

Japan International Cooperation Agency (JICA)  
Directorate General of Water Resources (DGWR)  
Ministry of Settlement and Regional Infrastructure (KIMPRASWIL)  
Government of the Republic of Indonesia

**THE STUDY  
FOR  
IMPROVEMENT OF IRRIGATION MANAGEMENT  
AND  
EMPOWERMENT OF WATER USERS' ASSOCIATIONS  
FOR  
ENHANCEMENT OF TURNOVER PROGRAM  
IN  
THE REPUBLIC OF INDONESIA**

**FINAL REPORT  
EXECUTIVE SUMMARY**

NOVEMBER 2001

PACIFIC CONSULTANTS INTERNATIONAL

## COMPOSITION OF THE FINAL REPORT

\*\*\*\*\* English Version \*\*\*\*\*

Executive Summary  
Main Report  
Annex

\*\*\*\*\* Indonesian Version \*\*\*\*\*

Summary

\*\*\*\*\* Japanese Version \*\*\*\*\*

Main Report

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Exchange Rate (November 2001)		
US\$ 1.00	=	Rp. 95,800
Rp. 100	=	¥ 1.28
US\$ 1.00	=	¥122.6

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## PREFACE

In response to a request from the Government of the Republic of Indonesia, the Government of Japan decided to conduct a Study for Improvement of Irrigation Management and Empowerment of Water Users Associations for Enhancement of Turnover Program in the Republic of Indonesia and entrusted the Japan International Cooperation Agency (JICA) with the Study.

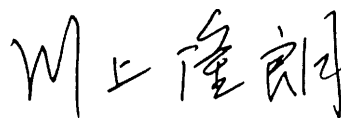
JICA selected and dispatched a study team headed by Mr. Keiji MATSUMOTO of Pacific Consultants International to the Republic of Indonesia between April 2000 and October 2001.

The Study Team held discussions with officials concerned of the Government of Indonesia, and conducted field surveys at the Study Area. Upon returning to Japan, the Team conducted further studies and prepared this Final Report.

I hope that this Report will contribute to the promotion of the Turnover Program and to the enhancement of friendly relations between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Indonesia for their close cooperation extended to the Study Team.

December, 2001



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Takao KAWAKAMI  
President

Japan International Cooperation Agency

Tokyo, November of 2001

Mr. Takao KAWAKAMI  
President  
Japan International Cooperation Agency

**Transmittal Letter**

We are glad to submit the Final Report of the Study for Improvement of Irrigation Management and Empowerment of Water Users' Association for Enhancement of Turnover Program in the Republic of Indonesia.

The report consists of the Action Plan for Improvement of irrigation management and empowerment of water users' associations, which have been prepared in consideration of the advices and recommendations of relevant ministries of the Government of Japan and JICA on formulation of development, as well as the discussions with the Indonesian counterpart on the Draft Final Report and their comments on the report.

Under the Irrigation Operation and Management Policy (1987), the Government of Indonesia started irrigation management turnover to water users associations for the decrease or elimination of government financing to irrigation O&M of irrigation scheme less than 500 ha by promoting self-reliant water users association. Under Water resources management reformation policy (1999) and Water resources sector adjustment loan (WATSAL), the government started the expansion and enhancement of irrigation management turnover program for all irrigation schemes.

This Study aimed to formulate the action plan to be implemented by government officials and farmers for enhancement of turnover of irrigation management within framework to be established by WATSAL. The Study conducted by participatory approach through all stages of the study from the problem identification upto action plan formulation at central government and five Study provinces. Many field surveys and workshops were conducted with collaboration with government officials and farmers. As a result of the study the action plan formulated to be a guideline for the government officials to enhance the irrigation management turnover program. It is thus anticipated that these Action Plan be put into implementation as soon as possible following the implementation schedule proposed in the report.

Taking this opportunity, we express our sincere gratitude to the officials of your Agency, the Ministry of Settlements and Regional Infrastructure and the Ministry of Agriculture, Forestry and Fishery of the Government of Japan for their valuable advices and recommendations for our Study. We are also grateful to the officials of the Ministries and other public organizations involved in the Study for their devoted cooperation and support during the implementation of the Study in Indonesia.

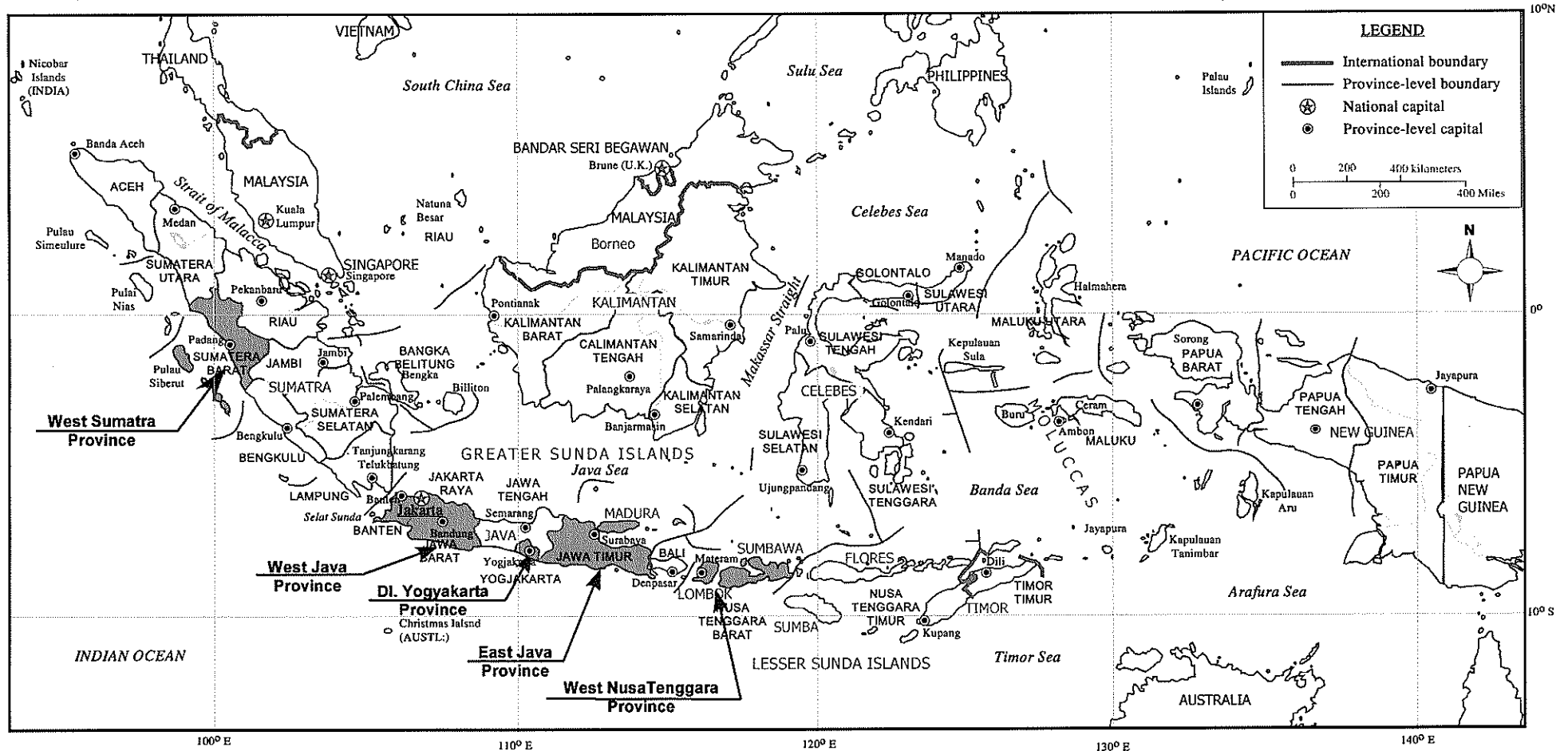
Sincerely yours,



Keiji MATSUMOTO  
Team Leader

The Study for Improvement of Irrigation  
Management and Empowerment of Water  
Users Associations for Enhancement of  
Turnover Program in the Republic of  
Indonesia

## Study for Improvement of Irrigation Management and Empowerment of Water Users' Associations for Enhancement of Turnover Program



**Location of Study Provinces**

STUDY FOR IMPROVEMENT OF IRRIGATION MANAGEMENT  
AND EMPOWERMENT OF WATER USERS' ASSOCIATIONS  
FOR ENHANCEMENT OF TURNOVER PROGRAM  
IN THE REPUBLIC OF INDONESIA

**FAINAL REPORT**  
**EXECUTIVE SUMMARY**

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STUDY FOR IMPROVEMENT OF IRRIGATION MANAGEMENT  
AND EMPOWERMENT OF WATER USERS' ASSOCIATION  
FOR ENHANCEMENT OF TURNOVER PROGRAM

**Executive SUMMARY**

**1. The Study**

The objectives of the Study, which were defined in the Scope of Works (S/W) and Terms of Reference signed in September 1999 by both Government of Indonesia (the Government) and a preparatory study team dispatched by Japan International Cooperation Agency (JICA), on behalf of Government of Japan, are as follows;

- 1) To formulate plans on the improvement of irrigation management and empowerment of Water Users' Associations(WUAs) for enhancing the turnover program
- 2) To carry out the technology transfer to Indonesian counterpart personnel through on-the-job training during the course of the Study.

The Study aims to formulate Action Plans for enhancing turnover of irrigation O&M, while considering aspects of improvement of irrigation management and empowerment of water users' association. To achieve these objectives, a number of Work Items were specified, as shown in Table S.1.1; those related to Phase I of the Study were completed during 2000, while the remaining ones were completed during Phase II, in the period to September 2001. Main activities during these two phases were defined as follows:

- Phase-1 Review previous studies and projects involved in the turnover program, conduct field surveys in the Study Area to identify the present problems and constraints related to the Turnover Program, and analyze and categorize these problems and constraints
- Phase-2 Based on the categorized problems and constraints, hypothesize appropriate countermeasures whose effectiveness will be confirmed, after being examined and inspected through detailed survey in the field. Following that, an action plan will be formulated for the irrigation O&M turnover program

The Study Area comprises the five provinces of West Sumatra, West Java, D.I.Yogyakarta, East Java and West Nusa Tenggara, with a total area of 157,000 km<sup>2</sup>, a total population of 80 million, an irrigated area of 1,911,000 ha and 18,000 existing WUAs. About 40% of the national paddy harvested area lies within these provinces, producing around 45% of its rice. Approximately 42% of the national population lives in these provinces.

Summary List of WUA By Status in Indonesia (1998)

Description	W. Sumatra	W. Java	Yogyakarta	E. Java	W. Nusa Tenggara	Sub-Total	Indonesia
<b>Developed / Function Well</b>							
Already legitimated	5	0	0	31	35	71	502
Not yet legitimated	319	1,818	57	1,187	6	3,387	6,727
Sub-Total	324	1,818	57	1,218	41	3,458	7,229
<b>Developing / Active</b>							
Already legitimated	0	0	0	0	0	0	312
Not yet legitimated	989	3,280	344	3,548	644	8,805	16,139
Sub-Total	989	3,280	344	3,548	644	8,805	16,451
<b>Develop Yet / Not Active</b>							
Already legitimated	0	0	0	0	0	0	198
Not yet legitimated	800	2,800	305	1,876	211	5,992	14,248
Sub-Total	800	2,800	305	1,876	211	5,992	14,446
<b>Total</b>							
Already legitimated	5	0	0	31	35	71	1,012
Not yet legitimated	2,108	7,898	706	6,611	861	18,184	37,114
Sub-Total	2,113	7,898	706	6,642	896	18,255	38,126

Source : PU PPSDA



## 2 Background to Irrigation Management Reform

The Study has been undertaken at a unique point in Indonesia's history; the country is in the throes of trying to establish a stable democracy and trying to establish a system of regional autonomy, while at the same time contending with the aftermath of the 1997 financial crisis. These issues set against the context of the irrigation sector, have impacted on the Government in the following ways;

- Government can no longer rely on major foreign-sourced funding,
- Government's internal sources of revenue are severely stretched,
- there is a move away from project-orientated development,
- towards one which promotes farmer participation and less reliance on Government support.

During the past 20 years or so there has been heavy expenditure in irrigation infrastructure, resulting in the build-up of a huge overall investment asset. Government has, for some time, appreciated that the cost of the operation and maintenance (O&M) of this asset has become burdensome, both in terms of annual and routine activities and of periodic rehabilitation. This caused government to introduce some initiatives more than a decade ago, aimed at keeping these costs in check. Attempts were made to;

- improve annual O&M,
- to encourage farmers to take more care of their systems,
- to turnover responsibilities for certain elements of irrigation systems to the farmers,
- to levy a water charge and to create water users' associations (WUAs).

Whilst all these initiatives met with some success, the overall impact has not been very significant. It is believed that the main reason for this was the top-down approach, which allowed little real scope for farmer participation. O&M has not, in general, improved significantly with neither farmers or Government providing enough input to allow the routine work to be done properly. This has engendered a condition whereby systems require rehabilitation at intervals far shorter than would have been necessary had O&M been done properly. It has also provided an environment whereby farmers expect Government to support them, both with annual O&M and with rehabilitation. Meanwhile systems operate at sub-optimal levels, constraining farmers' incomes and national food production.

Recently policies have been introduced with the intention of making many of the initiatives already tried more effective. The main differences between the past and the present are:

- that Government must now act in the role of facilitator, rather than implementer,
- farmer participation is required at all stages, with the intention that they develop a feeling of involvement (belonging) thereby being more willing and capable of accepting responsibility,
- WUAs should now be democratically established,
- All O&M funds collected by the WUA should be handled by the WUA,
- there is now little prospect that Government will, in the short to medium term, have the funds to support irrigation as it has in the past,
- irrigation systems will now only be rehabilitated, once they have been turned-over.

Government is being assisted by a Water Resources Sector Adjustment Loan (WATSAL) to develop new policies and initiatives. This Study has reviewed WATSAL activities, and all proposed activities to September 2001, have been taken into account. The current WATSAL situation is still dynamic and as yet, many conditional requirements are not fully satisfied.

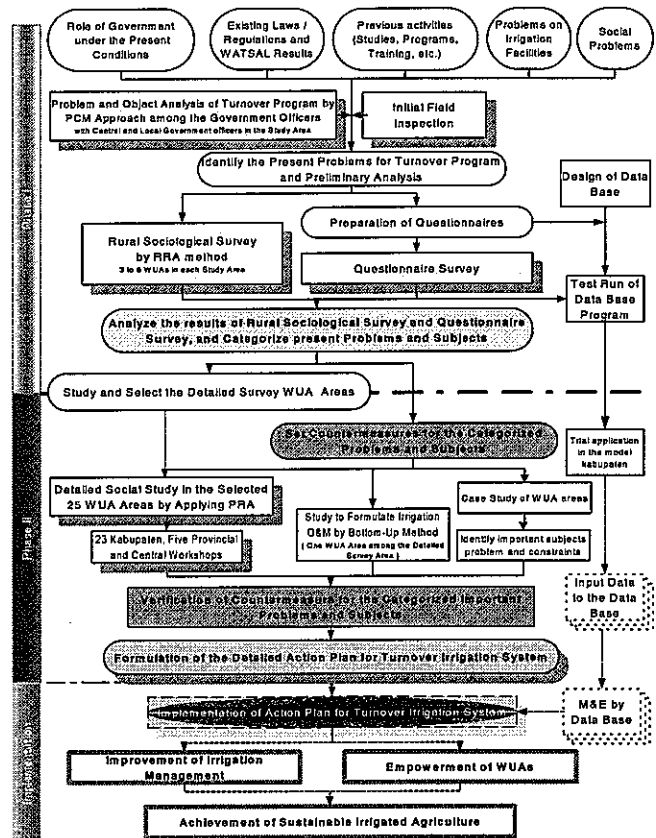
### 3. Study Activities

Table S.1 presents items of the Study and general flow is shown the methodology used at each step in figure below.

