office (*Cabang Dinas*) and thence to the Provincial Irrigation Office for clarification, agreement and allocation. In those provinces where such projects were implemented, the technicians were trained in the concepts of walk-through and the various maintenance works classification, such as preventative, routine and periodic. In other provinces where O&M training was not implemented, there was limited understanding. Although NBB served as a useful tool for realistic

[13] ADB Technical Assistance TA No. 2588-INO, "Northern Sumatra Irrigated Agriculture Improvement Project", Volume 4, Annex I – 'O&M Financing and ISF', Binnie & Partners (Overseas) Ltd. plus associated consultants, March 1997.

O&M budgeting, its value was somewhat impaired by the fact that there was not always a clear distinction made between maintenance and rehabilitation budget requirements.

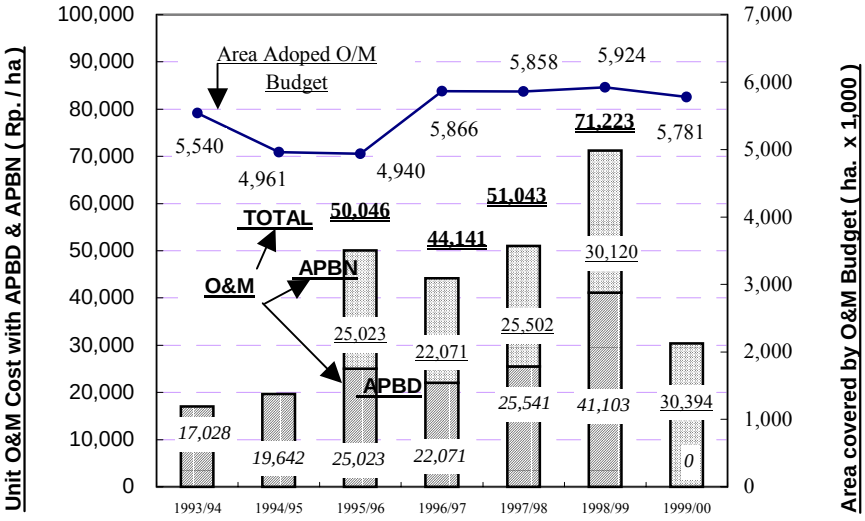
The Government has two financial programs for O&M, which are classified by source, one is *APBN* (*Anggaran Pendapatan dan Belanja Negara*), prepared by the Central Government and the other is *APBD* (*Anggaran Pendapatan dan Belanja Daerah*), by each provincial government, for conducting O&M activities. Objectives of those financial programs are recognized that APBN is for minor rehabilitations or major maintenances which provincial governments hardly owe the obligation due to lack of finance. Besides APBN, APBD is recognized widely that the fund is used for personnel expenses of officers in each province. *Bangda* has been in charge of appraisal and monitoring the disbursement of the budget. The followed table is a summary of series of disbursed O&M costs originated by APBN and APBD.

Area and Unit O&M Cost by Adopted APBN & APBD

Descriptions	unit	1993/1994	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000
Area Adopted O&M	x 1,000 ha	5,540	4,961	4,940	5,866	5,858	5,924	5,781
Disbursed APBD	Billion Rp.	94,334	97,448	123,622	129,466	149,622	243,497	N.A.
Disbursed APBN	Billion Rp.	N.A.	N.A.	123,625	129,466	149,623	180,150	175,713
Unit O/M Cost by APBD	Rp./ ha	17,028	19,642	25,023	22,071	25,541	41,103	N.A.
Unit O/M Cost by APBN	Rp./ ha	N.A.	N.A.	25,023	22,071	25,502	30,120	30,394
Total unit cost	Rp./ ha	N.A.	N.A.	50,046	44,141	51,044	71,223	N.A.

Note. Source: The Ministry of Home Affairs
*1: Budget covers Lowland field and Upland field
*2: Acreage consists of Lowland field and Upland field.

During last seven years O&M budgets disbursed by the Government have increased gradually from Rp. 34,000/ha to Rp. 71,000/ha. In reality, having taken account of inflation they have been reduced. Record on actual objectives for disbursement is not available at the Ministry. It is said that the fund was adopted routine operation and maintenance works at provinces.



Area and Unit O&M Cost Adopted APBN & APBD

Source : Ministry of Home Affairs
Note : Acreage consistes of lowland field and upland irrigation field.
Total O&M cost is only 4 years available from 1995/'96 to 1998/'99

Sources of APBD are 1) Funds distributed by the Central Government (*INPRES DATI-1* and BANGDA managing *MENDAGRI*), 2) Funds originating from land tax collected by local provincial government (*PBB*), and 3) Revenue from provincial governments (*PAD: Pendapatan Asli Daerah*). Funds from the Central Government (*INPRES DATI-1 and MENDAGRI*) has amounted to more than 90% of the total whilst funds provided by the provinces (*PBB* and *PAD*) has been sharing the remained respectively. It means that fund disbursed for O/M are virtually all from the Central Government, whilst those from provincial governments cover only a very small proportion.

Amounts of APBN and APBD might be a reference point how much the Government has been owed the burden for O&M and how much the financial burden which the Government intends to release through O&M turnover program as background of the policy.

(6) EOM Cost

In the absence of hard information on the real cost of O&M, two sources have been used, one being a study conducted during the TISP Project in Aceh[14] and the other being the O&M cost estimates derived during the preparation of the "Northern Sumatra Irrigated Agriculture Improvement Project"[15].

These cost estimates provide a breakdown of the activities involved in operating and maintaining an irrigation system, classifying the costs into administration, operation, routine, periodic and emergency maintenance. Whilst the costs estimated would differ from scheme to scheme, it is believed that the basis for cost estimation is sound and that the totals derived give a fair indication of the average cost which would apply for many schemes throughout the country.

EOM estimates should take into account the following:

- Operational costs, covering wages and salaries and administration costs related to gate operation and the equitable supply of water to farmers.
- Maintenance costs based on the following descriptions;
  * Routine maintenance is the work carried out on a daily, weekly or monthly basis dependent on the condition of degradation between each routine program. Activities include the removal of aquatic weeds and vegetation, embankment repair, trash removal, structure and lining repair, greasing, oiling and painting of structures and gates.
  * Periodic, Seasonal and Annual Maintenance, is commonly undertaken by a labor or maintenance team or by contract. It is inclusive of all items listed above under routine maintenance but which are too large or which require too wide a scope of works to be considered as routine, such as structural and gate damage repair, preventative maintenance and canal lining repair. It also included sediment removal.
  * Emergency Maintenance, covers those works that must be carried out promptly when the need arises, such as failed gate repair, failed embankment repair (washouts and collapses), and failed bridge or major structure damage. An allowance should always be included in O&M budgets to satisfy these emergency works.(Major damage inflicted by a natural disaster, i.e. a flood or earthquake has in the past been paid for from Government emergency funding and as such costs can be expected to be large, this form of emergency budget should not be borne by WUA).
  * Headworks Maintenance is a regular and periodic component which is generally controlled by a weir or river off-take gatekeeper.

The 1992 Aceh Study estimated that the yearly costs for operation of kabupaten and kecamatan offices,(Kabupaten and *Ranting Dinas*), gatekeepers etc. inclusive of administration was US$ 5.25/ha/year while the combined maintenance cost was US$ 21.75/ha/annum, giving a total of US$ 27.00/ha/year. The most costly items and time consuming tasks of the maintenance program were:

- Removal of sediment : US$ 6.80/ha/year
- Routine vegetation removal : US$ 5.40/ha/year
- Repair and replacement of gated structures : US$ 4.20/ha/year

[14] Budgeting of Operation and Maintenance for Irrigation Schemes. A Case Study in Aceh Province. J Horner, Institute of Irrigation Studies. Southampton University, UK. 1991

[15] ADB Technical Assistance proposal "Northern Sumatra Irrigated Agriculture Improvement Project" of 1997,

By comparison, the estimates prepared for the 1996 Northern Sumatera Study, inclusive of provincial operational costs for EOM cost is US$ 27.20/ha/annum. Additionally, this proposal estimated that tertiary unit EOM would be equal to approximately US$ 8/ha/year based on the assumption of paid labor and negligible *gotong-royong* (mutual self-help).

Some care is required when projecting these estimates into current prices; since both of these estimates were prepared, there have been major changes to the value of the rupiah. The prices of some items, such as steel and cement, have increased very substantially, whilst for those of other items the increases have been less significant. A detailed re-calculation of the original estimates show that a realistic estimate of the real cost of O&M (excluding tertiaries) would be approximately Rp. 120,000, or around US$ 15, at current exchange rates. Whilst significantly greater in rupiah terms, it can be seen that this is considerably less in US$ terms, than it was in 1992 or 1996.

Hence under the requirements of INPRES No.3, 1999 for WUA and farmer autonomy, it is not unrealistic to expect farmers to cover the cost of EOM for tertiary, secondary and primary systems to a value of US$15 to 20/ha/annum. The table below, "Realistic Cost Estimates for EOM" lists the associated costs from the above discussion. EOM costs for each individual irrigation system will vary, dependent on whether the system is either simple/traditional or semi-technical or technical. It would not be unrealistic, based on the above studies, to apply average estimates of some US$20/ha/year to all Indonesian irrigation systems, inclusive of tertiary unit. Gerards,[16] indicated that O&M costs, exclusive of tertiaries, would lie between US$12 and 25/ha/annum.

Apart from the under-funding of O&M, the actual manner in which the funds were utilized is also thought to have contributed significantly to the rapid decline in irrigation infrastructure condition. It has been estimated that of the funds allocated, some 40 % was utilized for irrigation department employee salaries, 20 % was used for the purchase of materials, equipment etc, and the remaining 40 % was allotted for O&M but much of which was spent on construction and rehabilitation, such as canal lining. This meant that very little was spent on regular or periodic maintenance. Wherever the allocated budget was less than the total estimated requirement, the fixed amount taken for salaries, represented a greater proportion of total expenditure.

Because of inadequate funding and inappropriate utilization of O&M funds, it has become necessary to regularly provide heavy maintenance or rehabilitation works to many of the irrigation systems.

3.3.2 O&M under WUA

(1) Traditional Community Gathering of Farmers

Presidential Instruction No.2, 1984 on Guidance of WUA (P3A) is thought to be the first official document which refers to Water Users' Association (P3A*: Perkumpulan Petani Pemakai Air*) and from the second half of the 1980s, Government's interest in WUAs gathered momentum.

Instructions issued from the Central Government were conveyed through the then concrete administrative channels with Top-Down manner to *Desa* level. Procedure taken for establishing WUA is 1) Gathering members of then existing local community (similar to *Kurlahan* area or *Kelompok Tani)* and appointed or let them select a leader by each cell group. Then grouping those leaders into one unit

[16] Irrigation Service Fee. Irrigation Management Transfer. JLMH Gerards, 1995

along a one tertiary canal as one organization to form a unit WUA. Most of existing WUA were formed and listed officially with such procedure. One WUA is formed by one tertiary canal and its acreage is about from 50ha to 150ha or so. Hence one gathering of farmers as one cell in a WUA might be recognized as a block of *Kelompok Tani* (or say "quarterly block"), which is back grounded with their own small community. Chairman of a WUA is called "*Ulu-Ulu*" who is said to be elected among the members and certified by head of village. Board of a WUA is formed with the chairman, secretary and treasurer basically and owes tasks to coordinate distribution of irrigation water and O&M of their tertiary canal.

A point to notice here is that a then WUA was formed from view point of Government's necessity, not from farmers' necessity originally. Many cases are to be aware in the field that still a farmer does not recognize WUA itself or confuses with *Kelompok Tani* or their own traditional local gathering. Due to the procedure adopted at that time

It seems better to recognize that local names of traditional water users' association / gathering are not Water Users' Association but their own neighborhood association / gathering handed by through generations. In such local association water management is just one of their daily activities, not aiming water management only. They are gathering and discuss on ceremonial occasions, group works, and their welfares. Farmers' gatherings so called Mitra Cai, Subak, etc. are covering quarterly area mainly, not covering whole for WUA area. Actually their daily lives are not covering a tertiary canal based area all, but only quarterly canal base area. Such gatherings of farmers have been promoted by their need-base and managed with their own nature in long period by today. They have been paying a part of rice harvests as membership and adopted for disbursements under their decisions. Activities are covering all of their welfare, not only for water management aspect. Hence it seems that a WUA is like a just Government's organization similar to a cell of Desa administration and not being familiar with farmers. JICA Study Team could not identified WUAs in the field even though listed in an official inventory. It might be a reference point how much farmers are recognizing or being familiar with WUA. It seems that the policy has never been saturated or being accepted well by farmers, even though the Government has been pouring efforts / investments by present.

(2) Formation and Development of WUA

Three Government agencies have the mandate and responsibility for WUA establishment, (Presidential Instruction INPRES No. 2, 1984):

- Ministry of Home Affairs (MOHA) is responsible for the institutional aspects
- Ministry of Public Works (MOPW) is responsible for irrigation technical aspects
- Ministry of Agriculture (MOA) is responsible for agricultural aspects

Up to 1994, institutional development was the responsibility of the MOHA and WUA development programs, including training were the primary responsibility of the Directorate of Water Resources Management and Development (PPSDA). After 1994, when the Director General Water Resources Development (DGWRD) was reorganized with the establishment of six directorates, no one directorate had the major responsibility and authority for institutional development programs. PPSDA now became a marginal player in institutional development and as such has no authority to implement program activities.

Of the six new directorates, three BINLAK (*Pembinaan Pelaksanaan*) directorates were established, one for each of the west, central and eastern regions of Indonesia. All institutional development

inclusive of WUA formation and development was, however, the responsibility of the BINLAK. This positioning of responsibility for WUA development within a directorate primarily orientated towards civil works, has not strengthened Government's purpose and commitment to WUA development and the hand-over of O&M responsibilities to WUA for small-scale and tertiary unit irrigation systems.

The IBRD stated (1999) that "inadequate attention is being paid by irrigation agencies to WUA capacity-building and its involvement in design, investment decisions and contractor performance". Discussions with both farmers and WUA committee members during study field visits have confirmed the lack of communication, guidance and assistance provided by Government departments to WUA development.

The purpose of WUA formation and development is;

- to prepare a cropping plan and calendar with respect to seasonal water availability and requirements,
- to introduce a schedule of water supply and water distribution proportionate to WUA areas,
- to organize tertiary, village scheme or small scale irrigation scheme canal maintenance and repairs,
- to educate WUA members in the economic and agricultural benefits of good water use, and
- to collect ISF and WUA member payments (*iuran*) from members.