#### 3.1 Phase I

##### (1) Inception Report and Setting-Up of Survey Implementation

After the explanation of the Inception Report by the JICA Study Team to the Indonesian agencies concerned, both parties discussed important issues related to the study implementation, including the JICA advisory Committee. The Assistant Deputy for Irrigation Affairs, under the Deputy for Water Resources of the State Ministry of Public Works (MENEG PU) was appointed and confirmed as the counterpart agency; while the Directorate of Rural Water Resources under the Directorate General of Rural Development of the Ministry of Settlement and Regional Development (KIMBANGWIL), was a member of the Steering Committee that defined the Scope of Works.



Work Flow of the Study

Minutes of Meetings, resulting from the explanations and discussions on the Inception Report, were prepared and signed by the Deputy for Water Resources of the MENEG PU and the Team Leader of the JICA Study Team. These were witnessed by the Directorate of Rural Water Resources under the Directorate General of Rural Development of the KIMBANGWIL, on April 13, 2000. An office for the JICA Study Team was provided in the MENEG PU headquarters.

##### (2) Collection and analysis of additional data and information

The JICA Study Team collected existing information from relevant organizations (Government ministries and agencies, World Bank, ADB and others), on aspects related to laws and regulations, on-going studies and plans, inventories of irrigation schemes and water users' associations, socio-economic and agricultural statistics. Initial field visits were made to the Study Areas to introduce the Study concept and to establish relationships with the local government agencies concerned.

##### (3) Detail Field Survey (Rural Sociological Survey & Questionnaire Survey of WUA)

###### 1) Survey Methodology and Site Selection

Rural sociological survey applying Participatory Rural Appraisal (PRA) methodology was used to identify, from the farmers' perspective, the constraints affecting the smooth turnover of O&M of irrigation systems.

Twenty four PRA survey sites were selected, six sites each in West Sumatra, West Java and East Java Provinces and three sites each in Yogyakarta and West Nusa Tenggara Provinces the. The selection criteria were 1) location along primary canal (upstream, midstream and downstream), 2) form of WUA management (managed by single WUA or managed by a federation comprising several single WUAs), 3) Status of WUA management (well functioning, active, non-active and not yet established). The field surveys involved both farmer interviews and farmer group discussions.

Instead of being planned originally to conduct four Questionnaire surveys in each of the *kabupaten* within the five provinces, it was decided to reduce the number of *kabupaten* but to increase the number of surveys, per *kabupaten* which were selected considering similar characteristics. Table S.1.2 summarizes the results of the PRA survey and Questionnaire surveys. Following the surveys, workshops were held in each province and in Jakarta, were the preliminary results were presented and discussed.

Selection of Districts & Sites for Survey and Respondent

Descriptions	No. of Districts	No. of Selected Districts	No. of Sites	No. of Respondent
W.Sumatra	14	7	56	56
W.Java	24	10	116	96
Yogyakarta	5	4	20	18
E.Java	37	10	128	105
NTB	6	4	24	24
Total	86	35	344	299

## 2) Results of PRA Survey

Following the provincial and central workshops, the PRA findings were considered and analyzed in some depth by the Study Team and by the counterpart staff, applying PCM methodology. It became apparent, because of the unstructured nature of the PRA approach, which the perceived problems and constraints of irrigation management, WUA development and turnover program vary quite substantially between provinces. The perceived problems and constraints included the following main issues:

### Government roles, support, laws and regulations :

- It was reported that Government's centralized and top-down approach remains much in evidence supporting the previous legal situation. This has often led to conditions where local government policies and actions with regard to irrigation management do not match with local needs.
- Indicators applied to WUA success do not give a true picture of WUA activity and capability.

### Agriculture, economic, financial :

- Net cash income from farming and irrigated cultivation is low compared to off-farm income due to, amongst other factors, the small average size of holding.
- The young generation rapidly lose interest in farming; the resulting out-migration is reducing the availability of active farm laborers. Farm labor wages are rising, and this combined with the high cost of other inputs, is making rice production unprofitable, particularly as paddy prices are so low.

### Irrigation system, O&M, water management :

- Irrigation canals and facilities do not function well due to many reasons, causing water losses and dry season shortages and wet-season floods.
- Conflicts among water users (between mid/downstream and upstream farmers, between paddy and non-paddy farmers, and between farmers and non-farmer water users,) are frequently encountered due to lack of water supply and unfair distribution.
- Inadequate technical designs and construction are partly responsible for the rapid breakdown of PU

irrigation structures and facilities. The project-oriented approach, the non inclusion of farmers in planning and implementation, and construction work contract practices, had varying unfavorable impacts on the problems of construction quality and the lack of a local sense of belonging and responsibility for water charges and O&M.

WUA management, institutional development:

- Too many farmers' organizations have been promoted, by various Government agencies, and exceed what the farmers require.
- WUAs establishment can be based on existing, traditional irrigation institutions using traditional *ulu-ulu* or *ili-ili*. Local water users are still committed to their *Ulu-ulu*, and the traditional practices of irrigation management including O&M remain (using *gotong-royong* for maintenance and paying in kind to the *Ulu-ulu*, etc.)

3) Results of Questionnaire Survey

The findings obtained through Questionnaire survey in the fields are summarized below:

- a) The status of most WUAs at present falls into the 'being developed' category. Most WUAs claim to have articles of association and operating guidelines (AD/ART). The majority of WUAs claim they are ready for turnover (to take on the responsibility of O&M of irrigation systems).
- b) The majority of respondents claim they actively participate in WUA activities, and consider the service of WUAs is good (This contradicts the conclusions reached by the World Bank, ADB and others, and statements made at the workshops, that most WUAs are generally not active, and receive very little support from the farmers).
- c) The majority of respondents consider that water is better managed under a WUA organization than under previous traditional systems. Water is distributed better in three provinces, East Java, West Java and NTB, and equitable water distribution is claimed by the majority of WUAs, and there is more order and cooperation.
- d) The majority of respondents said that WUA officials are appointed by open elections.
- e) Most WUAs claim to hold meetings, but communications are largely informal and records of meetings or minutes are rarely prepared. The main problems discussed are maintenance of the irrigation system, including, in many cases, secondary canals and water distribution and management. Other issues discussed were water service charges and payments and institutional and human resources matters (WUA organization and ability, personality and integrity of WUA officials, etc).
- f) Most WUAs, which are normally based on tertiary irrigation units, claim they also maintain secondary canals. Most maintenance is done by *gotong-royong* where farmers contribute their labour.
- g) The majority of WUAs stated that sanctions, for non-payment of water charge or violations of water use, are never applied.
- h) In response to the question regarding what aspects need to be promoted, the main points were:
  - Better trust, attention and guidance from the Government, training and extension;
  - Improved water supply and distribution, and the provision of sufficient water to all farmers;
  - Institutional strengthening and the improvement of human resources;
  - Irrigation system repair;
  - Access to capital, better management of funds, and better prices for crops.

#### (4) Categorization of Problems and Constraints

##### 1) Approaches Adopted to Realize Participatory Problem Analysis

Based on the results of these Field Surveys, a series of provincial workshops were conducted (during late August to early September), attended by local government officers and farmers, to feed back the results of the field surveys and to allow them to participate in the problem analysis using PCM methodology. A workshop, at the national level, was also conducted with aim of identifying common issues at national level, conducting problem analysis, and exchanging information between the relevant provinces. Central and local government officers and farmers attended the workshop, on September 7th, 2000. Results from the series of workshops were examined and analyzed together with officers from the counterpart agency, and the issues were grouped into four main categories covering aspects relating to, administration (including laws and regulations), irrigation management, WUA management and farm economy.

##### 2) Major Findings resulting from the Problem Analysis

- a) There is a long tradition of managing water in the farming communities of Indonesia (particularly for wet season rice), which have developed in accordance with local conditions and customs.
- b) It is axiomatic that the implementation of any Government project, including the WUA development program, involves a top-down approach, since the initiative and funding comes from above, and that project progress tends to be target-orientated. However, having said that, it is considered that the implementation of the WUA program has been too bureaucratic and uniform, and has not addressed the real problems being faced by farmers and rural communities. The rigid approach of the WUA program has not allowed sufficient flexibility to take into account local variations in physical conditions and traditions. The Government's domination has been too strong.
- c) Most WUAs exist in name only and are not active. Farmers are either not aware of WUAs or view them with apathy, and have little knowledge of the turnover program<sup>1</sup>. Support for WUAs is generally weak because the organization is formed from above without the farmers' participation.
- d) The registration and status of a WUA on a turnover list does not indicate the effectiveness of irrigation operation and maintenance.
- e) Most farmers consider that the bureaucratic and formal nature of WUAs, and the fact that most key posts are filled by village leaders, implies that the main purpose of the organization is to collect funds, with little benefit to the farmers themselves. AD/ART -- articles of association (AD) and operational rules (ART) -- are not clearly understood. Sanctions to deal with violations of regulations over water management are rarely enforced, because they were not formulated with the participation or agreement of the water users.
- f) Generally farmers are confused by the addition of yet another organization at village level, and are happier with simpler institutions that are already well established in the village such as *kelompok tani* and *kooperasi*. Farmers generally prefer a simple management style. In West Sumatra many farmers questioned the relevance of formal WUAs, particularly on small upstream irrigation schemes where water was already being well managed.
- g) Although farmers have the potential to manage the O&M of turned-over tertiary units (in some places repairs to canals and structures are carried out spontaneously by *gotong royong*), in practice their involvement in O&M is generally low. Farmers have generally not been involved in

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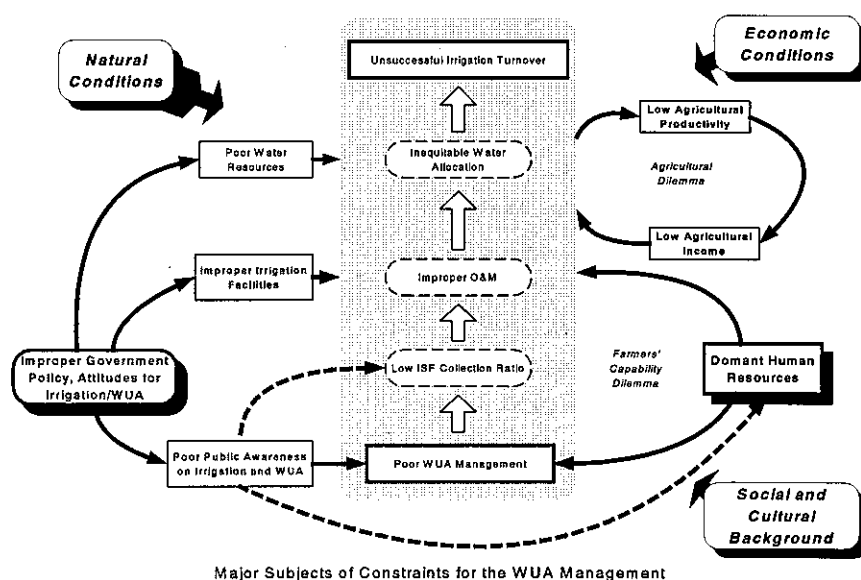
<sup>1</sup> Awareness is higher in East Java compared to the other Study provinces.

the design and construction of the irrigation schemes, and many projects have not been implemented according to plan (in terms of time, cost, design and quality) -- this has led to a lack of credibility amongst the farmers.

- h) The physical quality of many irrigation schemes is poor (for example, many diversion gates do not function) and water is lost through leakages. If irrigation facilities are in a poor state of repair, WUAs are generally not active and it is difficult to collect water service charges.
- i) Conflicts occur where water is not allocated or distributed in a fair manner between different water users (for example, between upstream and downstream farmers, between irrigation and domestic/industrial water supply, and between rice farmers, fish farmers, duck farmers, tobacco farmers, sugarcane farmers, etc). Also, confusion can arise where technical guidelines for O&M from different Government agencies (*Dinas PU Pengairan* and *Dinas Pertanian*) are not compatible or coordinated, since this can result in changes to cropping plans and planting times leading to reduced harvests.
- j) A major complaint of downstream farmers is what too much water is taken by upstream farmers.
- k) There is confusion concerning the area of responsibility of WUAs. Initially WUAs were based on village administrative boundaries<sup>2</sup>. However, this was not effective in promoting the participation of water users who tend to be spread out over wide areas (including other villages), and there is now a preference for boundaries to be based on tertiary irrigation units.
- l) The success of a WUA depends very much on the attitude and motivation of village leaders, the strength of community participation, and the awareness of farmer members.
- m) Technical irrigation schemes developed by the Government should be the priority of the turnover program.
- n) There is a problem organizing the O&M of higher level facilities (primary and secondary) which still depend on Government support.

### 3) Problem Analysis Summation

All of discussions and fact found in the fields were sublimated into Figure S.2 as problem tree diagram. Backgrounds of social / administrative hierarchy, social / historical influences and recent social/economical changes were recognized to have complicated cause-results relations among concerned aspects. Obviously both government and farmers' sides have been facing to such intricate situations in their daily lives. Considering the given subjects of this study and above mentioned examinations 4 major issues are proposed as classifications of problems as 1) Government Role, Laws and Regulations, 2) WUA Management and Institutional Aspect, 3) Irrigation O&M and Water Management and 4) Agriculture, Economic and Finance.



<sup>2</sup> This is still the norm in East Java.

Issues identified above indicate that the most important factors related to the improvement of irrigation management are;

- a) how to promote the concept of irrigation O&M and management by, and
- b) how to empower the farmers, as the users of irrigation systems, and government officers, as the providers of information and as civil servants.

As a result of empowerment, the old WUAs, established under Government's top-down approach, can be reformulated to become sustainable WUAs where farmers participate in irrigation system management, together with Government (joint management), through the federations of empowered unit-WUAs. The study of countermeasures to the constraints, and their confirmation through the detailed field survey, will be focused on these two issues.

#### (5) Selection of Detailed Survey WUA Area

Phase-II Study was scheduled, as stated in the Inception Report, to establish hypothesizing countermeasures, to carry out detailed surveys as confirmation of the hypothesis, and to prepare Action Plans

Site selection for the detailed surveys in Phase II took into account the results of the Categorization of Problems and Constraints process, the experiences of the World Bank assisted Java based IDTO program, and the views of the Study counterparts.

Site selected for the Detailed Survey in Phase-II is presented in the table opposite.

#### (6) Design of Database

As a tool to support the acceleration of the establishment and strengthening WUA organizations, efficient irrigation management of WUA for the turnover program, a database for the water users' organization was designed during Phase I of the Study. Figure S.1 shows a conceptual flow for the preparation and collection of data adopted by the database, while Table S.3 summarizes the data menu of the WUA database.

### 3.2 Phase II Stage

#### (1) Objective Analysis and Countermeasure

The first task in Phase II was to undertake an objective analysis of the categorised problems and issues identified in Phase I and prepare hypotheses for countermeasures, and to prioritise these. Three hypotheses, were developed related to the following:

- Improvement of Farmers' Incomes,
- Government's Role,
- WUA Empowerment and Turnover of O&M responsibilities.

These were then presented in a Project Design Matrix (PDM) format. Four such formats were prepared covering the following aspects:

- Government, WUA and O&M aspects,
- Agricultural development programs for farmers,
- Agricultural development programs for Government assistance,
- Social preparation.

The countermeasures PDMs were then discussed at central government level.