WUA development was to be strengthened through the training program (*PTGA – Proyek Tata Guna Air*) which is explained in detail, below. Part of this program for further strengthening of the WUA organization, following establishment and the receiving of the training component, involved the procedure known as 'follow-up activities' or *kegiatan tindak lanjut – KTL*. These KTL activities were to be carried out by a group of people, including the Juru Pengairan, Kepala Desa, PPL and, in some instances, an informal leader under the direction of the *Camat*. This group was to implement 'walk-through' programs with the WUA for O&M guidance, assist with administrative problems and to provide guidance in the application of the WUA responsibilities mentioned above. In the majority of cases, however, once the training was completed insufficient funding was made available to implement the KTL and inadequate attention was paid to the development and strengthening of WUA. As would be expected, only a small percentage of WUA continued as an active and effective organizations.

From the beginning, WUA formation was supposed to have involved a bottom-up approach, with the farmers being the instigators and planners in the selection of WUA committee members through a democratic approach, i.e. by the farmers, from the farmers and for the farmers (farmers being the water-users). This concept was, however, only given lip service by most Government departments and officials. An example of the top-down approach is the procedure of WUA development which was used in East Java where the Provincial Government instructions were that, "…each village was to have a WUA (*HIPPA – Himpunan Petani Pemakai Air)*". Consequently, the head of each District instructed each village head to form a WUA. As found during field visits during this Study, many farmers within the irrigation boundaries of the WUA do not know or understand what is the function of their WUA.

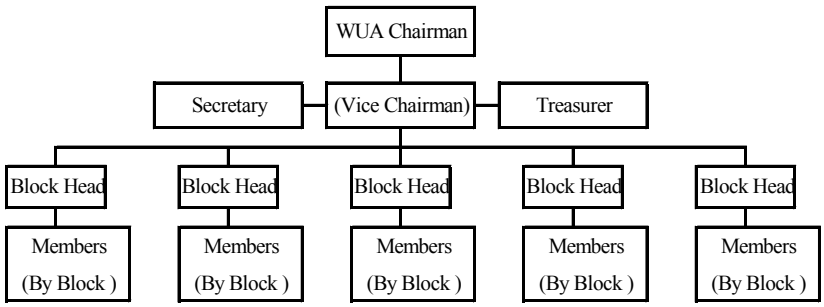
The regulations and legislation relative to WUA formation are based on a standard format and, as such, are not well suited to allow inclusion of the farmers' traditional or ethnic system of irrigation management. The methodology was established to produce a standard WUA implementation system, to assist the many Central Government requests for the formation of WUA, and to speed-up the process of turnover of O&M responsibilities to the WUA.

A positive step towards the achievement of WUA sustainability and recognition was achieved through MOHA Decree No. 12, 1992, where WUA were given the opportunity to become legal entities under Indonesian law, thus enabling them to open bank accounts, enter into contracts, court actions, receive government assets and have access to commercial credit facilities. Whilst this was an advantage, actual implementation requires substantial input from the field extension group to assist with the application, registration and associated requirements. Most WUA committees do not understand that they can attain a legalized corporate status, but even when they do, the process of attainment is bureaucratically slow, where the process of application has to be channeled through the *Kecamatan* and *Kabupaten* offices. Since the 1992 Decree only 501 WUA have achieved legal status.

Up to 1998, 38,131 WUAs were formed, of which only 7,229 (or 19%) were classified as developed (Table 3.3.1).. The overall target was 106,000. Considerably more effort will be required to complete the development process before the concept of WUA Empowerment can be said to have been established successfully. With regard to the WUAs visited between July and October 2000, during the field studies conducted in the five provinces of this JICA Study, between 7 and 10 % of WUAs were active, effective and operational.

(3) WUA Management

Almost all of WUA has an organization system as shown on the diagram in the right hand side over the country. Key members of WUA board, chairman, secretary or treasurer, are usually selected dominant person in the area, hence there are many cases that they are in charge of board members of other local organization like member of LKMD, certain crop associations, KUD, Kelompok Tani.



Typical Organization Chart of WUA

Note : Position of Vice chairman is a case by case.
Generally each block head will owe certain function like " Technique In Charge ", " Extension In Charge ", etc.
Number of "blocks" are dependable by condition of each WUA.

They are gathering mainly once a month to define necessary activities and monitoring like crop selection, setting-up cropping schedule, maintenance works of irrigation system, water distribution criteria, WUA fee collection and others regularly. Even though their activities are independent actually local administration officers are guiding or assisting for aspects of suggesting subjects of discussions, provision of schedules, necessary designing for facility maintenance, agriculture extension works and so on.

Water allotment along tertiary canal in draught season is one of their main issues to discuss. WUA members are recognizing merit of WUA commonly as a place of discussion, especially for the aspects of water allotments in dry season. Also subjects of setting countermeasures against flood damages, damages by pest and rats are to be discussed.

They collect membership fee of WUA, which is not ISF, with cash or a part of harvested rice. Range of the amount is from Rp.17, 000 to 25,000/ha/harvest, or donation of rice from 30 to 50 kg/ha/harvest,

depending on situation of WUA. (Some cases are there, that the amount / rice donation is defined per year only). Such donations (WUA member fee) is just adopted only for rice production. They are not adopting for *Parawija* crop, excluding *Tobacco* cropping. Farmers in Jawa and West Nusa Tenggara have been expanding *Tabasc*o planting due to its high market prices than other crops. Also available to plant any places without consideration of soil fertility. WUAs in those regions are charging quite higher charges comparing with fee for rice production, with range from Rp. 200,000 to Rp. 250,000 /ha/harvest. Those charges of *Tobacco* are to be paid to local Public Work office. That situation is conspicuous in East Jawa and West Nusa Tenggara. The JICA Team could meet with no WUA that is collecting ISF.

(4) Federation of WUA

INPRES No.3/1999, as discussed above, presents the principle of "one irrigation system – one management". This is the concept behind the formation of WUA Federations, be they at secondary or primary system level, i.e. a combination of *Gabungan and Induk.* Most efforts poured by Government to enhance formation of WUA have been approaches of O&M at tertiary block level, not taking care of secondary and primary levels so deeply. The Government's intension of setting-up WUA federation is to let them owe O&M of irrigation system by themselves.

Conceptual task demarcation between Government and farmers is quite obvious; 1) O&M of tertiary level is to be owed by unit WUA completely. 2) O&M for Secondary and Primary level is to be owed by both of farmers, WUA federation, and Government. Now terminology " Joint Management" is introduced there for the discussions, means if WUA federations requires some assistances as conclusion of their examining and discussion for keeping proper O&M, Government will assist some parts of O&M activities, including some financial contribution. But such idea is still conceptual level, never been developed as clear implementation plan.

Conceptial Task Allocation in WUA Federation Hierarchy

Irrigation System Hierarchy	Federation Hierarchy	Tasks to be owed
Primary Level	Primary level WUA Federation (IWUA)	O&M of Primary level (+Joint Management)
Secondary Level	Secondary level WUA Federation (WUAF)	O&M of Secondary level (+Joint Management)
Tertiary Level	Unit WUA	O&M of Tertiary level

Whichever system is implemented will be scheme specific and empowerment will involve an evaluation of the irrigation scheme, a response to and inclusion of farmer and community requirements and consideration of the WUA system that the farmers see as being most appropriate. It will be necessary to evaluate every existing unit WUA, form new WUA if the farmers see them as being necessary, and slowly and steadily facilitate the farmers towards empowerment of themselves, of their unit WUA and of their WUA Federations. The success of the "one irrigation system – one management" principle is dependent on a strong, willing and committed farmer base towards the establishment of developed, strengthened and empowered unit WUA. A strong unit WUA base will make the process of empowerment of WUA Federations a much easier task. If in the application of the reform policy order to facilitate rapid system turnover, a committed participatory approach from the water users (farmers) is neglected, implemented too hastily or ineffectively, the reform policy is likely to fail.

Under the reform policy of participatory approach, the empowerment of the WUA Federation is the last step in the process of sustainable irrigation systems and agriculture through committed EOM.

3.4 Training, Monitoring and Evaluation

3.4.1 Irrigation O&M and WUA Training Program

(1) Previous Training Programs

There have been a number of training programs established to improve O&M and WUA development. Since 1987, the training of government officials, WUA committee members and farmers with respect to WUA activities has been coordinated through the PTGA *(Program Pengembangan Tata Guna Air* – Water Use Development Program*)* training project. In 1990, the training of all government irrigation officials and staff has been directed through an EOM training project, the Staff Training, Efficient Operation and Maintenance (EOM) Course.

Both courses were established on a concept of prepared training modules directed towards the education, knowledge and skills of individual groups of participants. The PTGA modules were prepared by the Government in 1987. They are an excellent presentation of the aspects of O&M, on farm management (OFWM), agriculture and WUA administration that are required by the participants particularly at the Kecamatan, village and farmer level.

The EOM modules, developed by the Government in 1990, are again an excellent presentation of all the necessary aspects for the field implementation of EOM. The modules cover all aspects of irrigation operation, maintenance, administration and include the agricultural irrigation requirements for plant water relationships to determine irrigation requirements.

In parallel with these training programs, many loan and aid funded projects have included training development. A number of these projects have gone ahead with training, without reference to the above PTGA & EOM programs, and as such have possibly wasted both time and money. One of the reasons for this has been the poor coordination between Government departments and agencies and also the inclusion of training programs within the terms of reference, where there has been no reference to the PTGA and EOM training programs.

Both the EOM and PTGA programs involved the various levels of government, in particular the Central and Provincial levels, in the development of syllabus and methodology. Both systems included sections for the training of trainers for the purpose of reaching the actual implementers of EOM and WUA development. The systems were established with an excellent base of material and proposed methodology. Whilst the concepts, content and methodology were good, it was with the implementation of the programs were the problems occurred. In particular the failures occurred because the PTGA system did not train or educate in terms of the WUA and farmer's needs and with the EOM training, there was a lack of on the job training for practical application.

(2) EOM Training Program

This program was directed mainly at the officials and staff of the irrigation department of *Dinas Pengairan*, with a special goal of improving the O&M capabilities of the officials and field staff at the *Ranting/Cabang Dinas* level. The success of the program can be gauged as moderate. A lack of Government funding reduced the area of coverage and several provinces, mostly those outside Java, were not included except where the training was included as part of an irrigation project.

The participants who received the training, inclusive of on-the-job training, particularly those at field level and who were directly responsible for O&M have gained considerable competence in planning,

budgeting and implementing EOM programs. Their ability to achieve sustainable O&M through the implementation of routine and periodic maintenance programs is limited by inadequate Government funding and not by an inadequacy in the training provided by the EOM training program.

The major failure of the EOM training program was the lack of coverage and the failure to implement on the job training for practical application. Where on-the-job training has been completed, field-staff have become confident in applying operation and maintenance techniques.

(3) PTGA Training Program

The PTGA training program has been successful in terms of the numbers people trained especially at the Provincial, Kabupaten, Kecamatan and Village levels. The system of training divided participants into Groups relevant to their areas of responsibility. The training was implemented in each Province in the following manner:

- an Expose for Provincial Government officers,
- a Group A Workshop for Provincial and *Kabupaten* Government officers,
- a Group B1 training course for *Kecamatan* Government officers,
- a Group B2 training course for *Desa* level officials,
- a Group C training (technical sssistance) course for WUA leaders and key farmers,
- a Follow-up Activities (*Kegiatan Tindak Lanjut – KTL*) for WUA leaders and key farmers

The modules were directed at the Group B and Group C participants. PTGA was successful at training the trainers so that those trainers who were delegated to train participants at the lower levels were well versed in their field of expertise, i.e. institutional and law, irrigation technical and agricultural technical.

(4) Review of PTGA Program

The PTGA program cannot be considered as being completely successful at the WUA and farmer level, even though the program reached every Indonesian province. The WUA and farmer training initially consisted of training the WUA Chairman, one or two WUA committee members and the WUA Irrigation Foreman. It was expected that these people would then impart their learning to the other WUA committee members and farmers. The system failed because there was no support given to the WUA to implement the training to farmers and following a reduction in Government and project funding, farmer participants were confined, in most instances, to the WUA Chairman or Irrigation Foreman only. This drastically decreased the benefits of training.

Farmer training was to be strengthened through a program of KTL. This extension was to be implemented through a field extension group (KPL*: Kelompok Penyuluhan Lapangan*), comprising the *Kepala Desa*, the *PPL* and the *Juru Pengairan*. In some instances an informal leader, to be selected by the *Camat* was also added to this group. The follow-up activities were to incorporate walk-throughs to assist with planning, implementation and budgeting of WUA, O&M programs. The KPL was to assist WUA with administrative matters, agricultural and irrigation technical matters.

Although donor and government reports state that PTGA has helped train thousands of farmers, on average approximately only one farmer per WUA received training. Reasons for its partial failure included the following:

- The implementation of the training to farmers was based on a perceived lack of farmer education rather than addressing the areas where farmers needed training and support,
- The content of the modules (curricula) were delivered in classroom and standard format, and did not take account of the particular needs of the farmers. Modules should have been selected as per

farmer requirements and presented accordingly,

- The *Desa* and *Kecamatan* field staff and farmers were subjected to a 40 hour week long classroom training sessions without any significant application of field level or on-the-job training,
- Government funding for the KPL and extension activities, through allocation to the respective Kecamatan offices was minimal or non-existent after project completion,
- The amount of book and record keeping proposed, whilst applicable to the level of recording needed for the financial and operational control of a semi-technical or technical irrigation system, is excessive at the WUA level. There are in excess of some 10 record keeping requirements to be completed by WUA,
- Village heads have an input to the KPL but WUA activities are just one of a number of village based programs for which they are responsible and as such they cannot always give much time to WUA affairs,
- The lack of PPL's technical knowledge regarding OFWM and O&M creates an unwillingness to become involved in WUA support activities.

The complete PTGA training program was target driven, i.e. a recording of people trained instead on the success of application of the training as indicated in the field by the numbers of efficient and well managed WUA. If the success of the PTGA system is based on the number of WUA organizations formed, developed, active and the effectiveness of application of irrigation system O&M, then the PTGA system has to be rated as rather unsuccessful.

There is some concern with the current thinking within KIMPRASWIL with respect to continued training activities under the new policy of "one irrigation system – one management". Although the PTGA training cannot be classified as successful, the modules developed are excellent in content and apart from the modules on law and regulations, they are still applicable. Some sections of MOPW have stated that these modules are no longer relevant. Similarly, the EOM modules contain excellent material. There is no need to produce additional modules, these modules should be used as the basis for further training to farmers, WUA, WUA Federations and their associated O&M staff, be they ex-PU or farmers. Correct module selection with respect to farmer and WUA training needs requests will be one of the steps in the direction of WUA empowerment through training.

KIMPRASWIL has suggested a possible method of implementing training to WUA and WUA Federations under the new policy. Again, this training proposal is along the lines of classroom activities based on a 40 hour per week timetable, with aspects of irrigation, institutional and agriculture divided into percentages delivered in a week. There would be three applications of the training to be given at the WUA level prior to each yearly crop season, i.e. 3 seasons per year. Details of the proposed training program are detailed in a paper presented in Jakarta, 17th July 2000 – "*Kebutuhan Pelatihan – Program Tata Guna Air (PTGA)* – Training Requirements for PTGA", by N. Darismanto, ME, *Kantor Menteri Negara Pekerjaan Umum – Meneg PU*.