## (2) Field verification of Countermeasure

For the verification of countermeasures 25 irrigation schemes, located in 23 districts spread over the five provinces were selected, where the surveys, were undertaken. Four different verification approaches were applied, as follows:

- Field investigation in the detailed survey areas,
- Detailed field surveys
- Case studies,
- Trial formulation of irrigation O&M plan, using bottom-up approach,

### 1) Field Investigations in the detailed survey areas

Field investigations in the detailed survey areas were undertaken by Study team members who concentrated on obtaining the views of, village chiefs, WUA officers and similar level individuals.

### 2) Detailed field surveys

NGOs were recruited to undertake the detailed field surveys as Provincial Study Teams. These comprised reconnaissance surveys, and key informant surveys applying Participatory Rural Appraisals (PRA) methodology in 25 selected locations. PRA/PCM workshops were held at the field survey sites to validate the key informant and PRA data and to verify the countermeasure hypotheses.

The Provincial Study Teams then prepared reports of their field surveys and PCM workshops and these were presented at 23 kabupaten level workshops. The purposes of these were to: 1) complete the PDM, using the PRA results, 2) validate the completed PDM and allocate responsibilities, and 3) verify the countermeasure hypotheses. Similar workshops were held at 5 provincial level workshops and one at national level.

The main issues and recommended actions arising from discussions at the various levels were identified and summarised. Table 3.2.4 in the Report, for example, summarises the priority actions recommended at the irrigation scheme and district level workshops. The actions mentioned here are included in the overall Action Plans, which are discussed below.

### 3) Case Studies

One practical case study and five other case studies were undertaken.

The practical case study concerned Maintenance and Rehabilitation, in the Pekatan Scheme in West Nusa Tenggara, where a detailed walk-through was undertaken, with the farmers. Details of the works required to undertake maintenance and rehabilitation were prepared and the operational standard and capacity of the tertiary system was described.



Other studies, covering the following topics were prepared: 1) Rehabilitation of Irrigation Systems, 2) Irrigation Service Fee (ISF), 3) Participatory Training, 4) Capacity Building and Empowerment, 5) WUA Monitoring and Evaluation, and 6) WUAs' Function to Support Irrigated Agriculture.

4) Trial Formulation of Irrigation O&M Plan applying bottom-up approach.

Trial formation of irrigation O&M plan applying bottom-up approach was conducted at the Cipalebuh irrigation scheme located in Kabupaten Garut, in West Java. This scheme, comprising five WUA which were active but required considerable strengthening, had a rather mediocre O&M contribution record, did not have an equitable water allocation system and required some rehabilitation. As part of the activity, WUA members from this scheme were taken to another scheme in the same district, the Cimanuk irrigation scheme. Here, the individual WUA have formed a federation where considerable success has been achieved. There has been improved O&M practice, improved collection of O&M charges, the formation of a co-operative formed in association with the WUA federation and the participative rehabilitation of some parts of the irrigation infrastructure.

Detailed discussions were held with WUA officers and members and other key figures in the area with the purpose of examining the cause-solution of the problems and the proposed action plan and of seeking ways to implement the action plan in a practical and sustainable manner. Assistance was provided to the WUA members, who benefited from their visit to the Cimanuk scheme and from the discussions and the advice they were given.

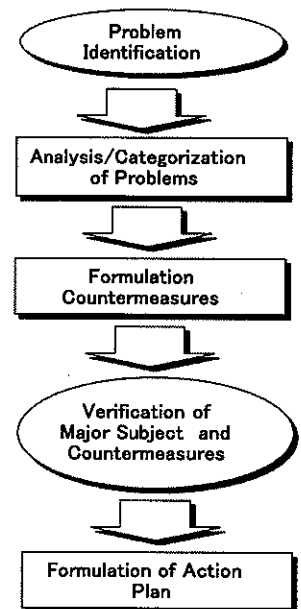
5) Verification of Countermeasure Hypotheses

Based on results of various surveys/studies mentioned above, the countermeasures on irrigation aspects have been verified to be applicable and acceptable countermeasures. Whilst countermeasure in irrigated agriculture aspects are not justified or effective under the present conditions of agricultural policies.

**4 Action Plans**

(1) Introduction

The objectives of this Study make reference to improvement of irrigation management and the empowerment of water users associations (WUAs) for the enhancement of “turnover” (“transfer of irrigation management authority”) under the WATSAL framework. The Study has been careful to maintain the investigation and development at the grassroots, where our use of the term WUA refers to unit (either village or tertiary unit) based groups. It is from this basic approach that all Study initiatives including the generation of the Action Plan has been developed. In generating the plan a process of staged development has been undertaken, review, problem and constraints identification, analysis, hypothesis, and confirmation, developing the grassroots condition in terms of physical, institutional, organisational and financial, aspects (Figures S.3 and S.4). It should be noted that all processes used on the Study and proposed by it, are generated



Action Plan Formulation Process

from needs based assessment (AKNOP) and participatory methods. This process has been successively introduced and developed at each level of administration from the field to National level. Within this process the term WUA has been used in its generic sense, allowing it to encompass all structures currently envisaged as water user development.

To add clarity and emphasis in various sections of the report, the more specific terms of WAUF (Federated WUA referring to grouped WUA units) and IWUA (Induk WUA referring to grouped Federations based on secondary systems) have been used. To avoid confusion the term WUA has been used through out the report in its generic sense referring to all structural levels

The recommended Action Plan is split into three sections. Two concern irrigation and closely related issues, comprising preparatory works and main works; one relates to agricultural aspects.

Attempts have been made to include as many of the irrigation related countermeasures as possible within the main Action Plan and to arrange these into a reasonable number of discrete packages, or activities. As indicated in Figure S.5, there is a fairly logical sequence of related activities, with many merging into each other.

Despite the close relationship between the various activities it has been possible to identify ten, fairly discrete activity packages. Some are confined to a narrow range of issues, some encompass a wider field. It is recommended that this initial list of activities is viewed flexibly, and if other important issues arise or if it is decided to re-arrange the components between activities, the opportunity is given to modify the current plan.

The recommended irrigation sector related activities are as follows:

**Action Plans on Irrigation and WUA Management**

Preparatory Activities:  
Action-1: Public Awareness of Government Policy amongst Government Officials  
Action-2: Inventory of Irrigation System and WUAs

Core Activities:  
Action-3: Public Awareness and Capacity Building at WUA level  
Action-4: Training of WUA(s) Leaders  
Action-5: Start-up Financial Assistance  
Action-6: Formulation/reformulation of WUA(s), GWUA and IWUAs  
Action-7: Kabupaten Irrigation improvement Fund  
Action-8: Improved O&M and joint management  
Action-9: Collection of ISF and Government Support  
Action 10: Rehabilitation of Irrigation System  
Action-11: Monitoring and Evaluation

It should be appreciated that if the Action Plan is implemented, it will have to board a moving train. Its objectives will include strengthening of activities which, in some cases, are already on-going, albeit many on a pilot or limited scale, as well as the introduction of some new concepts, as yet untried.

The situation within the country is currently quite fluid. The structures of Government departments are being changed, staff are being moved around, regional autonomy has yet to be properly established, foreign assistance is largely being held in abeyance and certain vital pieces of legislation have yet to be put in place. Some of the WATSAL activities have yet to be finalised. At the same time there is considerable political uncertainty, increased lawlessness and reduced respect for authority.

The Action Plan will have to work in these conditions, and adapt itself to changing circumstances. It will also have to be careful how it targets its efforts and funds. It would need, for example, to try to ensure that the majority of officials being trained would remain in post during the life of the project.

Whilst support is recommended at many levels, there are some important links in the chain which are already in place and it is anticipated that, as part of their routine activities, these will operate as and when required. With regard to agricultural extension, for example, the service has been in operation for many years, and in many areas has provided a valuable contribution. Apart from being encouraged to co-operate closely with any development initiatives being focussed on a particular irrigation scheme, it is not anticipated that, initially at any rate, any significant inputs would be required from the Project

## (2) Action Plan Activity Details

Brief descriptions of the various activities are given below

### Preparatory Works

The following three activities would be undertaken mostly away from the irrigation systems and the communities where the recipient farmers live. These are activities designed for a particular area, and are viewed as preliminary requirements that need to be undertaken before the remaining activities can be initiated. It is viewed that as the Project horizons widen, new areas will be brought in and the preparatory activities initiated.

It should be appreciated that in the context of regional autonomy, most of the following activities would need to fit in with the implications of this new policy, and the Project should be prepared to adjust itself to work with the district level authorities to ensure that their overall development program is well integrated and efficient.

#### **Action 1: Public Awareness of Government Policy amongst Government Officials**

Most Government officials must already be aware of the changes going on around them. It will be important for this Project that all those officers involved have a clear understanding of current Government policy and are aware of the role which they will be expected to play within the Project. They should also be able to identify their own strengths and weaknesses and to make known their requirements for capacity building and training, and judge whether they can see a place for themselves in the changing development process. Many officials have been severely impoverished since the onset of the financial crisis and the major reductions in Government budgets; many have also found that their roles have become less clear. Without the willing co-operation of Government staff, the success of this Project would be seriously compromised.

This activity will help to provide the public awareness, communicate with the Government officials from Provincial to sub-district level, encourage them to identify their needs and provide a channel through which they can feed their requirements back to those who can provide further assistance.

### **Action 2: Inventory of Irrigation Systems and WUAs**

Without a detailed and accurate inventory of irrigation schemes, it would be very difficult to prepare a rational campaign plan. Although many details are available, and an inventory, without detailed mapping, was produced around a decade ago, it is considered necessary that a new, nation wide standardised inventory is prepared, incorporating, where available, materials that have already been prepared.

The recommendation is that activity should comprise six sub-activities as follows:

- a Major Irrigation Scheme Inventory Updating Program, (schemes > 150 ha),
- a Small Scale Irrigation Scheme Inventory Updating Program, (schemes < 150 ha)
- a Water Resources Related National Asset Database Installation Program,
- a WUA Inventory Provision Program,
- an Irrigation System Assessment Program,
- an Irrigation Scheme Rehabilitation Proposal Competition Program.

An inventory of WUAs would be prepared, utilising the WUA database facility which has been initiated under the auspices of this Study. Inputs in both Phase 1 and Phase II involved it's construction, the training of operators and its post field trial modification.

### **Main works**

Once the decision has been made which irrigation systems and related WUAs are to be included in the Project, the sequence of activities discussed below will be set in motion.

Conditions will vary by scheme; WUAs maybe active, partially active, inactive or absent, some WUA will require strengthening, others will need to be disbanded and reformed. Some schemes will be in good condition, many others will require rehabilitation. Some will be virtually ready for turnover, others will be far from this position.

According to the specific requirements, it will then be decided which activities are relevant to the needs of a particular scheme. Where there is little or no WUA activity, it will probably be necessary to start at the beginning with the WUA level public awareness program. For better developed schemes it will be necessary to determine which activities are relevant, and implement them accordingly. Starting from the beginning the proposed main works activities comprise the following:

### **Action 3: Public Awareness and Capacity Building at WUA level**

This is an activity which would be required if it is seen that most farmers are not yet aware of Government policy regarding turnover, and the implications this has for them in terms of WUA formation, the gradual shifting of responsibility for O&M to the farmer and the consequent reduction in Government subsidies. Many farmers will also need to be made aware of the principles of joint management and the new policy regarding rehabilitation-after-turnover.

This process may be quite a gradual one, and could well be accompanied by other activities aimed at building up the capacity of any WUA officials, if they exist, and/or farmers. Before farmers are in a position to take positive action with regard to creating soundly based WUA, many will need considerable support.

#### **Action 4: Public Awareness and Capacity Building at WUA level**

This is an activity which would be required if it is seen that most farmers are not yet aware of Government policy regarding turnover, and the implications this has for them in terms of WUA formation, the gradual shifting of responsibility for O&M to the farmer and the consequent reduction in Government subsidies,. Many farmers will also need to be made aware of the principles of joint management and the new policy regarding rehabilitation-after-turnover.

This process may be quite a gradual one, and could well be accompanied by other activities aimed at building up the capacity of any WUA officials, if they exist, and/or farmers. Before farmers are in a position to take positive action with regard to creating soundly based WUA, many will need considerable support.

#### **Action 6: Start-Up Assistance**

This activity is designed to provide start-up financial assistance to support WUA during their early formative period. This is a form of assistance where there has to be a fine balance between providing the type and amount of support which is sufficient to create a positive impact whilst, at the same time, avoiding perpetuation of the Government dependency syndrome which has become ingrained in the minds of so many.

#### **Action 5: Formation and re-formation of WUA, WUAF and IWUA**

It is now appreciated that many of the 35,000 plus WUA which are said to have been established, exist in name only. Many others set off on the wrong foot, and are currently structured in such a way that they cannot, in their current form, ever hope to function as a WUA should. It is also estimated that for considerably more than half the nation's irrigated area no WUAs exist.

A new approach to WUA formation is recommended, where farmers make the decisions and democracy is the watchword. Farmers will be encouraged to build on any traditional organisations with which they are familiar and to create the type of organisation they consider appropriate. In some areas it will be necessary to abandon existing WUAs where there is no chance of them becoming viable units. Elsewhere there will be possibilities to work with the sub-optimal structure, modify it and gradually develop a viable unit. Many WUA have been top-down created with local Government officials being appointed to the key positions. Whilst the formation process may have been flawed, many of the staff have performed valiant and effective roles; they might well find themselves in elected positions if a democratic establishment procedure were to be adopted.

The purpose of this activity is to assist farmers to establish viable WUA and, where relevant, once the individual WUA are functioning properly to assist in the formation of WUA federations (WUAF) and scheme level WUA federations (IWUA). The main input is technical assistance and community support.

#### **Action 8: Kabupaten Irrigation Improvement Fund(KIIF)**

It is recommended that this Project works alongside other projects in developing funds, such as the KIIF, and assisting staff in the handling of such funds, in improving their decision making and M&E skills.

#### **Action 7: Improved O&M and Joint Management**

Once a WUA has been formed and is moving towards a position where it will be wishing to enter into a joint management agreement with Government there will be a need for continued support for technical support. This would be required throughout the transition period, up to the time when the scheme is ready for turnover. Thereafter it is anticipated that any further support would be provided through the routine activities of the relevant Government agency.

Prior to and during this transition period it is proposed that, under other activities included in the Project, farmers would receive training and would be assisted with aspects related to water charges. The main input under this activity would be technical assistance, provided primarily by Government agencies on issues such as the preparation of cropping calendars, the development of water operation schedules with particular focus on distribution during periods of water shortage and the preparation of irrigation system maintenance schedules.

The other main input would be to assist WUAs in drawing up joint management agreements, identifying exactly what each party would be responsible for, and drawing up a schedule of how the WUA would gradually take over more responsibility.

#### **Action 9: Collection of ISF and Government Support**

This is just one more issue, which the WUA will need to deal with, but because of its fundamental importance it has been identified as a separate activity. Technical assistance will be provided to assist farmers in undertaking system walk-throughs, estimating needs-based real O&M costs, setting water charges according to the service delivered and the type of water-user, identifying in what form payment will be made, organising collection, dealing with reluctant payers, absentee landlords, illegal abstractors, book keeping and a host of other related issues.

#### **Action 10: Rehabilitation of Irrigation Systems**

It appears that on many schemes there is a need for rehabilitation where problems have arisen which are beyond the scope of repair under normal routine maintenance inputs. The new policy is that schemes will need to be turned over, before they can be rehabilitated. One activity here is to provide technical assistance to WUAs to help them prepare rehabilitation proposals, identify what counterpart funding/contributions, the farmers will make and submit the proposal for funding.

The second, major, input would be funds required to supplement the farmers' contribution to implement the rehabilitation and supervise construction and quality control. Once the KIIF pilot schemes have completed their task and purpose such funds should be made available.

### **Action 11: Monitoring and Evaluation**

Whilst most activities will be required to keep detailed records of their activities, and to some extent assess the impact that they have had, it is recommended that a separate M&E unit should be established. This would check the accuracy of the aforementioned records, and in some cases take on the assessment of impact beyond that which the individual activities would precede. The unit would be responsible for looking at all the activities within the Action Plan, identifying where there are any weak links and provide the information required to allow the Project to adjust the various activities as the Project proceeds.

It is recommended that it would be heavily concerned with the WUA monitoring and ranking procedures that are discussed in detail in the Report

### **(3) Agricultural Enhancement Plans**

#### **Action 12: The Agricultural Enhancement Plans**

There are many problems in the agricultural sector; in many respects the situation is worsening. Whilst it is not within the context of the main Action Plan to take on these issues and whilst it would be possible to proceed with the main action plan without any improvements in the agricultural sector, the need for change cannot be overstated. The key to securing farmers' co-operation with the new irrigation management policy is that they obtain good returns from their irrigated cropping. The better the returns, the more able and, probably, the more willing they would be contribute towards full O&M cost.

One area where there could be a direct tie up between the agriculture and irrigation action plans concerns the development of agri-business and the harnessing of the power of an active WUA. Whilst it is not recommended as an initial activity, once WUAs become viable, there could well be the possibility of forming co-operatives and engaging in income generating activities

### **(4) Action Plan for Public Relation of Irrigation and Irrigated Agriculture**

"The indirect action plan" which is shown below, is the contents that the dimension is different completely from "the direct core action plan" which was described to enhance the transfer of the irrigation O&M. On the occasion of the proposition of "the indirect action plan", some intentions are considered to push 1) Not pour funds so much, 2) Available to utilize existing social infrastructures,, 3) To meet with "enjoying a life" character of the people in the country , 4) To call back "the social pride" which was cultivated from the ancient times in the psychology of the people, 5) To decrease the intervention of "the administration", which has lost the trust of the people, 6) To provide occasions to accomplish things with the people's cooperation, 7) To imprint viewpoints that the role of task sharing and efforts by the individual to ensure their own subsistence is necessary.

### **(5) Implementation of Action Plan**

Action Plan shall be implemented, firstly, at the pilot kabupaten as package program applying recommended actions. Based on these pilot schemes, the detailed procedures and guidelines shall be formulated for the implementation in national-wide.

The National Water Management Program is going to be operated by donor countries/institutions under the IBRD initiative. In order to coordinate the activities for the implementation of the new irrigation management policy in pilot Kabupatens, a coordination committee composed with government agencies and other institutions as same as the member of steering committee for the JICA Study, shall be formulated.

The proposed plan of implementation of the Action Plan is shown in Table S.4, applying the Plan of Operation of PCM, indicating, the outputs, target person/groups, executing agencies, role of responsibility of each action.

#### (6) Action Plan and WATSAL Final Results

Within the period of the Study Phase I (April to November 2000) and Phase II (January 2001 to final presentation October 2001) many changes have occurred. Terms have altered, new legislation has been enacted, institutional structures created and dissolved, and ideas conceptualised tried and tested. While every effort has been made to accommodate these changes within the Study the project has not operated continuously since its inception, and phase II (draft final) completed on June 2001.

Owing to these restrictions, several pertinent and important issues have not had the full benefit of the Study Team's attention and should really have been investigated as part of parallel studies. Agricultural and agrarian policy reform, are examples of such issues that impinge strongly on tenant farmers incomes and their ability to contribute both in financial and membership terms to organisational development.

Within the scope of the action plan (Action 7) the concept of Kabupaten Irrigation Improvement Funds (KIIF) and good governance are aspects that have not had thorough investigation and development from the Study. While the concept of KIIF is undoubtedly worthy of trial there are pitfalls to be avoided, capacities to be tested, and financial control transparency and audit to be put to use. For example, should these funds operate as roll-over funds, should they be circular funds, contributory funds, or how should they operate. While this plan is supportive of the concept of KIIF for the purpose of pilot development, it is felt that if the initial indicators are encouraging then expansion to other areas should capitalize on these results as soon as possible. Contributory funding is an important part of the successful operation of this fund, but the exact details of these mechanisms are yet to be determined.

These and other aspects of the plan are presently dynamic, the final form and incorporation into the 'Action Plan' must be left as flexible as possible to allow for change and alteration in the light of practical experience once pilot development has started. At this stage it is emphasised that many measures, constraints, and concepts have been investigated and the plan presented here, is under the current circumstances, the Study Team 'best fit' to the prevailing conditions, both at the field level and within the structural framework of the plan.



## 5. Conclusions and Recommendations

### 5.1 Conclusions

- (1) Applying the concept of, “Full Cost Recovery” to the target number of irrigation schemes for better O&M of infrastructure facilities, the Government’s record of turnover over the last 20 years, is exceptionally poor. It is difficult to identify sustainable program oriented plans, which would show how much investments have been made for establishing required infrastructures to support the peoples’ staple foods, or how many irrigation schemes have been provided and at what costs. On the other hand, farmers engaged in irrigated agriculture who are the object of this Study are already carrying out income diversification activities in order to sustain their livelihoods. Farmers have a mental and economical dependence on irrigated agriculture, even though many irrigation facilities are in rapid decline. It is unfortunate that under the present condition nobody, neither government staff, nor farmers acknowledge or take responsibilities for current failures and low achievement rates.
- (2) What is required from governments now, is creativity and self-reliance. Such characteristics happened to be those most repressed ones under previous governments. Administration skills, and the ability to ensure and manage local budgets with transparency and efficiency, are those most urgently required.
- (3) Most farmers engaged in irrigated agriculture never have occasion to be involved in the planning of irrigation schemes above the level of tertiary and quarterly blocks. Under the present conditions a “sense of ownership” is only possible for farmers within the vicinity of their farm plots and irrigation systems, but ‘ownership’ is not so strongly felt for trunk facilities, like intakes and primary/secondary canals. In most rural communities tertiary and quaternary irrigation systems have been maintained well by local farmers, as one of their rural community activities. For enhancing transfer of irrigation O&M by WUAs, and to accelerate establishments of WUA, it is often unavoidable that initial attempts must take account of traditional rural organizations. From this starting point efforts must be made to reform their awareness to accept the concept of “Full Cost Recovery”. This huge change in awareness may only be tempered by the introduction of the intermediate step of “joint management”, an undefined temporary stage whereby government and WUA join forces under a jointly agreed informal association, to undertake and understand the necessity of O&M of trunk irrigation systems.
- (4) It is not uncommon to find that downstream farmers are frequently found illegally abstracting water to express their discontent with upstream farmers. Previously government officials have done little to become involved in farmer disputes particularly in the issues of irrigation O&M. The JICA Study Team examined the contents of the Action Plans, based on these understandings, the importance of “Participatory Decision Making Procedure (RRA, PRA and Problem Analysis Procedure of PCM) as applied in this Study is recognized.
- (5) “Unification in diversity” was adopted as the motto for managing the country from Independence to present times. Whilst the consultant was aware of the " diversity of culture according to the area" at the time the study commenced, it was also recognized that this cultural diversity did not deeply affect the diversity of irrigation and O&M. An “Irrigation system” is one possible way that unification can be achieved in the field situation, regional differences in landform conditions and

traditional water management regime may also characterize an individual scheme. The introduction of the concept of full cost recovery for secondary and primary systems mainly by WUA federation, not unit WUAs will take time. As for the issue of establishing unit WUAs, it was recognized that “Cultural diversity” does not share a large part of factors defining whether members would like to establish WUA or not. Conversely, the issue of whether persons with potential leadership qualities capable of directing community people into joint action, are available and willing to take command, is often a more important aspect.

- (6) Against a background of low achievement of O&M transfer it became clear that serious “distrust” exists between farmers and government staff. Farmers have no sense of ownership for the irrigation facilities constructed by past government initiatives. It is also evident that “internal distrust” among strata and sectors of various government agencies exists. Action Plans identified by this study have preceded from viewpoints of “ an awaking sense of ownership” and a “creation of partnership”, based on attempts of arousing “trust in the society”.
- (7) Until recent times the government has maintained most of the existing irrigation schemes and the O&M activities, rather like a ,“government one-man show”. This has impacted on farmers’ creating a weak sense of ownership and rarefied partnerships, such history and background are quite evident. The ‘step by step’ Action Plans described in this report makes dealing directly with local governments and farmer a starting point, but are really attempting to provide a model development plan based on the future concept envisaged under WATSAL. The Study Team understands that the government can not wait until all necessary processes and institutional building have been completed before commencing actions to, mobilize all available resources, to solve the problems confronting farmers and local governments. For example, it is already possible to set target levels and commence the establishment of unit WUAs. Also, within the existing framework of present laws and regulations, it would be possible for kabupaten to establish "Coordinated WUA Support Fora".
- (8) Creation of willingness to formulate WUA federation could be promoted through efforts strengthening the capability of WUA to conduct problem finding and self-management. An important key to such development could be a government initiative supporting the use and popularization of many WUA “success stories”. It will be important for government to collate shared experiences of solving problems with farmers and out sources like NGOs, like the IDTO schemes for realizing "the success stories".

## 5.2 Recommendations

### (1) Action Plans and WATSAL

Action Plans of this Study, based on the transfer of irrigation and O&M as the main subject, have been constructed to meet the policies of WATSAL. Government has been trying to provide a policy framework for water resources development and utilization, that considers points of view from farmers and local government staffs who are involved with irrigated agriculture. Even though this framework is still not complete, particularly in the matter of the details of the decentralization policy, the Action Plans are arranged so that they can be progressively developed. It is recommended that Government shall concentrate on the implementation of the Action Plans in the early stage, encouraging the local governments that will become the centers of the local administration in near future.

WATSAL is the structured adjustment loan, affecting water resource management. A condition to this loan is the reformation of water resource policy, requiring a new policy framework to suit Indonesia's attempts to realize decentralization now. It is the kind of policy framework that requires considerable more effort expended before details providing linkages with the actual laws and regulations to be utilized at field levels will be available. In particular, in the implementation of decentralization that has just started, adjustments among provincial and district governments concerning issues of cost allocation for developments, operations of rivers and water resources, and the water right interpretation. However it should be noted that not one technical irrigation system has been completed during the last two administrations.

### (2) Irrigated Agriculture

Even though it has recently been reviewed Indonesian agriculture seems to be governed by complicated administrative structures, involving many ministries and agencies. Such administrative conditions complicate the task and responsibility allocation for any irrigated agricultural issues. Present situation of farmers and local government staff appear to be under non-political direction; Government has not yet issued definite state policy on agriculture, especially on irrigated agriculture. The provision of a detailed plan, emanating from a national agriculture policy involving irrigated, upland, plantation, support and market divisions, should be a Government priority. Through the provision of such a plan, aspects such as the transfer of irrigation and the organization of O&M, which the Study has dealt with, should be incorporated in this document. Other issues that impinge on the development of irrigated agriculture such as provision of agricultural chemicals, an effective farmer credit system, the reform of the KUD and further development of IPM systems, also require urgent attention and should be similarly incorporated in this document.

### (3) WUA Database Operation

To enhance the transfer of O&M of irrigation, and with due acknowledgement to constraint imposed on farmers, it is important to define the target of the number of WUA(s) that should be established within the next term. The WUA database established under this Study comprises information fields, of WUA organization, WUA activities, and conditions of crop cultivation, O&M management, name of respective irrigation scheme and its canal system at tertiary level. It is strongly recommended that this example can be used as a prototype of "WUA Inventory" proposed as one of the Action Plan. It can be easily adapted to provincial and districts level conditions. The structure, the contents and the operations, including setting-up necessary Information Technology (IT) infrastructure, of the database are already completed and compiled into CD-ROM and been delivered to related province and district governments

during the Phase II of this Study.

It is recommended that Government should make it a policy directive that all provincial and district authorities provide compatible WUA Inventory databases as the preliminary preparation for O&M transfer, making the results available to all interested parties.

#### (4) Other Issues

Many constraints exist in the background of the subjects of this Study. It is evident from our surveys that traditional landholding systems remain a prime constraint on farmers, causing conditional poverty. It is obvious that farmers can not improve the land productivity, incentive to these farmers is limited and their ability to pay water charges will not be expected to improve under current tenancy impositions. It is observed that often societies surrounding small-scale irrigated agriculture will impose some direction on generally restraining farmers from their own preferred cropping patterns.

It is recommended that Government should start a sincere effort to review the traditional landholding system in parallel with this project.

Owing to the severe constraint that are endured by many tenant farmers and some lower local government assistants, the social livelihoods of these people are such that they can at best expect only a subsistence existence. Under such an existence it is often impossible for these people to think outside of their 'immediate needs'. This syndrome makes it particularly difficult for these people to join any social initiative programs aimed at improving their existence. Such poverty cycle can only be broken by direct intervention at the grass roots level. Government should keep its convictions to recover "Social trust" among the people, to stir their self-help efforts and competitive spirits for re-creating social duties of them, when Government is going to apply the Action Plans.

Over past decades the Government has adopted a policy of development using loans and grants offered from the international donors as a large part of necessary financing of national development projects. It is suggested that for future development the government should aim to reduce its' reliance on such heavy external funding in this sector. Before accepting international donor development as the only way it is suggested that local and provincial governments should look at the potential for self-funded development. Better debt management and less reliance on international funding should also be an objective in the future of this sector.

Breaking away from the past government attitudes over 400 years, including the half-century from the independence has just began today for the people of Indonesia. A lot of problems are yet to manifest themselves, while society should benefit more from sharing in the national wealth. Unless people are prepared to share the burden of countermeasures, the mountain of problems will increase. The Government should continue to concentrate efforts to re-create a climate of "trusteeship", which should be a foundation of the activities of the society. At the same time attempts to develop capability to grasp the present situation for contributing to "the public service" as the precondition to solving problems that have already accumulated.