It is suggested that such a system is one which tells the farmers what Government officials perceive that they need, rather than one which presents the training to the farmers with respect to their needs. This form of training is not appropriate in the early stage of empowerment of WUAs and WUA Federations. This training in technical skills can be implemented at a later date once the farmers and WUA understand their responsibilities with respect to O&M of the irrigation system. WUA empowerment needs an extensive support service through the application of extension services from *Dinas Pertanian*, *Dinas Pengairan* and BANGDA. This extension and guidance is required as on-the-job training, simple in presentation and targeted towards the farmer/WUA's needs and requests for assistance. Government funding towards these objectives is necessary. There is also a need for Government to organize the

management, development and empowerment of WUA under one department or section of government inclusive of the skills of laws and regulations, WUA administration, agriculture, irrigation and O&M.

3.4.2 Monitoring and Evaluation (M&E) System

(1) Objectives of M&E of WUAs

Monitoring is an activity to collect information and data of implementation of a program. Evaluation is an activity to analyze and assess collected information and data in order to see whether the program is implemented in accordance with the plan. Basically M&E is a part of management of on going program and post implementation of program. By M&E manager can see: 1) progress, direction and achievement of implementation of the program and 2) result and impact of completed program. More strictly, M&E is a control of management. Result of M&E can be used as an inputs for i) improvement of program, ii) improvement of direction, iii) acceleration of implementation of the program, and iv) feed back for improvement of policy concerning the program and other similar programs.

Monitoring and evaluating the performance of WUA or the methodologies of empowering WUA can involve a number of measurable criteria. A good M&E system is one that uses the least number of indicators which are capable of conveying an accurate indication of the situation or performance. The problem with WUA M&E is not a lack of systems, but rather, because a lack of resources, the ability to implement, the willingness to implement and the collection of a mass of data which tends to obscure, rather than highlight, the true situation.

The purpose of a WUA, in terms of the sustainability of irrigation systems and irrigated agriculture, is to deliver water to farmers in an efficient, timely way with equitable allocation, and to implement maintenance programs that return the irrigation system to or near to its original, as-built, condition.

If either criterion is not met, then it must be considered that the WUA is either not active or ineffective in its application. These simple criteria have not been monitored within the M&E systems developed for WUA evaluation in Indonesia.

(2) Present E&M System of WUAs

The M&E of WUA is based on 18 evaluation criteria grouped into six categories, namely WUA organization, water management, system maintenance, financial aspects, system physical condition and WUA guidance from Government after turnover. The full details of the methodology of the Monitoring and Evaluation – Post Irrigation Turnover are listed in Table 3.4.1.

The initial M&E methodology has two criteria that, when evaluated and scores allocated, can penalize a WUA for reasons that are beyond its control and are, in fact, the responsibility of Government. These criteria relate to WUA organization (not yet legalized via *desa* register, via *Camat & Bupati* register, up to Court register) and WUA guidance from Government after turnover. Both of these aspects need to be monitored but not to the detriment of the WUA evaluation. Past registration or legalization of WUAs has often been delayed because of bureaucratic incompetence at the local government level, i.e. some delays of up to 2 and 3 years. In addition, the current support given by Government to WUA following turnover has been recorded as negligible. Details of this lack of support have been reported within the Provincial and Central Workshops of this study.

(3) Proposed E&M System by IDTO

The present M&E methodology is simple and suitable for application to new WUA and turnover systems during the early stages of empowerment. It is suggested that this particular M&E system, apart from one or two basic shortcomings, is far better and less complicated than the later revised WUA, M&E system. This revised methodology was developed by WATSAL and the JIWMP - IDTO Project [17] (Table 3.4.2).

The proposed M&E methodology has revised the methodology but it is considered that the format now evaluates in greater detail and, as such, is too detailed for newly formed and developing WUA. It is more in tune with the M&E requirements of a fully developed WUA. Some of the minor evaluations will place a negative evaluation on the WUA when in fact a positive evaluation of that aspect can only be achieved after the WUA has gained experience through development and guidance, e.g. legalization of the WUA. Another example is the evaluation of the implementation of a cropping plan and the relationship to cropping intensity. The implementation and planning of a cropping plan can be the responsibility of WUA but to negative evaluate a WUA because of the non acceptance or non implementation by farmers is not necessarily an indicator of poor WUA.

Data on cropping plans, cropping intensities and yields is needed to ascertain trends and rural conditions and naturally there is a relationship between sustainable agricultural production and good irrigation O&M. The use of this criterion as an indicator of good WUA activity and effectiveness is, however, flawed. Cropping intensity is dependent on too many influences outside the control of WUA. For example, the price of rice and the cost of farming inputs plus the need for some farmers to supplement their rural income with other employment opportunities will affect cropping intensity. There are many farmers to produce the family rice requirement only and at a time when the farmer or family wish to plant.

With respect to the development of a suitable M&E plan, further investigation is necessary but current opinion is that the present M&E should be applied during the early stages of WUA development and turnover. Following the achievement of a high scored evaluation then the proposed M&E can be applied to what can then be classified as a fully developed and functional WUA. This should only follow after the M&E enumerator, be he a local government representative or a third party monitor, in consultation with the WUA committee, is satisfied that the WUA is capable of self-support.

The proposed M&E has included a numerator and it is suggested that this represents a third party. The initial M&E required signatures from the WUA Chairman and the *Juru Pengairan* as a representative of the *Ranting Dinas Pengairan*. This does not promote transparency. The M&E evaluation should be implemented by a third party, working in conjunction with both of the above operatives. A participatory approach of WUA committee members and others in WUA activities is a desirable goal of WUA empowerment but for M&E activities, there should be a participatory approach from WUA committee members in association with an uncommitted third party.

The participatory approach to M&E is being considered because, in the past, a substantial lack of M&E funding has reduced the effectiveness of M&E programs and the data are inconclusive and sometimes unrecorded. Placing the responsibility for M&E onto WUA is quite acceptable but the actual implementation and evaluation process should be under the control of a third party, employed either by

[17] Reference: "*Pedoman Umum Pemantauan dan Evaluasi (P&E) Kinerja Perkumpulan Petani Pemakai Air Secara Partisipatif*"

WUA or Government and WUA.

The employment of a third party increases WUA administration costs but the transparency of the M&E process is as important as the transparency of WUA payments, banking and WUA financial record keeping. It is not expected that costs would be excessive and they should be covered by member contributions; NGOs or universities could provide the service.

M&E needs an initial database from which the future referral of collected M&E data can be assessed and compared. With respect to as-built construction plans for irrigation systems, many *Ranting Dinas* offices do not have copies or are unable to procure the required data. For monitoring O&M performance, it is essential that the condition of infrastructure at the time of M&E be related back to the as-built condition. This presents an evaluation of the success or failure of the implementation of routine and periodic maintenance, indicates whether or not the WUA is active and effective and can provide a clear indication of the current condition of the infrastructure.

Field studies of the JICA Study Team has noted irregularities between the actual field condition of WUA and their respective irrigation systems and the information contained within reports produced from M&E data. There were, for examples, instances where WUA were classified as established and active, but in reality were found to be inactive. There were irrigation systems classified as efficiently maintained, through active WUA, but were seen to be in a state of disrepair. Field studies also produced M&E data that was up to 2 years out of date, as a consequence of the lack of government funding for M&E.