Table S.1 Work Items of the Study

Stage		No.	Work Items
PHASE I	Preparatory Work	【 1 】	Collection and analysis of available data and information relevant to the Study
		【 2 】	Formulation of the Study methodology and implementation plan
		【 3 】	Preparation of Inception Report
		【 4 】	Explanation and discussion on the Inception Report in Japan
	Field Survey (1)	【 5 】	Explanation and discussion on the Inception Report
		【 6 】	Preparatory works of the Field Survey (1)
		【 7 】	Collection and analysis of additional data and information
		【 8 】	Analysis of organizational and institutional aspects
		【 9 】	Analysis of physical and social structural aspects
		【 10 】	Analysis of operational aspects
		【 11 】	Rural sociological survey of WUAs
		【 12 】	Questionnaire survey of WUAs
		【 13 】	Categorization of problems and constraints
		【 14 】	Selection of detailed WUA survey areas
		【 15 】	Design of data-base
		【 16 】	Preparation of Progress Report I
		【 17 】	Explanation and discussion on Progress Report I
	Work in Japan (1)	【 18 】	Preparation of Field Survey Results Report (1)
		【 19 】	Preparation of Interim Report
		【 20 】	Preparation of the Field Survey (2)
PHASE II	Field Survey (2)	【 21 】	Explanation and discussion on Interim Report
		【 22 】	Formulation of the countermeasures for the categorized problems and constraints
		【 23 】	Detailed survey of WUA areas
		【 24 】	Case study of WUA areas
		【 25 】	Identification of the important issues and analysis of the problems and constraints
		【 26 】	Confirmation of problems by the participatory approach (inspection of important problems)
		【 27 】	Preliminary formulation of irrigation O&M and management plan by bottom-up method (identification of countermeasures)
		【 27' 】	Provincial and kabupaten workshops of detailed WUA survey areas
		【 28 】	Evaluation of the countermeasure alternatives
		【 29 】	Formulation of the Action Plan for the acceleration of the Irrigation Turnover Program
		【 29' 】	Technical transfer of WUA database to counterparts and Study Provinces and trial of data input at Kabupaten Bandung
		【 30 】	Preparation of Progress Report II
		【 31 】	Explanation and discussion on Progress Report II
	Work in Japan (2)	【 32 】	Report the results of Field Survey (2)
		【 33 】	Preparation of draft Final Report
		【 34 】	Preparation of seminar
	Field Survey (3)	【 35 】	Explanation and discussion on the draft Final Report
【 36 】		Conducting seminar on the results of Study	
Work in Japan (3)	【 37 】	Preparation of Final Report	

Table S.2 Summary of Problems identified by Questionnaire and RRA Survey

Descriptions	Sources		Provinces				
	QS	RRA	W.S	W.J	DIY	E.J.	NTB
<b>A. INEFFECTIVE SOCIALIZATION</b>							
<b>A.1. Top down approach (centralized)</b>		✓	H	H	M	M	M
<b>A.2. Local government was not given autonomy fully</b>		✓	H	M	M	M	H
<b>A.3. Local government depends decision &amp; fund on central government</b>		✓	H	H	M	H	H
<b>A.4. Policy &amp; action on irrigation. management not meet local need</b>		✓	H	H	M	M	H
<b>A.5. Indicator of WUA' status not indicate WUA functioning</b>		✓	H	M	M	M	H
<b>B. LOW FUNCTION OF WUA</b>							
<b>B.1. Poor Management of WUA</b>		✓	H	H	L	M	H
1.1. Meeting were not conducted regularly (%)	✓	✓	76	89	15	58	73
1.2. Meeting were not recorded properly (%)	✓	✓	54	82	15	47	65
1.3. Meeting was conducted less than once a season (%)	✓	✓	68	59	35	51	71
1.4. Collected ISF was not transparently managed (%)	✓	✓	73	90	30	53	70
<b>B.2. Majority of members not paying ISF (%)</b>	✓	✓	78	68	29	59	70
2.1 Majority of members never seen cash book (%)	✓	✓	76	88	30	61	70
2.2 Collected ISF was not reported (%)	✓	✓	68	83	20	60	69
2.3 Majority of members not know using collected ISF (%)	✓	✓	58	75	10	57	88
2.4 WUA members were not able to pay cash (%)	✓	✓	54	93	5	31	46
<b>B.3. Rehab. is eventually done by gotong royong (%)</b>	✓	✓	94	76	100	84	97
<b>B.4. WUA members not trust official</b>		✓	M	M	L	M	M
<b>B.5. Members not appreciate official</b>		✓	M	M	L	M	M
5.1 Members not recognized sanction (%)	✓	✓	61	88	60	54	82
5.2 Deviating members were not punished	✓	✓	77	76	67	42	62
<b>B.6 WUA officials were signed by the government (%)</b>	✓	✓	56	69	67	72	82
<b>B.7 Low participation of members on tertiary level (%)</b>	✓	✓	13	7	15	9	41
<b>C. WATER DISTRIBUTION</b>							
<b>C.1. Low water availability for paddy field</b>	✓	✓	100	72	69	82	86
1.1 Intersector water competition		✓	M	H	H	H	M
1.2 Intercrops water competition		✓	L	H	H	H	M
1.3 Water resource degradation	✓	✓	38	40	48	33	45
1.4 Water was not evenly distributed (%)	✓	✓	68	85	65	44	82
<b>C.2. Facilities were not well function</b>	✓	✓	28	61	30	10	64
2.1 Terminal facilities were inadequate			H	H	L	M	M
2.2 Irrigations construction system were inadequate (%)		✓	49	75	30	13	47
2.3 O&M was dysfunctional	✓	✓	22	53	33	26	90
<b>C.3. Rehabilitation by WUA was poor</b>	✓	✓	H	H	H	H	H
<b>C.4. O &amp; M budget was inadequate</b>	✓	✓	69	64	36	42	71
4.1 ISF collection was low	✓	✓	78	68	29	59	70
4.2 In adequate government budget		✓	H	H	H	H	H
<b>C.5. Need of alternative water acquisition was high</b>	✓	✓	100	72	69	82	86
<b>C.6. Conflict among members of up-middle-down streams</b>		✓	M	M	L	M	M
<b>D. LOW TURN OVER</b>							
<b>D.1 Water was miss-allocated</b>		✓	M	M	M	M	M
1.1 Income from farming was low (Rp. Million/ha/year)	✓	✓	2.7	3.76	2.44	3.71	4.22
1.2 Farming orientation was still subsistence (ha)	✓	✓	0.79	1.1	0.3	0.78	0.59
<b>D.2 Percentage of tenant farmer was still high (%)</b>	✓	✓	10	43	36	6	34
<b>D.3 Out of migration of farm labour (%)</b>	✓	✓	44	13	52	15	14
<b>D.4 Average cultivated land area was low or limited (ha)</b>	✓	✓	0.85	0.77	0.35	0.8	0.59
<b>D.5 No readiness to turnover of WUA members (%)</b>	✓	✓	14	74	20	17	67
<b>D.6 Yield production was still low (ton/ha)</b>	✓	✓	3.2	4.4	4.2	2.5	3.6
<b>D.7 Pests and diseases were still high (%)</b>	✓	✓	55	21	68	25	43
<b>E. Cultural aspect were internalized in local living arrangement, e.g.:- pattern of landownership - gender role - local traditions</b>							
<b>E.1. Low involvement of Women in WUA decision making (%)</b>	✓	✓	18	9	8	<1	5
<b>E.2. Local leadership more effective</b>		✓	M	H	L	H	H
<b>E.3. Local institution in water management were strongly trusted</b>		✓	M	H	L	H	H

Notes :

QS = questionnaire survey, RRA = rapid rural appraisal, H= high, M = medium, L = low

W.S.= West Sumatera; W.J.= West Java; DIY = Daerah Istimewa Yogyakarta; E.J. = East Java NTB = Nusa Tenggara Barat

Table S.3 Plan of Operation fro Action Plan

No.	Activity	Expected Results	Target Farmers/Beneficiaries	Person in Charge	Implementer	Implementation Schedule										Remarks				
						Start line	1	2	3	4	5	6	7	8	9		10			
1	Public Awareness of Government Policy amongst Government Officials	1. Regional government officials can formulate their action plan and required regulation, coordination for irrigation management/turnover 2. Government Officials are true civil servant and facilitator	Central and Regional government officials	Central: KIPRASWII Provinsi: BAPPEDA, Pengairan, Pertanian Kabupaten: BAPPEDA, Pengairan, Pertanian	PMU Consultants Field Activities: PTGA	Completion of WATSAL	█	█	█											
2	Inventory formulation & updating	1. Clarify the present condition of irrigation schemes/WUA for the monitoring to formulate policy and and national asset management.	All irrigation schemes and WUA including WIJAF and WUAF	Central: DWRM of DWRP, KIPRASWII Provinsi: Dinas Pengairan Kabupaten: Dinas Pengairan & Pertanian	PMU Consultants at central level Field Activities: local consultants and irrigation Supervisors and PPL	Immediately	█	█	█	█	█	█	█	█	█	█	█	█	█	10. Large & Small Scale Scheme Inventory 11. National Asset Database 12. WUA Inventory 13. Irrigation System Assessment 14. Irrigation Scheme Rehabilitation Proposal Competition
3	Public awareness and capacity building of WUA level	Farmer can receive government policy of irrigation management/turnover program at field level	All WUAFarmers	Central: DWRM of DWRP, KIPRASWII Provinsi: Dinas Pengairan, PTGA Kabupaten: Dinas Pengairan & COs	Kabupaten: Dinas Pengairan, WUA Coordinated Support Forum and COs Farmers	Completion of WATSAL	█	█	█	█	█	█	█	█	█	█	█	█	█	
4	Training WUA leaders	Ability of trained WUA/ leaders to organize participatory action planning and implementation locally with their respective WUA/ members for sustainable farming irrigation	All WUAFarmers	Central: DWRM of DWRP, KIPRASWII Provinsi & Kabupaten: Dinas Pengairan and WUA Coordinated Support Forum	Kabupaten: Dinas Pengairan, WUA Coordinated Support Forum and COs Farmers	Completion of WATSAL	█	█	█	█	█	█	█	█	█	█	█	█	█	
5	Start-up Assistance	To produce a more equitable condition of development at the field. To improve WUA capability and organization.	All WUAFarmers not yet functioning	Central: DWRM of DWRP, KIPRASWII and BANGDA of MOHA Provinsi & Kabupaten: Dinas Pengairan and WUA Coordinated Support Forum	Kabupaten: Dinas Pengairan, WUA Coordinated Support Forum and COs Farmers	Completion of WATSAL	█	█	█	█	█	█	█	█	█	█	█	█	█	
6	Formation/Information of WUA and WIJAF	Democratic WUA re-formation to obtain basic component of irrigation management turnover	All WUAFarmers not effectively operated	Central: DWRM of DWRP, KIPRASWII Provinsi & Kabupaten: Dinas Pengairan and WUA Coordinated Support Forum	Kabupaten: Dinas Pengairan, WUA Coordinated Support Forum and COs Farmers	Completion of WATSAL	█	█	█	█	█	█	█	█	█	█	█	█	█	
7	Kabupaten Irrigation Improvement Fund	Efficient operating irrigation systems under the maximum fund available in Kabupaten government	All stakeholders of irrigation schemes including Government	Central: DWRM of DWRP, KIPRASWII and BANGDA of MOHA Provinsi & Kabupaten: Dinas Pengairan and WUA Coordinated Support Forum	Kabupaten: Dinas Pengairan and WUA Coordinated Support Forum & Consultants WIJAFs and farmers	Completion of WATSAL	█	█	█	█	█	█	█	█	█	█	█	█	█	
8	Improved O&M and Joint Management	Maximum number of fully functional WUA under the collaboration between WUA members and Government	All stakeholders of irrigation schemes including Government	Central: DWRM of DWRP, KIPRASWII and BAPPENAS Provinsi & Kabupaten: Dinas Pengairan and WUA Coordinated Support Forum	Kabupaten: Dinas Pengairan, WIJAFs and farmers,	Completion of WATSAL	█	█	█	█	█	█	█	█	█	█	█	█	█	
9	Collection O&M and Government Support	To maximize the number of WUA which are capable of preparing realistic O&M budgets, of collecting fee from the water users, and disbursing the funds efficiently. The net result should be reduced Government subsidies and improved irrigation systems.	All stakeholders of irrigation schemes including Government	Central: DWRM and DPs of DWRP, KIPRASWII and BANGDA of MOHA Provinsi & Kabupaten: Dinas Pengairan and WUA Coordinated Support Forum	Kabupaten: Dinas Pengairan, WIJAFs and farmers,	Completion of WATSAL	█	█	█	█	█	█	█	█	█	█	█	█	█	
10	Rehabilitation of Irrigation System	Irrigated areas brought back into good working condition to maximize returns to investment in rehabilitation.	All farmers and WUA under the existing delineated irrigation schemes	Central: DWRM & DPs of DWRP, KIPRASWII & BAPPENAS Provinsi & Kabupaten: Dinas Pengairan and WUA Coordinated Support Forum	Kabupaten: Dinas Pengairan, WIJAFs and farmers, and contractors	Completion of WATSAL	█	█	█	█	█	█	█	█	█	█	█	█	█	
11	Monitoring & Evaluation	Monitor and evaluate the progress of Action Plan and irrigation management turnover and provide the appropriate countermeasures if they are required	All stakeholders of irrigation schemes including Government	Central: DWRM of DWRP, KIPRASWII and BAPPENAS Provinsi & Kabupaten: BAPPEDA & Dinas Pengairan	PMU Consultants, KIPRASWII and BAPPENAS Provinsi & Kabupaten: KIPRASWII & BAPPEDA	Completion of WATSAL	█	█	█	█	█	█	█	█	█	█	█	█	█	
12	Agriculture enhancement plan	Farmer's confidence and their own initiative could be the most important requirements for the success of any farmer activities on a sustainable base. Then agricultural income increase.	Farmer	Central: Center of Agricultural Extension, MOA Provinsi & Kabupaten: BAPPEDA & Dinas Pertanian	Extension system formulation by Consultants at central level Extension service by PPL and Farmers	Immediately	█	█	█	█	█	█	█	█	█	█	█	█	█	

Notes:  Field Kabupaten implementation  
Preparatory stage  
Implementation in all provinces in Indonesia

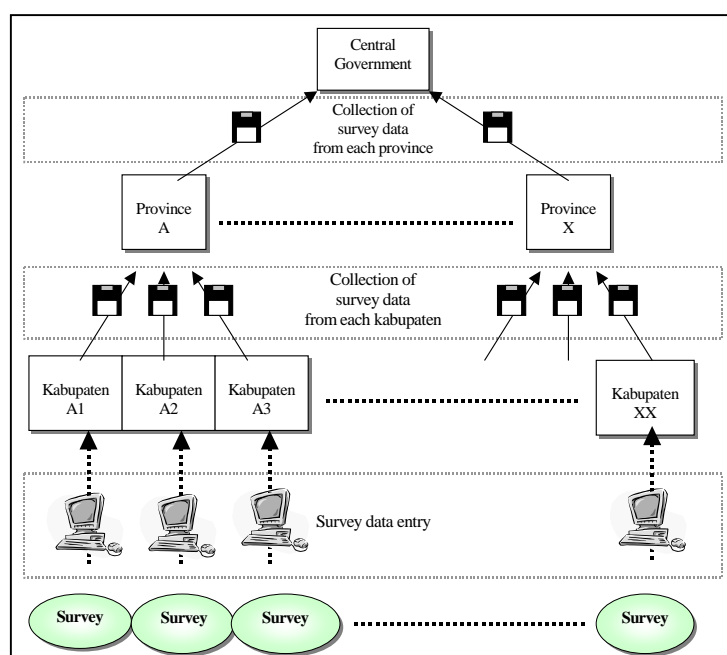


Figure S.1 Conceptual Flow of Preparation and Collection of Data

Table S.4 Data Menu of WUA Database

Category	Items
<b>WUA General Information</b>	1) P3A_Status 2) P3A_Federation 3) P3A_Federation_Member
<b>Irrigation Scheme</b>	1) Irrigation scheme 2) Tertiary irrigation drainage system
<b>ISF</b>	1) P3A_ISF
<b>Management and Guidance for empowering the existing WUA</b>	1) P3A_Training 2) P3A_Evaluation
<b>Irrigation Management</b>	1) P3A_Identification 2) P3A_History 3) P3A_Land 4) P3A_Institutional structure 5) P3A_Organisation 6) P3A_Fees 7) P3A_Function_Water_Distribution 8) P3A_Maintenance_practice 9) P3A_Activity_Meeting 10) P3A_Sanctions 11) P3A_Unit_Production 12) P3A_Management_Administration 13) Government Role
<b>Food crops agriculture in paddy field</b>	1) P3A_Technical_Aspects 2) P3A_Pests_Diseases 3) P3A_Costs_Production
<b>Food crops agricultural activities</b>	1) P3A_Agricultural_Activities
<b>Farming activities for perennial crops (Fruits trees)</b>	1) P3A_Perennial_crops 2) P3A_Agricultural_business 3) P3A_Crop_Yield
<b>Farming activities for Animal husbandry</b>	1) P3A_Livestock 2) P3A_Managing_animal 3) P3A_Livestock_Food 4) P3A_Cost_Value_livestock_activity
<b>Water management and Institutional aspect and farmer's perception</b>	1) P3A_Water_management 1) P3A_Institutional_aspect
<b>Off-farm income</b>	1) P3A_Off_Farm_Income



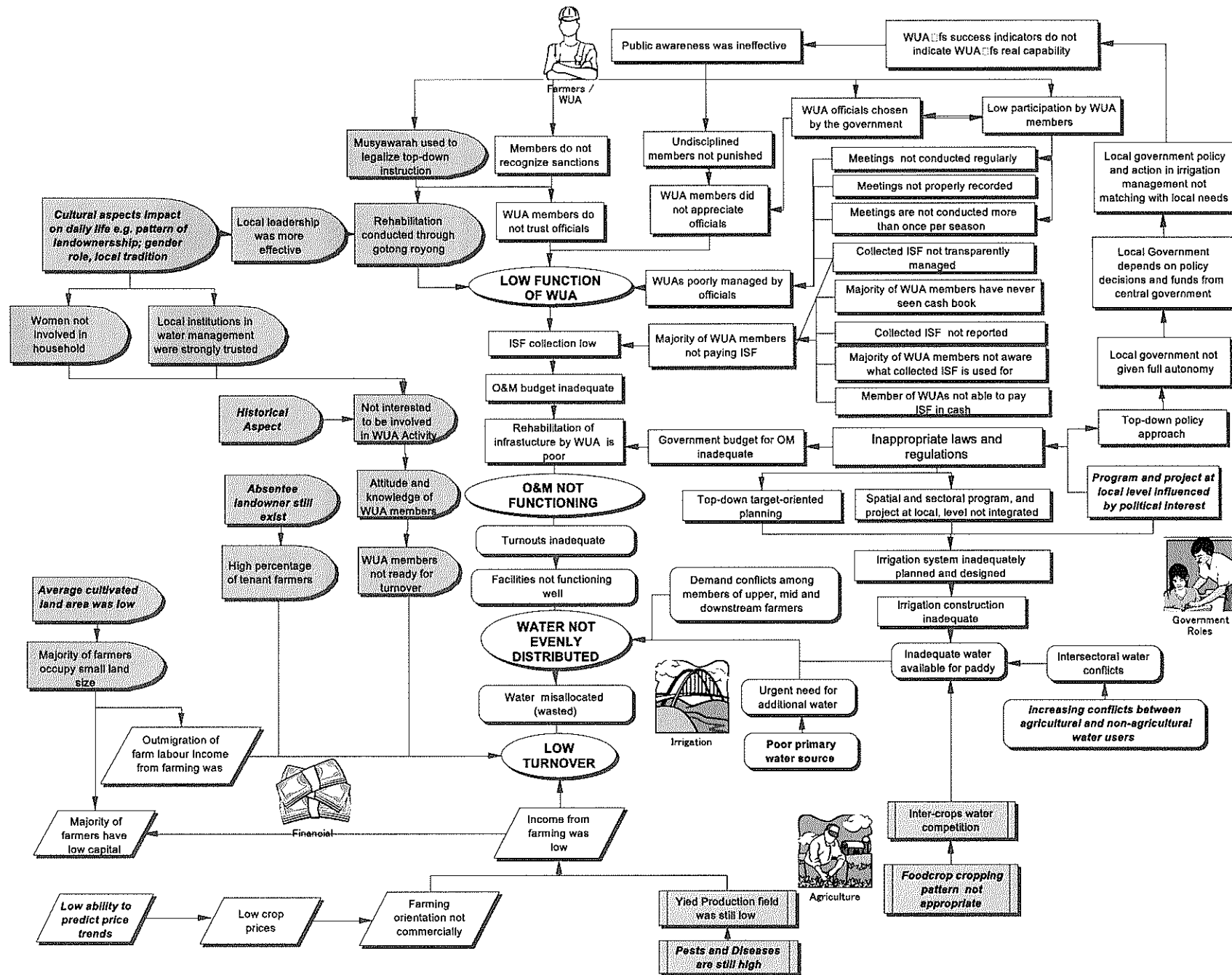


Figure S.2 Comprehensive Problems on Irrigation and WUA Management

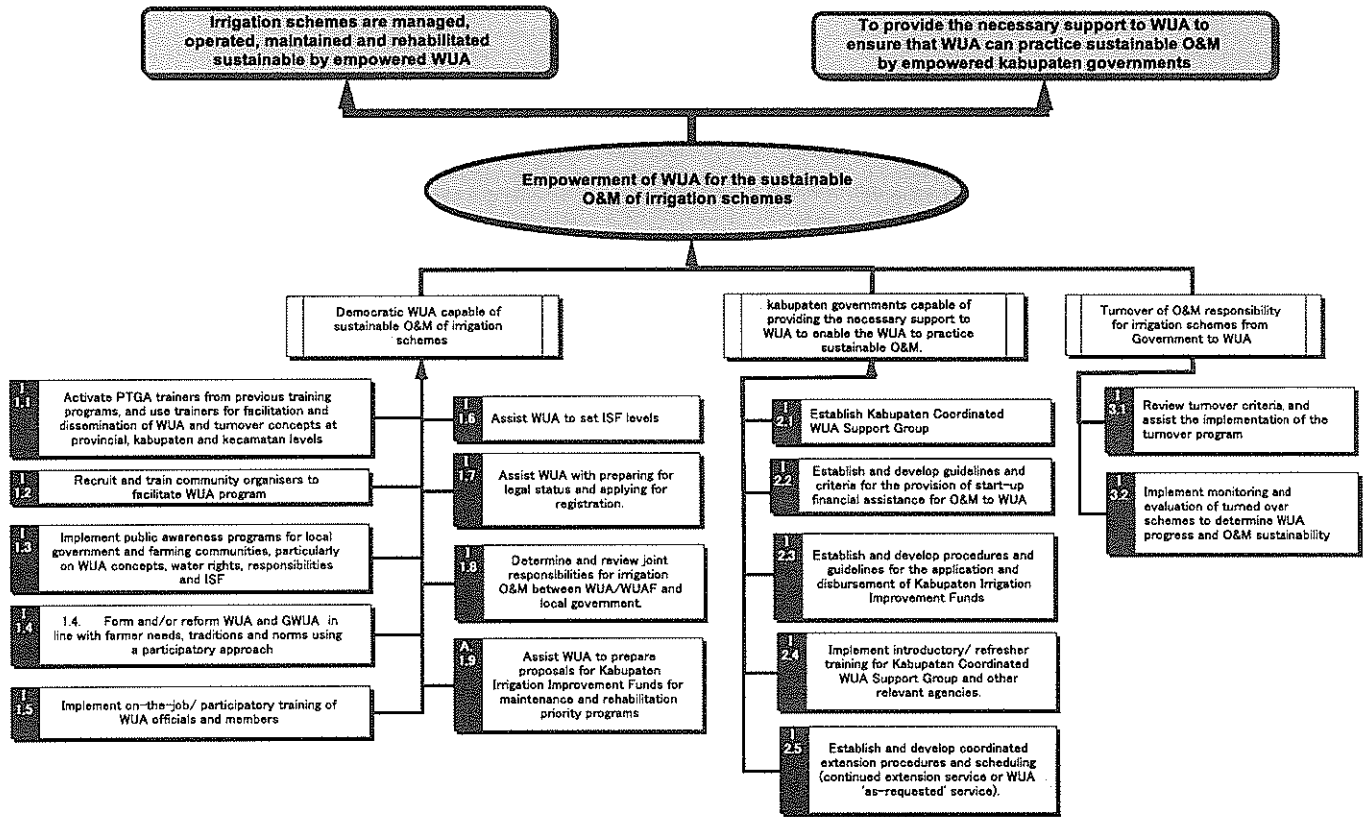


Figure S.3 PDM of Irrigation and WUA Management

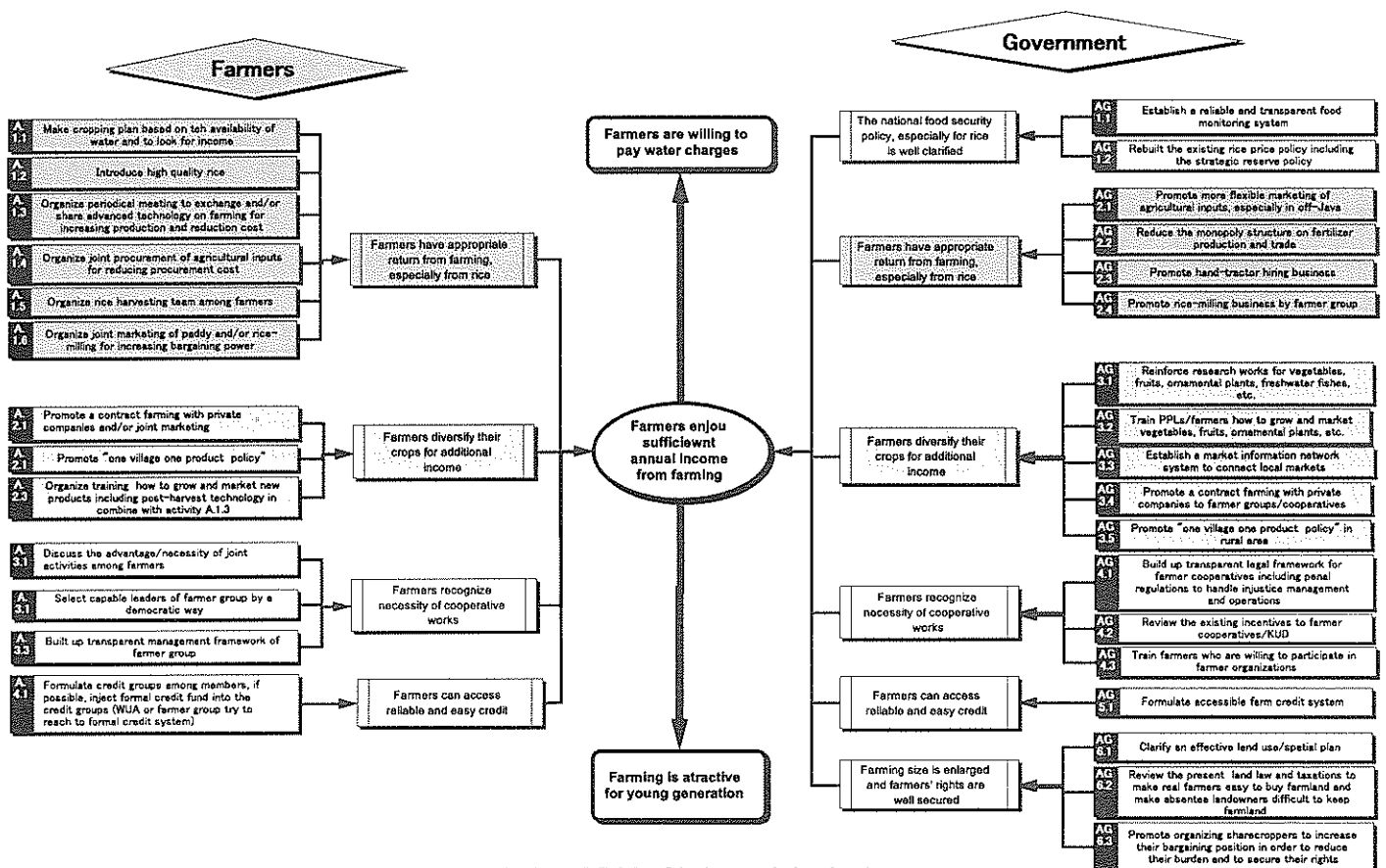


Figure S.4 PDM of Irrigated Agriculture

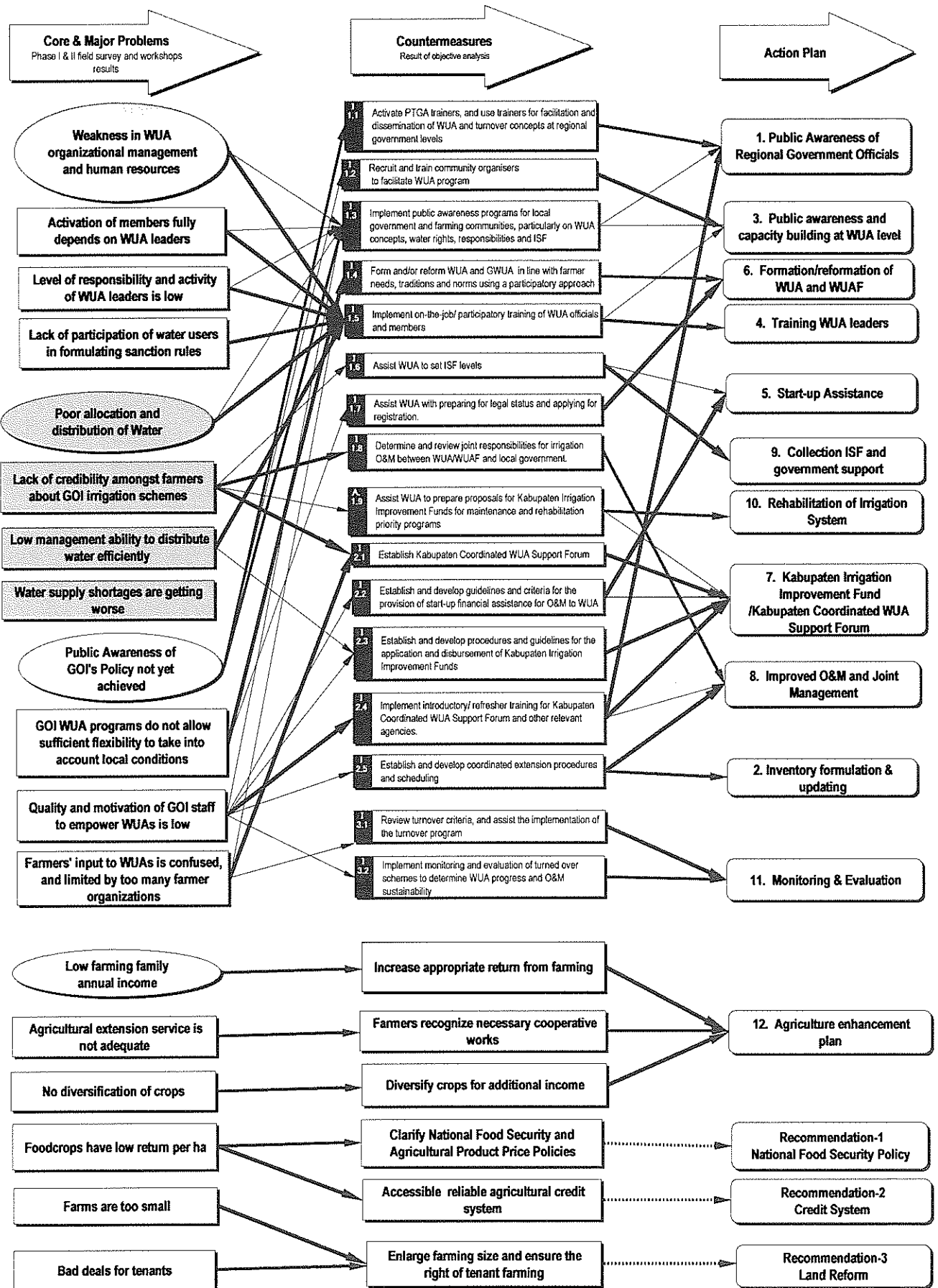


Figure S.5 Major Problems, Countermeasures and Action Plan

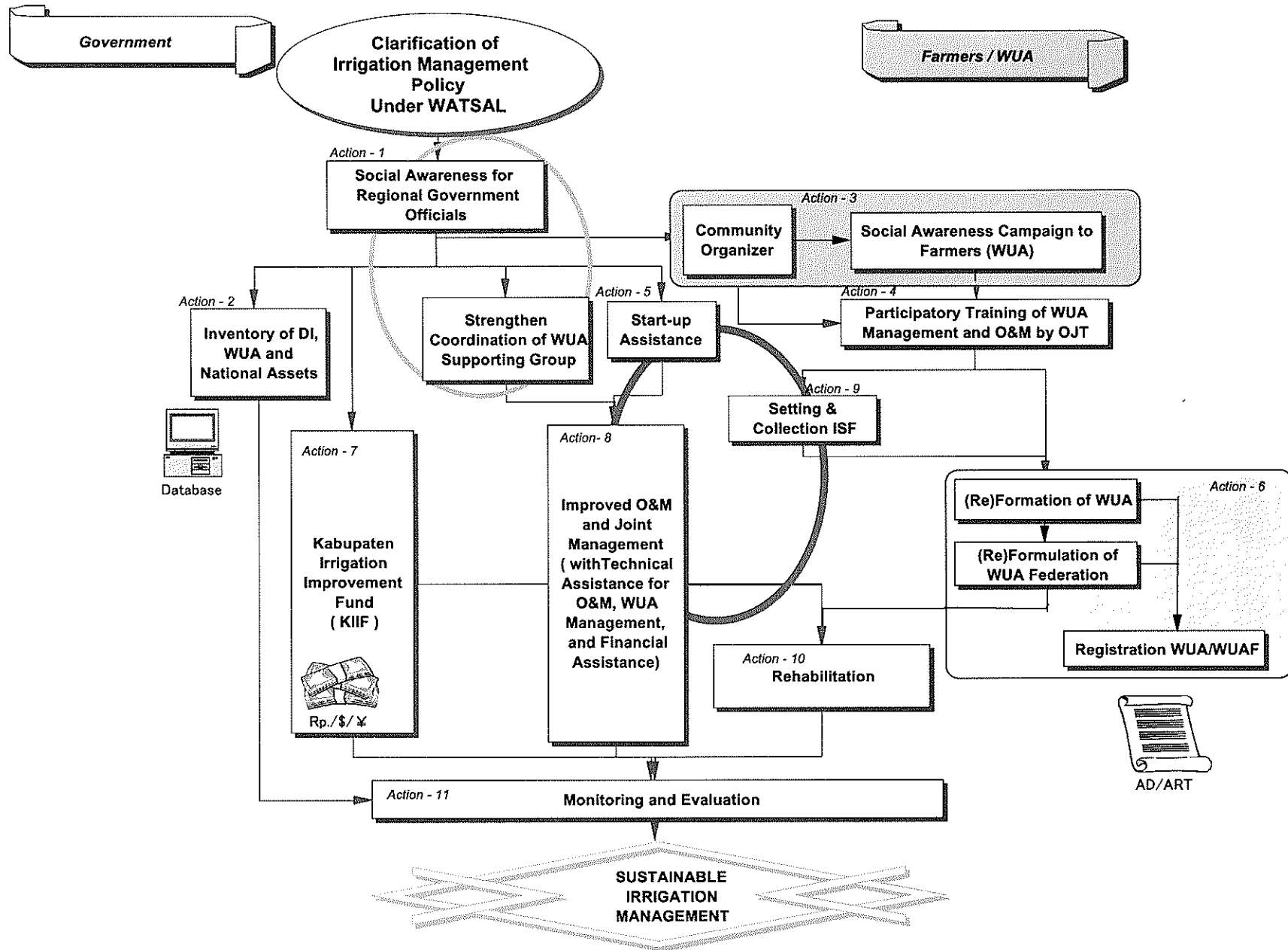


Figure S.6 Action Plan for the Irrigation and WUA Management

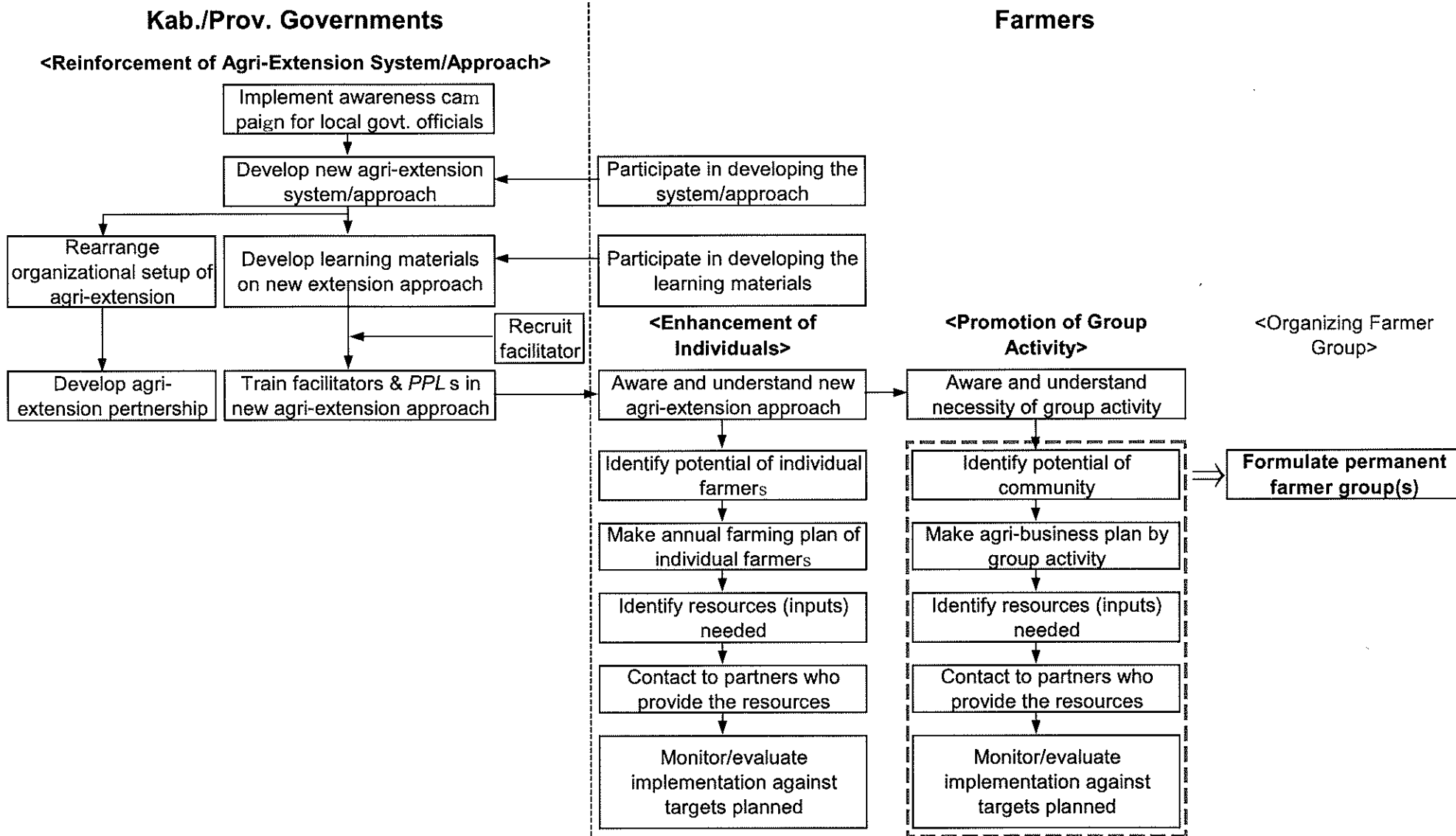


Figure S.7 Outline of Enhancement Plan of Agriculture

Table SA.1 Public Awareness of Government Policy amongst Government Officials

(1) Activity No. :	Program Name	Irrigation-related GOI Attitude Change	Category of the Program
(2) Sector :	Irrigation	(3) Expected Implementation Period :	6 months Irrigation Scheme, WUA, Others
(4) Target Area / Category	1) Estimated Total Number :	2) Estimated Total Area :	
3) Others Indonesia, Province of West Sumatera and 7 Kabupatens and Municipal included in the Study			
(5) Program Description			
Carry out participatory need assessment, program designing and implementation to assist the Provincial and Kabupaten/Municipal GOI and irrigation-related GOI Agencies ready to conduct Social Preparation program and to facilitate program implementation of irrigation policy reform, particularly improvement of irrigation management, WUA empowerment and turnover programs. The activities need to address comprehensively GOI Administration system and GOI Officers' attitude change, hence may include both GOI institutional and capacity buildings in the Province and at Kabupaten/Municipal level in particular.			
(6) Executing agencies/institutions, their roles, present conditions & required strengthening			
1) <u>Field level</u> : Pengamat/Ranling Pengairan GOI, Kecamatan GOI, and Village GOI (Initiative, Beneficiaries, Participation).			
2) <u>Kabupaten government</u> : Kabupaten GOI, Bappeda, Dinas Pengairan, <u>Current Problems to be addressed by the Program</u> Dinas Pertanian (Initiative, Decision, Action, Funding, Beneficiary) Regard with inadequate Government role and management capacity			
3) <u>Provincial government</u> : a. Provincial GOI, Bappeda, Dinas Pengairan, Dinas Pertanian (Funding, Control, M&E) b. PTGA (Action, Participation, Beneficiary) c. Consulting Company, University, NGO (Technical Assistance)			
4) <u>Central government</u> :			
(7) Program Background			
1) <u>Current Problems to be addressed by the Program</u> : a). Inadequate GOI Administration sectoral and intersectoral system, b). Inadequate GOI Office and Field management capacities, c). Inappropriate GOI Officers' approach and orientation (top-down, ego-sectoral, target-oriented, project-oriented)			
2) <u>Countermeasures already taken</u> : a). Issuance of Kab/Mun <i>Perda</i> correspondingly to regional autonomy laws and regulations, b). Reorganization of Kab/Mun GOI organizational structure and work mechanism accordingly, c). Limited socialization of Irrigation Policy Reform, and d) Inclusion of Province and the 7 Kabupaten and Municipal in JICA Study 2000/2001.			
3) <u>Significance and necessary of the Program</u> : GOI is the side where the irrigation policy reform come from. Thus, due to regional autonomy and democratization, GOI preparedness is firstly required for Kabupaten and Municipal prior to Dissemination and Program implementation of irrigation policy reform			
4) <u>Relation between the Program and national development plan/policies/instructions</u> : This program must be supplementary to the on-going comprehensive GOI project schemes (P3DT, KDP etc) and supporting for irrigation-related program schemes (PTGA, Watsal scheme, Batang Hari scheme, Batang Anai scheme, etc) under Inpres no. 3/1999 and Laws and Regulations of decentralization and deconcentration.			
(8) Program Targets and Monitoring			
1) <u>Overall Goal</u> : Preparedness of Kab/Mun GOIs and irrigation-related GOI Agencies to disseminate and facilitate adequately implementation of irrigation policy reform as required.			
2) <u>Proposed performance indicators to assess results at the target level</u> : Readiness of Kab/Mun GOI and related Sector GOI Officers to initiate dissemination as scheduled and facilitate PPI implementation in the included DIs, Kecamatan and Villages on request basis.			
3) <u>Output</u> : a) Adequate Operation Plans of dissemination and facilitation of PPI implementation b) Formation of KICF at Kab/Mun level c) Applicable materials and tool-kits for dissemination and facilitation purposes of PPI implementation d) Sufficient financial resources and arrangement for dissemination and facilitation purposes of PPI implementation e) Adequate number and quality of COs for PPI implementation f) Awareness and ability of GOI officer to be highly motivated civil servants			