The M&E systems have not been used to direct the attention of irrigation managers (farmers and agency staff) towards the accomplishment of 1) equitable distribution of water, 2) effective application of routine, and 3) periodic maintenance. WUA and farmer participatory involvement in M&E could improve this situation.

The present and proposed M&E methodologies**,** allow for an evaluation of actual implementation of water distribution plans and the implementation of a maintenance plan. There is no provision to ascertain whether water has been equitable distributed amongst farmers located downstream, mid-stream and upstream of an irrigation system. There is provision for questions are water distribution to an irrigation block in the proposed methodology but again this does not address a core problem of WUA development, i.e. the satisfaction of farmers with their water allocation is relative to their positioning within the irrigation area, irrigation block etc. Such information is important because if farmers do not receive their correct allocation, then there is the increased possibility that they will not wish to pay the full water charge.

The same criterion applies to the effectiveness of maintenance operations. Maintenance is directly related to effective water delivery and hence knowledge regarding the condition of the irrigation system at the down, mid and upstream sites of an irrigation area or block is also important to WUA being sustainable through farmer willingness and cooperation. There is a need for these aspects to be further considered within the M&E methodologies.

Table 3.1.1 PPI (Irrigation Management Turnover)

Item	Description
1. Background	To follow up Irrigation Management Policy Reform.
2. Purpose and objective	a. To delegate irrigation network management from the Government to WUA. b. To enhance the efficiency and effectiveness of irrigation management.
3. Aims of PPI activity	a. Sustainable irrigation system. b. Autonomous, independent and rooted in the society of WUA. c. Improvement of society's prosperity.
4. Scope of PPI	a. Delegating irrigation network management in the form of canals and structures owned by the state. b. Award of water concession to WUA and other water users.
5. Management of turnover	a. The turnover shall be conducted after WUA institutional development has been conducted democratically). b. The delegation shall be conducted in stages, selectively and democratically. c. The Regent (head of local government) shall specify the turnover per irrigation scheme. d. The implementation of the delegation shall be officially administered. e. The turnover of irrigation management including the management authority to WUA shall be carried out by the Regent. f. Although the irrigation management has been delegated to WUA the Government shall be responsible for the conservation of the whole irrigation network and its utilization.
6. Criteria	a. Location of selected PPI to be closed to former turnover small schemes, not backward area, located within a district, adequate water resource, given priority to new irrigation areas, available access, well condition of irrigation system and simple operation. b. Institutions of WUA and WUA Federation (WUAF) have been established democratically and independently with clear legal status, ready to democratically receive the delegation and they have possessed the skills in organizational, technical and financial fields to be able and ready to manage an irrigation network. c. WUA/WUAF is able to discover the potentials of financial sources of the members.
7. Principles of approach	a. Participation approach b. Socio-technical approach c. Combination of top-down and bottom-up approaches. d. Dialogic and reciprocal approaches. e. Using principle of 'Environment Awareness'. f. Sustainable empowerment of WUA/WUAF.
8. Activity	a. Preparation activity including promotion of PPI program, training using PRA method to include society's participation etc. b. Delegation process activity including establishment and development of WUA/WUAF, preparation of 'joint management' between Government and WUAFs, preparation of O&M financing scheme, preparation of M&E activities, preparation of District Regulations and delegation process at the irrigation regional level. c. Post delegation activity including technical audit, technical guidance based on the request of WUAs.
9. Result of activities	a. Result of activity before delegation covering guidelines, materials for M&E implementation and regulations at district level. b. Result of activity after delegation including irrigation management by WUA, increased efficiency and effectiveness of irrigation management and autonomous WUA in sustainable irrigation system.
10. Funds	a. The sources of fund to finance PPI may come from APBN/APBD (National/Regional Budged), ISF, WUA contribution and farmers' self support, loan from lending agencies or other non-binding fund supports. b. Financing procedure could be as following: - The government with WUA defines the real needs of cost of irrigation management. - WUA collect ISF - The Government allocates fund for subsidy

Table 3.3.1 List of WUA with Status in Indonesia (1998)

NO.	PROVINCE	TOTAL OF WATER USER ASSOCIATION (P3A) WITH STATUS																REMARKS
		DEVELOPED/FUNCTION WELL				DEVELOPING/ACTIVE				DEVELOP YET/NOT ACTIVE				T O T A L				
		SBH	BBH	Subtotal	%	SBH	BBH	Subtotal	%	SBH	BBH	Subtotal	%	SBH	BBH	Total	%	
1	2	3	4	5	3/5	6	7	8	6/8	9	10	11	9/11	12	13	14	12/14	3/14
1	D.I. Aceh	6	4	10	60.0%	44	158	202	21.8%	2	510	512	0.4%	52	672	724	7.2%	0.83%
2	North Sumatera	0	20	20	0.0%	38	685	723	5.3%	0	442	442	0.0%	38	1,147	1,185	3.2%	0.00%
3	West Sumatera	5	319	324	1.5%	0	989	989	0.0%	0	800	800	0.0%	5	2,108	2,113	0.2%	0.24%
4	Riau	3	60	63	4.8%	0	80	80	0.0%	0	44	44	0.0%	3	184	187	1.6%	1.60%
5	Jambi	0	0	0	-	25	0	25	100.0%	0	928	928	0.0%	25	928	953	2.6%	0.00%
6	South Sumatera	0	0	0	-	0	188	188	0.0%	0	1,459	1,459	0.0%	0	1,647	1,647	0.0%	0.00%
7	Bengkulu	10	0	10	100.0%	37	0	37	100.0%	0	221	221	0.0%	47	221	268	17.5%	3.73%
8	Lampung	0	135	135	0.0%	0	856	856	0.0%	192	210	402	47.8%	192	1,201	1,393	13.8%	0.00%
9	DKI Jakarta			0	-	0		0	-			0	-			0	-	-
10	West Java	0	1,818	1,818	0.0%	0	3,280	3,280	0.0%	0	2,800	2,800	0.0%	0	7,898	7,898	0.0%	0.00%
11	Central Java	4	922	926	0.4%	0	2,688	2,688	0.0%	0	2,070	2,070	0.0%	4	5,680	5,684	0.1%	0.07%
12	DI Jogyakarta	0	57	57	0.0%	0	344	344	0.0%	0	305	305	0.0%	0	706	706	0.0%	0.00%
13	East Java	31	1,187	1,218	2.5%	0	3,548	3,548	0.0%	0	1,876	1,876	0.0%	31	6,611	6,642	0.5%	0.47%
14	West Kalimantan	0	0	0	-	0	18	18	0.0%	0	50	50	0.0%	0	68	68	0.0%	0.00%
15	Central Kalimantan	3	0	3	100.0%	32	74	106	30.2%	0	240	240	0.0%	35	314	349	10.0%	0.86%
16	South Kalimantan	0	27	27	0.0%	0	69	69	0.0%	0	71	71	0.0%	0	167	167	0.0%	0.00%
17	East Kalimantan	0	17	17	0.0%	0	21	21	0.0%	0	17	17	0.0%	0	55	55	0.0%	0.00%
18	North Sulawesi	63	85	148	42.6%	42	121	163	25.8%	5	12	17	29.4%	110	218	328	33.5%	19.21%
19	Central Sulawesi	0	233	233	0.0%	0	293	293	0.0%	0	220	220	0.0%	0	746	746	0.0%	0.00%
20	South Sulawesi	0	129	129	0.0%	43	1,247	1,290	3.3%	0	984	984	0.0%	43	2,360	2,403	1.8%	0.00%
21	South East Sulawesi	35	47	82	42.7%	51	68	119	42.9%	4	110	114	3.5%	90	225	315	28.6%	11.11%
22	Bali	215	1,396	1,611	13.3%	0	0	0	-	0	0	0	-	215	1,396	1,611	13.3%	13.35%
23	NTB	35	6	41	85.4%	0	644	644	0.0%	0	211	211	0.0%	35	861	896	3.9%	3.91%
24	NTT	11	176	187	5.9%	0	765	765	0.0%	0	430	430	0.0%	11	1,371	1,382	0.8%	0.80%
25	Maluku	81	89	170	47.6%	0	0	0	-	0	180	180	0.0%	81	269	350	23.1%	23.14%
26	Irian Jaya	0	0	0	-	0	3	3	0.0%	0	2	2	0.0%	0	5	5	0.0%	0.00%
27	East Timor	0	0	0	-	0	0	0	-	0	56	56	0.0%	0	56	56	0.0%	0.00%
	T o t a l	502	6,727	7,229	6.9%	312	16,139	16,451	1.9%	203	14,248	14,451	1.4%	1,017	37,114	38,131	2.7%	1.32%