4) <u>Proposed performance indicators to assess achievements at the outputs level</u> : a) Prepared adequate dissemination and facilitation operation-plans of PPI implementation of 7 Kab/Mun at the end of this program b) Prepared applicable dissemination and implementation facilitation set of materials and tool-kits of 7 Kab/Mun at the end of this program c) Sufficient financial resources and arrangements for dissemination and facilitation of PPI implementation of 7 Kab/Mun at the end of this program d) Formation of Kabupaten Irrigation Coordination Forum (KICF) of respective Kab/Mun at the end of this program e) Adequate TOT for PTGA and proper PTGA capabilities to train Cos accordingly f) Hired and trained adequate COs managed by Univ/NGO Consulting Team responsible to KICF of 7 Kab/Mun in the end of this program g) Field tested Kab/Mun GOI Officers' ability to be civil servants of 7 Kab/Mun at the end this program			
5) <u>Activities</u> : See Supporting Information			
6) <u>Assumptions</u> : a) Fund is available b) Irrigation policy reform is benefiting to water users c) Task allocation of Central Provincial and Kab/Mun GOIs and Water Users were finally defined and accepted			
(9) Program Inputs			
1) <u>Budget allocation plan throughout the Program period</u> - Need assessment, Provincial GOI and 7 Kab and Mun GOIs, 1 month, 24 man/month - Materials and tool-kits production for dissemination and facilitation of PPI implementation, 2 months, 48 man/month - TOT for PTGA and 7 Kab/Municipal PTGA Teams, 1 training, 1 week, 30 participant at maximum - Recruitment and training for COs, 7 Kab/Mun, 1 CO/DI, 3 DI priorities per Kab/Mun (21 COs), 1 week recruitment, 1 week training - Initiation of KICF, 7 Kab/Mun, meetings for organizational setting and AD/ART formulation (1 week, 7x 21 man/days), 7x1-day Formation Meeting @ 40 attendances, start-up budget for Secretariate and overhead. - In-built consultancies for individual Province and Kabupaten/Municipal GOI and GOI Agencies, KICF and COs for formulation of Dissemination and Facilitation of PPI implementation and activities specified above, 6 month, 48 man/month - Overhead, transportation, communication, accomodation			
2) <u>Staff allocation plans and technical after achievement of overall goal</u> : The Consulting Team is demobilized at the end of this program, whereas the Provincial and Kab/Mun GOIs and related GOI Agencies, PTGA teams, CO and KICF take actions respectively in according to the formulated dissemination and facilitation Action Plan			
3) <u>Provisional equipment/ Materials</u> a) Related laws and regulations (Central, Province, Kab/Mun, Kecamatan/Nagari levels) of irrigation policy reform and implementation b) Explanatory sets of irrigation and WUA problems and solutions c) Proposed Action Plan and task allocation under irrigation policy reform d) Financial budget arrangement (appraisal, proposal, approval, disbursement requirements and mechanisms) e) Manual, instruments, forms which regard to financial, technical, and GOI administration requirements f) Dissemination materials as required for local mass-media (TV, newspaper) and group-media (seminar, meetings, trainings), etc			

to be continued

continued

<b>(10) Program Benefits &amp; Impacts</b>	
<p>1) <u>Direct beneficiaries &amp; their numbers during the program implementation:</u> (631 Provincial and Kab/Mun Key-leaders)</p> <p>a) Provincial GOI: Parliament 2, ProvGOI 3, Bappeda 3, Dinas Pengairan 3, Dinas Pertanian3, others 5, PTGA 5 = 19 people b) Kab/Mun GOI: 7 (Parliament 2, ProvGOI 3, Bappeda 3, Dinas Pengairan 3, Dinas Pertanian3, others 5, PTGA team 4, CO 21, KICF 45) = 588 people</p> <p>2) <u>Direct beneficiaries &amp; their numbers after achievement of overall goal:</u> (similarly to above)</p> <p>3) <u>Indirect benefits:</u> a) Field examination of regional autonomy GOI reorganization x irrigation task allocation into practice b) Universities and NGO hired for Consulting Team at Kab/Mun level managing the Cos = Headquarter 3, Kab/Mun offices 7x3 = 24 people</p>	
<b>(11) Related Projects/Programs (IISP, IDTO, PTSL, SAL, Others)</b>	
1) Other projects : Available to supply accurate info. To realize regional development	
<b>(12) Pre-Requirements</b>	
1) Reorganization and redefinition of Provincial and Kab/Mun GOIs was completed and workable, 2) Competent Consulting Agency is available to execute this program 3) COs were recruited on minimumum S1+3year-rural community experience basis 4) Priority is given to 3 DIs per Kabupaten/Municipal at maximum due to a screening criteria	
<b>(13) Risks &amp; sensitivities</b>	
<b>(14) Special Remarks</b>	