Source: PU PPSDA

Notice: SBH : Already use the Law (Legitimated in local court of justice)

BBH : Not use the law (not legitimate yet in local court of justice)

Table 3.4.1 Post Turnover WUA Evaluation Scoring Method

Aspects	Sub-aspects	Score allocation	
1 Organization	Completion of WUA Board of Directors	0.40	1.50
	Completion of AD/ART (Articles of Association) and their perception	0.20	
	Presence of members in WUA annual meeting	0.40	
	Meeting frequencies of WUA Board of Directors	0.50	
2 Water allocation and utilization	Planting plan, planting pattern and its realization	(0.25+0.75)	3.00
	Water allocation plan, and it's realization	(0.25+0.75)	
	Regular meetings of technical irrigation officer/Ulu-ulu of WUA with the local Mantri Pengairan, and Ulu-ulu of WUA with the farmers	1.00	
3 Irrigation maintenance	Irrigation maintenance program	1.00	3.00
	Implementation of irrigation maintenance program	1.00	
	Irrigation rehabilitation and development plan, and it's implementation	(0.25+0.75)	
4 Financing	Collection of members' contribution[18]	1.00	2.50
	Expenses and it's administration	(0.75+0.25)	
	Financial report to WUA general assembly	0.50	
5 Physical irrigation condition	Building	3.00	6,00
	Canal	2.00	
	Supporting facilities	1.00	
6 Government program on WUA promotion and development	Technical promotion and development	2.00	4.00
	Need for technical assistance and it's realization	1.00	
	Need for physical assistance and it's realization	1.00	
Total (maximum)		20,00	

Ranking formula a total score of a turned over irrigation will represent it's progress

Total score (N)	Turned over irrigation progress rank
N less than 14	Developed (SB)
8 < N < 14	Under developing(SDB)
N more than 8	Not yet developed (BB)

[18] Translated from "iuran anggota". This may be confusing as it may means ISF and also contributory fee for WUA.

Table 3.4.2 Proposed M&E WUA Evaluation Scoring Method (1/2)

Aspect	Item	Indicator	Scouring		
			Scour	Max. weight	Total weight
Aspect of authority in taking decision	WUA can decide profitable crops	Cropping pattern and cropping calendar are agreed by members	5	5	20
		Cropping pattern and cropping calendar have not been agreed by members	2		
		Cropping pattern and cropping calendar are not planned	0		
	WUA can prepare a planning of water distribution	Agreement amongst members of water distribution plan for the first cropping season	1	5	
		Agreement amongst members of water distribution plan for the second cropping season	2		
		Agreement amongst members of water distribution plan for the third cropping season	2		
	WUA can restrict lands conversion	No land conversion	5	5	
		There is a plan for lands conversion	2		
		Existence of lands conversion	0		
	WUA can decide policy of water management to sustain irrigation system	Guideline of water management (including sanctions) exist and implemented	5	5	
		Guideline of water management (including sanctions) exist but not implemented	2		
		Guideline of water management (including sanctions) does not exist	0		
Aspect of capability to manage irrigation system	WUA can activate members in the organization	Official meeting every cropping season	2	5	25
		Planetary meeting annually	3		
		No meeting	0		
	WUA can improve its performance of irrigation management	Equally distribution and allocation water	3	5	
		Uniformly cropping calendar	2		
		No equally water allocation and uniformly cropping calendar	0		
	WUA can activate members in stages of maintenance works and development of irrigation system	Meeting amongst members for planning and evaluation	2	10	
		Actual implementation of work program of maintenance and development using *'gotong royong'* system	4		
		Actual implementation of work program of maintenance and development using 'fee collection' system	4		
	WUA can encourage members to be responsible for sustainability of irrigation system	Members are willing to follow the rule of utilization of irrigation water	5	5	
		Members break the rule and sanctions applied	3		
		Members break the rule but sanctions are not applied	0		
Aspect of satisfactory and prosperity of members	WUA can provide guarantee of water right for members	Guarantee of water allocation in which correct regarding time, area, amount and quality for each member	5	5	15
		Less guarantee of water allocation for each members	2		
		No guarantee of water allocation for each member	0		
	WUA can improve prosperity of its members through increasing agricultural production	Above average agricultural production	5	10	
		Equal average agricultural production	3		
		Below average agricultural production	0		
		Selling price is above market price	5		
		Selling price is equal market price	3		
		Selling price is below market price	0		

Table 3.4.2 Proposed M&E WUA Evaluation Scoring Method (2/2)

Aspects	Item	Indicator	Scouring		
			Scour	Max. weight	Total weight
Aspect of autonomous and self help	WUA can develop organisation with regard to laws and regulations	Set up AD/ART, legal entity, bank account and respect to village regulation properly	5	5	20
		As above setting up to be completed	2		
		No as above setting up	1		
	WUA can activate members to be financially self help	Collected fee > 50% NBB	10	10	
		Collected fee = 30% - 49% NBB	4		
		Collected fee < 30% NBB	0		
	WUA can minimize dependency from other parties in irrigation management	Actual subsidy < 30% NBB	5	5	
		Actual subsidy = 30% - 49% NBB	2		
		Actual subsidy > 50% NBB	0		
Aspect of equality with other institutions	Representation of WUA in Coordination Forum/Irrigation Committee	Representative of WUA is at the level of sub-system	2	10	20
		Representative of WUA is at the level of system	3		
		Representative of WUA is at the level of Coordination Forum/Irrigation Committee	5		
	Business relationship with cooperative and other private sectors	WUA cooperative was set up at the level of sub-system	2	10	
		WUA cooperative was set up at the level of system	3		
		WUA cooperative was set up at the level of system and is extended to cover other business (contractor etc)	5		
Total			100		

Source: IDTO/JIWMP (2000)

Ranking formula a total score of a turned over irrigation will represent it's progress

Total score (N) max. 100	Turned over irrigation progress rank
71>N< 100	Self standing
41>N< 70	In the process of self help
N< 40	Not yet self standing

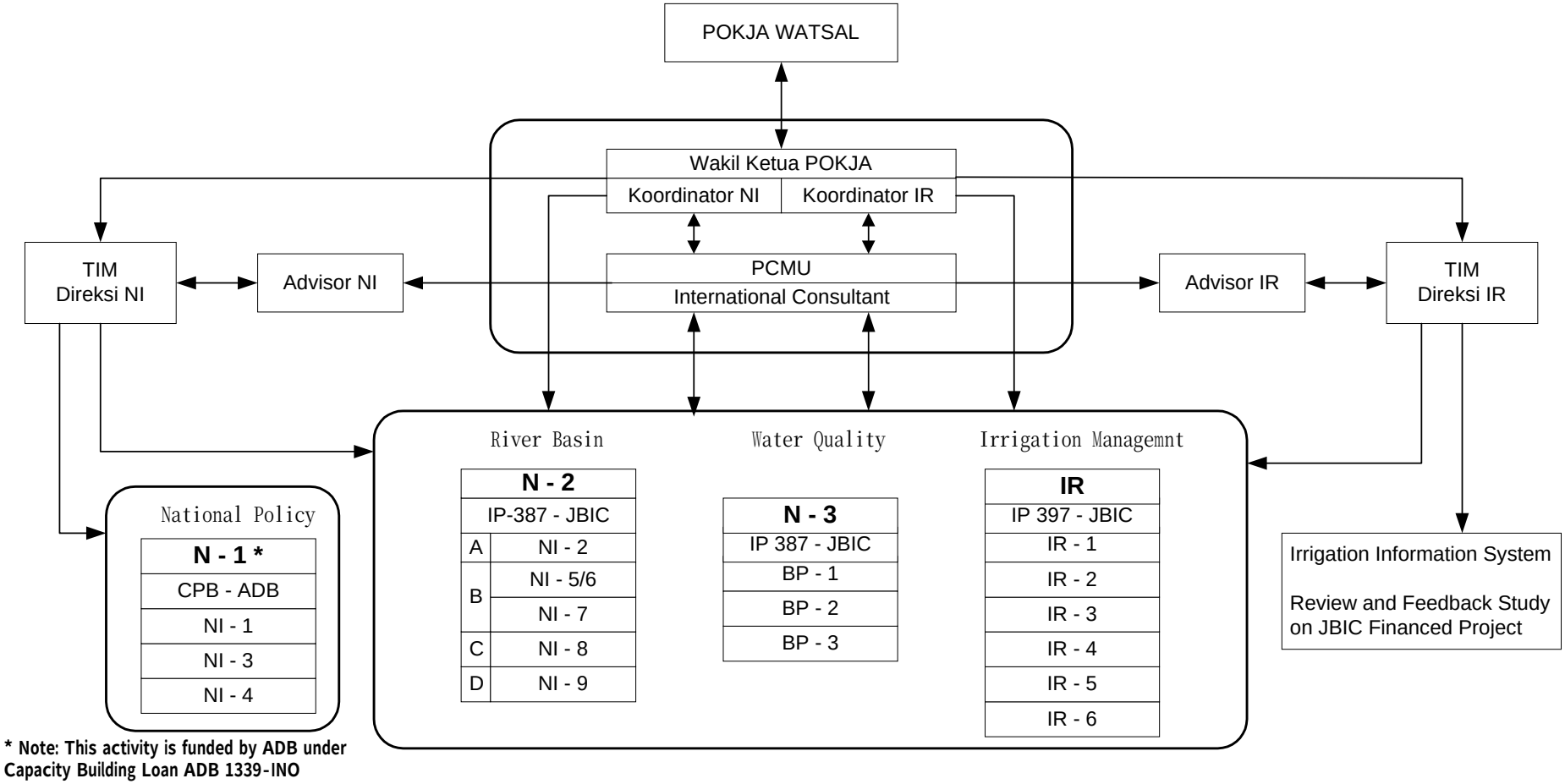


Fig. 3.1.1 WATSAL Structure

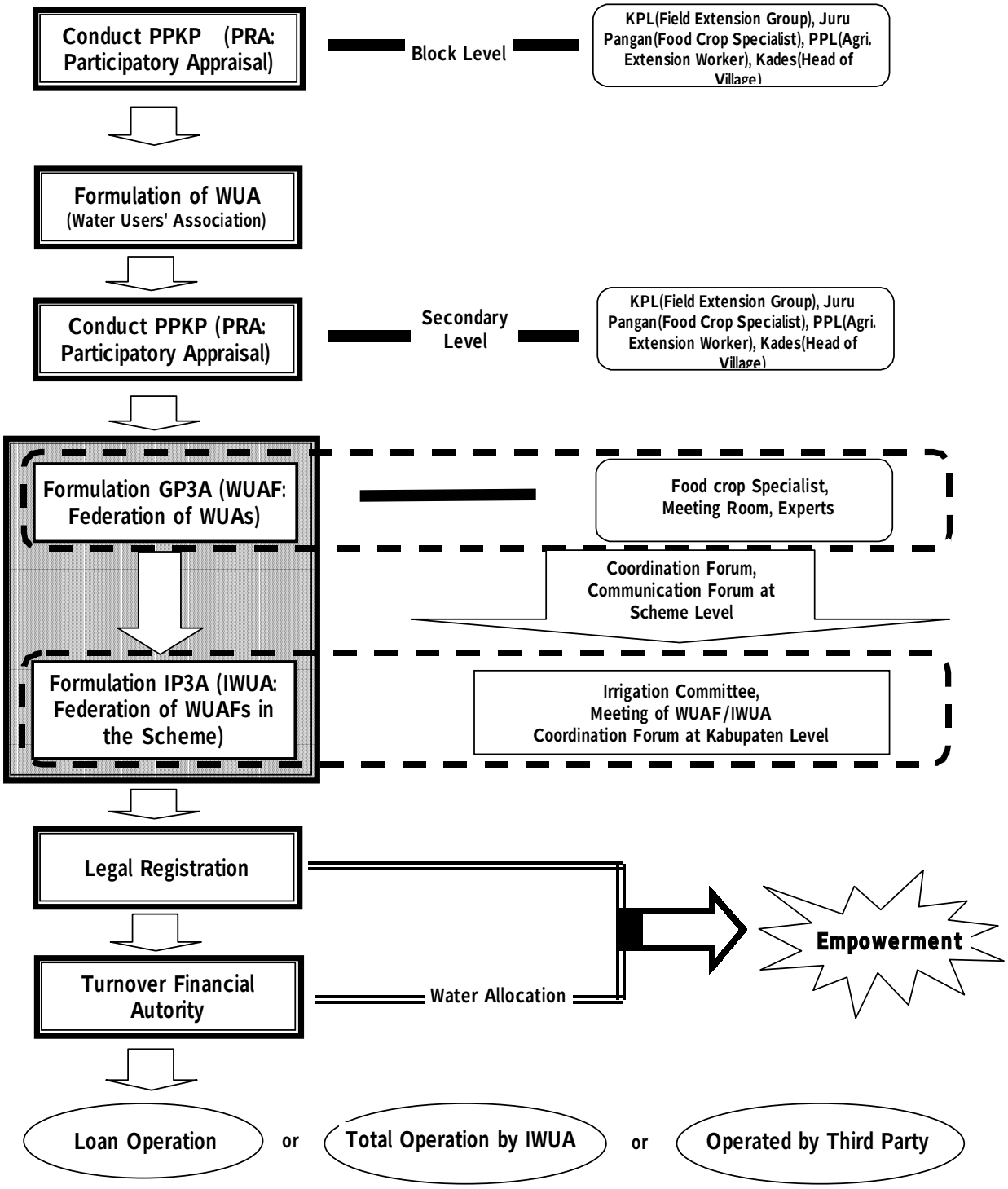


Fig.3.1.2 Irrigation Management Turnover (PPI) Set-up Process (May 200)