### Implementation Schedule : Irrigation-related GOI Attitude Change

Work Descriptions	1st Year												2nd Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
1 Need assessment to capacity & attitude change	■	■	■																					
2 Planning of Dissemination & facilitation of PPI		■	■	■	■																			
3 Production of dissemination & facilitation materials			■	■	■	■																		
4 Workshop & training for local GOI attitude change						■	■																	
5 Initiation of Kab Irrigation Coord Forum (KICF)																								
- Formation and legalization			■	■	■																			
- Guide/criteria of start-up fund to IUUA				■	■																			
- Guide/procedure of application of KIIF				■	■																			
6 Training for PTGA					■	■																		
7 Recruitment and Training of COs						■	■																	

Note : 1. Both of programs of Public awareness and training of IUUA leaders proposed here are intending as Pilot Program before commencing nationwide activities

2. This program is to be implemented after completing "Public Awareness at GOI level & IUUA level" in the first year

**Supporting Information of 5) Activities of (3) Program Targets and Monitoring : Irrigation-related GOI Attitude Change**

Activities	Expected result	By Farmers / WUA	By Local Govt	By Central Govt	Consulting Team	CO Managing Team*)
1 Need assessment of local Govt capacity and attitude change for PPI implementation	Prioritization and scheduling of local Govt capacity and attitude change		V		TA	
2 Formulation of local Govt Plan for Dissemination and Facilitation of PPI implementation	Local Govt's Dissemination & Facilitation Plan of PPI implementation		V		TA	
3 Material productions of Dissemination and Facilitation for PPI implementation	(1) Applicable methods and materials for Dissemination of PPI implementation (2) Applicable manuals and administration requirements for PPI implementation		V		TA	
4 Changing local Govt Officers' attitude for dissemination and facilitation of PPI implementation 4.1 Workshop on Govt Officers attitude change 4.2 Job trainings of local Govt's Officers	(1) Formulated local Govt Officers' job description, standard performance and procedures (2) Ability of local GOIs' Officer to facilitate adequately the implementation of PPI.		V		TA	
5 Initiation of Kab Irrigation Coord Forum (KICF) 5.1 Draft formulation of KICF Articles 5.2 Formation and legalization of KICF of KICF Articles 5.3 Formulation of guideline and criteria for provision of start-up O&M fund to WUA 5.4 Formulation of guideline and procedure of application and disbursement of Kabupaten Irrigation Improvement Fund	Initiated and prepared KICF to undertake as well their role and responsibility	V	V		TA	
6 Training for PTGA Officers 6.1 Designing of training/refreshing syllabus 6.2 Selection of participants from Provincial PTGA and Kab/Mun PTGA Teams 6.3 Provision of Training for PTGA Officers	Ability of PTGA Officers to facilitate CO training		V		TA	
7 Recruitment and training of COs 7.1 Need analysis for COs 7.2 Planning and budgeting for CO recruitment and training 7.3 Formulation of CO minimum requirements and recruitment procedure 7.4 Advertisement and selection of Cos 7.5 CO training and posting	Adequate number and quality of COs by Kabupaten and Municipal		V		TA	V

Note : . Legend of Task Owning

\*) acted by Univ/NGO

V : Having authority & responsibility      KS : Joint operation  
KM : Partnership                                      TA : Technical Assistance

This program is to be implemented after completing "Public Awareness at GOI level & WUA level" in the first year



Table SA.2.1 Major Irrigation Scheme Inventory Updating Program

(1) Activity No. :	INV - 1	Program Name ;	Major Irrigation Scheme Inventory Updating Program	Category of the Program
(2) Sector :	Irrigation	(3) Expected Implementation Period ;	3 years	Irrigation Scheme, WUA, Others
(4) Target Area / Category	1) Estimated Total Number ;	1,800 schemes	2) Estimated Total Area ;	2.7 million ha
3) Others				
<b>(5) Program Description</b>				
Carry out revision of latest inventory of irrigation schemes over the country, basing on the 1993 D.I. Inventory. Present conditions of irrigation & drainage system are to be confirmed by walk-through survey. The survey is to be conducted by strong Top-Down instruction, showing incentives from the Central to provinces' govts of assistance budget for maintenance / rehabilitation. Trunk system from water source to turn-out to tertiary along secondary is to be compiled. Tertiary level is to be excluded.				
<b>(6) Executing agencies/institutions, their roles, present conditions &amp; required strengthening</b>				
1) <u>Field level</u> : Hired contractors will conduct walk-through confirmation survey				
2) <u>Kabupaten government</u> : Dinas Kab. Kimpraswil				
3) <u>Provincial government</u> : Dinas Kimpraswil, In-Charge at province level, guide Dinas Kab Kimpraswils				
4) <u>Central government</u> : In-Charge; Kimpraswil, DGWR, DWRM				
<b>(7) Program Background</b>				
1) <u>Current Problems to be addressed by the Program</u> : Almost all information of present condition of irr. & drainage system is not sufficient for provide accurate qty / cost estimation for maintaining the system.				
2) <u>Countermeasures already taken</u> : Any particular measures have never been taken by the central govt.				
3) <u>Significance and necessary of the Program</u> : As being requested by farmers to local governments to complete rehabilitation before handing-over, central government should up-date or guide so to provide basic reference points for sound asset management.				
4) <u>Relation between the Program and national development plan/policies/instructions</u> : GOI is going to proceed National Water Resources Management Program developing BWMP to provide accurate references for sound regional planning in near future. The proposed program is most precious info. to make any regional plannings concrete, because irri-sector is major water users in field.				
<b>(8) Program Targets and Monitoring</b>				
1) <u>Overall Goal</u> : To realize / complete accurate referenciable inventory to identify rehab necessary parts and available to accurate cost estimate.				
2) <u>Proposed performance indicators to assess results at the target level</u> : Compiled inventory itself.				
3) <u>Output</u> : Compiled inventory itself				
4) <u>Proposed performance indicators to assess achievements at the outputs level</u> : Compiled inventory itself, including map oriented info. & drawings, not only numeric info.				
5) <u>Activities</u> : See Supporting Information				
6) <u>Assumptions</u> :				
<b>(9) Program Inputs</b>				
1) <u>Budget allocation plan throughout the Program period</u> Rp 74,549.92 (x 1,000,000) eq. \$6,777.27 (x 1,000) US\$1=Rp11,000				
2) <u>Staff allocation plans and technical after achievement of overall goal</u>				
3) <u>Provisional equipment/ Materials</u>				
<b>(10) Program Benefits &amp; Impacts</b>				
1) <u>Direct beneficiaries &amp; their numbers during the program implementation</u> : Private consultants ( With contracts for the survey )				
2) <u>Direct beneficiaries &amp; their numbers after achievement of overall goal</u> : Local govts ( Kab. & Province )				
3) <u>Indirect benefits</u> : Farmers ( Available to expect originally design water allocation ; 6million), Local govt ( Available to prioritize irri. Scheme & save expenditure ), Urban people ( Because available to buy rice)				
<b>(11) Related Projects/Programs ( ISP, IDTO, PTSL, SAL, Others)</b>				
1) IDTO, but not related directly because high-lighting tertiary level rehabilitation.				
2) PTSL, Available to obtain latest irri/drainage sys conditions through not covering whole scheme area.				
<b>(12) Pre-Requirements</b>				
1) Inventory developed by Provincial govts or inventory 1993 should be existing.				
2) WUA or Farmers' union should be established				
<b>(13) Risks &amp; sensitivities</b>				
1)				
<b>(14) Special Remarks</b>				
1)				

**Supporting Information of 5 Activities of (2) Program Targets and Monitoring :  
Major Irrigation Scheme Inventory Updating Program**

Activities	By Farmers / WUA	By Local Govt	By Central Govt	By Consultant
<b>Phase-I : Initial Set-Up Stage</b>				
Irrigation Scheme Identification			V, BU	
(1) Irrigation Scheme Initial Identification		I	V, BU	
(2) Present Irrigation Scheme Compilation		I	V, BU	
<b>Phase -II : Inventory Updating / Completion Stage</b>				
Present Condition Confirmation of Irrigation Scheme			V, BU	
(1) Present Condition Confirmation Survey	KM	KS	V, BU	I
(2) Present Condition Compilation Works			V, BU	I
(3) O&M Management Stratified Tree	KM	KS	V, BU	I

Note : Legend of Task Owing

V : Having authority & responsibility

BU: providing guidance/assistance/backup

KS : Joint operation

I : Implementor

KM : Partnership

**Implementation Schedule : Major Irrigation Scheme Inventory Updating Program**

Work Descriptions	1st Year												2nd Year												3rd Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
<b>Phase-I : Initial Set-Up Stage</b>	-----																																			
Irrigation Scheme Identification	-----																																			
(1) Irrigation Scheme Initial Identification	-----												-----																							
(2) Present Irrigation Scheme Compilation	-----												-----																							
<b>Phase -II : Inventory Updating / Completion Stage</b>	-----																																			
Present Condition Confirmation of Irrigation Scheme	-----																																			
(1) Present Condition Confirmation Survey	-----												-----																							
(2) Present Condition Compilation Works	-----												-----																							
(3) O&M Management Stratified Tree	-----												-----																							

Table AS.2.2 Small Scale Irrigation Scheme Inventory Updating Program

(1) Activity No. :	INV - 2	Program Name ;	Small Scale Irrigation Scheme Inventory Updating Program	Category of the Program
(2) Sector :	Irrigation	(3) Expected Implementation Period ;	3 years	Irrigation Scheme, WUA, Others
(4) Target Area / Category	1) Estimated Total Number ;	17,200 schemes	2) Estimated Total Area ;	1.31 million ha
	3) Others			
<b>(5) Program Description</b>				
<p>Carry out revision of the latest inventory of irrigation schemes over the country, but only for tertiary block level, basing on the 1993 D.I. Inventory. Present conditions of irrigation &amp; drainage system in tertiary level are to be confirmed by walk-through survey, by WUA members. The survey is to be conducted by farmers applying participatory approach, showing rehabilitation schemes as their incentives, also available add other incentives if any. Trunk system from water source to turn-out to tertiary along secondary is to be excluded. Including a whole irrigation scheme less than 500ha or so might be alternative.</p>				
<b>(6) Executing agencies/institutions, their roles, present conditions &amp; required strengthening</b>				
<p>1) <u>Field level</u> : WUA or farmers' group will provide with fulfilling the specified forms</p> <p>2) <u>Kabupaten government</u> : Dinas Kab. Kimpraswil</p> <p>3) <u>Provincial government</u> : Dinas Kimpraswil, In-Charge at province level, guide Dinas Kab Kimpraswil</p> <p>4) <u>Central government</u> : In-Charge; Kimpraswil, DGWR, DWRM</p>				
<b>(7) Program Background</b>				
<p>1) <u>Current Problems to be addressed by the Program</u> : Almost all information of present condition of irr. &amp; drainage system is not sufficient for providing accurate qty / cost estimation for maintaining the system.</p> <p>2) <u>Countermeasures already taken</u> : Any particular measures have never been taken by the central govt, but by provincial govt for up-dating..</p> <p>3) <u>Significance and necessary of the Program</u> : According to new regulation all of O&amp;M irrigation schemes are to be handled by farmers, but the administration side can not show latest information as in-charge of national asset. Farmers are insisting to complete maintenance of irr. &amp; drainage sys as designed originally. Such inventory can be a precious evidence to keep transparency and fairness to recover the trust to administration.</p> <p>4) <u>Relation between the Program and national development plan/policies/stratctions</u> : GOI is going to proceed National Water Resources Management Program developing BWMP to provide accurate references for sound regional planning in near future. The proposed program is most precious info. to make any regional plannings concrete, because irri-sector is major water users in field.</p>				
<b>(8) Program Targets and Monitoring</b>				
<p>1) <u>Overall Goal</u> : To realize / complete accurate referenciable inventory to identify reha necessary parts and available to accurate cost estimate.</p> <p>2) <u>Proposed performance indicators to assess results at the target level</u> : Compiled inventory itself.</p> <p>3) <u>Output</u> : Compiled inventory itself</p> <p>4) <u>Proposed performance indicators to assess achievements at the outputs level</u> : Compiled inventory itself, including map oriented info. &amp; drawings, not only numeric info.</p> <p>5) <u>Activities</u> : <b>See Supporting Information</b></p> <p>6) <u>Assumptions</u> :</p>				
<b>(9) Program Inputs</b>				
<p>1) <u>Budget allocation plan throughout the Program period</u> Rp 54,514.16 (x 1,000,000) eq. \$4,955.83 (x 1,000) US\$1=Rp11,000</p> <p>2) <u>Staff allocation plans and technical after achievement of overall goal</u></p> <p>3) <u>Provisional equipment/ Materials</u></p>				
<b>(10) Program Benefits &amp; Impacts</b>				
<p>1) <u>Direct beneficiaries &amp; their numbers during the program implementation</u>: Farmers groups (or WUA) with receiving initial rehab by govt.</p> <p>2) <u>Direct beneficiaries &amp; their numbers after achievement of overall goal</u>: Local govts ( Kab. &amp; Province ), farmers provided the inventory</p> <p>3) <u>Indirect benefits</u>: Farmers ( Available to expect originally design water allocation ; 6million), Local govt ( Available to prioritise irri. Scheme &amp; save expenditure ), Urban people ( Because to buy rice stable )</p>				
<b>(11) Related Projects/Programs ( IISP, IDTO, PTSL, SAL, Others)</b>				
<p>1) IDTO, directly being related. but not covering majority of tertiary blocks</p> <p>2) PTSL, Available to obtain latest irri/drainage sys conditions through not covering whole scheme area.</p> <p>3) FMI, ADB assisted scheme aiming to maintain small scale irrigation schemes nominated by provincial govts every year. But no info of whole small schemes.</p>				
<b>(12) Pre-Requirements</b>				
<p>1) Inventory developed by Provincial govts or Inventory 1993 should be existing.</p> <p>2) WUA or Farmers' union should be established</p>				
<b>(13) Risks &amp; sensitivities</b>				
1)				
<b>(14) Special Remarks</b>				
1)				

**Supporting Information of 3 Activities of 3 Program Targets and Monitoring :  
Small Scale Irrigation Scheme Inventory Updating Program**

Activities	By Farmers / WUA	By Local Govt	By Central Govt	By Consultant
<b>Phase-1 : Initial Set-Up Stage</b>				
Irrigation Scheme Identification			V	
(1) Irrigation Scheme Initial Identification		I	V, BU	
(2) Present Irrigation Scheme Compilation		I	V, BU	
<b>Phase-2 : Inventory Updating / Completion Stage</b>				
Present Condition Confirmation of Irrigation Scheme			V, BU	
(1) Present Condition Confirmation Survey	I	KS	V, BU	
(2) Present Condition Compilation Works		I	V, BU	
(3) O&M Management Stratified Tree		KS	V, BU	I

Note : Legend of Task Owing

V : Having authority & responsibility

BU: providing guidance/assistance/backup

KS : Joint operation

I : Implementor

KM : Partnership

**Implementation Schedule : Small Scale Irrigation Scheme Inventory Updating Program**

Work Descriptions	1st Year												2nd Year												3rd Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
<b>Phase-1 : Initial Set-Up Stage</b>	[Hatched bar]																																			
Irrigation Scheme Identification	[Hatched bar]																																			
(1) Irrigation Scheme Initial Identification	[Solid black bar]																																			
(2) Present Irrigation Scheme Compilation	[Solid black bar]																																			
<b>Phase-2 : Inventory Updating / Completion Stage</b>	[Hatched bar]																																			
Present Condition Confirmation of Irrigation Scheme	[Hatched bar]																																			
(1) Present Condition Confirmation Survey													[Solid black bar]																							
(2) Present Condition Compilation Works													[Solid black bar]																							
(3) O&M Management Stratified Tree																									[Solid black bar]											