DIRECTORATE GENERAL FOR INTERNATIONAL COOPERATION
MINISTRY OF FOREIGN AFFAIRS
KINGDOM OF THE NETHERLANDS

WATER USERS ASSOCIATION STRENGTHENING PROJECT

INDONESIA

Report on the Joint Evaluation Mission

(June - July 1990)

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first draft

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ir. P. Ankum
dr.ir. R. Best
mrs.ir. W.J. van Leeuwen

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1. CONCLUSIONS AND RECOMMENDATIONS

1.1. Conclusions

- Three projects were included in the first time-slice of the World Bank's Irrigation Sub-Sector Project (ISSP-1) to deal with water users associations, namely the Water Users Training Project (WUTP), the Water Users Association Strengthening Project (WUASP), and the Irrigation Service Fee (ISF) project. Each of these projects was intended to have its own task in organizing and activating water users associations (WUAs).

  The planned coordination of the projects did not take place. This resulted in a considerable overlap activities, while finally the ISF project had to combine most activities of the three projects in order to be able to operate.

- The Water Users Associations Strengthening Project (WUASP) concentrated much of its efforts on training staff at the district and sub-district levels for the so-called "Action Groups" and the "Field Guidance Groups".

  These are meant to inform and motivate the (sub-)heads of agencies at district level, who are subordinates of the members of the Irrigation Committees, to act as catalysts for communication with sub-district and village levels and to organize WUAs.

- The project staff concluded rightly that too much effort had been put into the training of the Action Group members at district level, so that the actual target group, the water users associations, had insufficiently been reached.

- The project worked on a very small scale (220 WUAs in 2½ years of an estimated total of 50,000 WUAs, i.e. 0.4%) and its activities proceeded slowly, partly because of the time-consuming effort put into the "Action Groups" and "Field Guidance Groups".

  The project staff came to the conclusion that for future activities, with a concentration on the training of the agricultural extension workers (PPLs), operations could be speeded up to reach a target of 500 water users associations.

  This is still a small number and there is no indication what the ultimate goal of the project should be.

- The impact of WUASP cannot be measured at the present stage. However, a weakness of the project is that when there are no project funds available any longer for Action Groups and Field Guidance Groups, there will no longer be an incentive for the officials concerned to function in such groups.

- Strengthening of water users associations and training are major components in several other projects (see also chapter 6), but incentives to make these activities effective, are insufficiently provided by the projects.

- There are two exceptions to the foregoing conclusion, namely the Irrigation Service Fee (ISF) Project and the FAO On-Farm Water Use Project.

- The ISF Project because of the very specific way in which it has been organized, giving farmers a say in the irrigation matters concerning their water users association.
  The associations and federations of associations are being placed in a position where they can demand services and influence the way in which the constraints which they experience, can be solved partly or entirely with the fees they have paid.

- The FAO On-Farm Water Use Project deals with village-managed systems and uses the concept of activating water users associations to introduce technical improvements. Farmers pay and provide materials and labour to improve the irrigation system in their tertiary unit.
  However, these technical improvements are introduced only in a final phase after the socio-economic conditions are investigated and the non-technical constraints have been removed.

- The present concept of introducing the irrigation service fee and of the FAO On-Farm Water Use Project is changing relations in the irrigation sub-sector because of the approach from lower to higher levels instead of the top-down approach.

- At the same time, the ISF Project creates a need for complementary extension services. The one is in the field of irrigation, the other in agriculture.
  For traditional water users associations the needs in agriculture are well-covered by the FAO concept, which also provides for a stable institutional basis.

- There are three projects, WUASP, Agricultural Component of the Third irrigation Project (ACTIP) and FAO's On-Farm Water Use Project, which deal with on-farm water use and water management from an agricultural point of view.
  All three projects operate with Netherlands' financial participation. The participating international agency of WUASP indicated that it will no longer continue its financial involvement in the project.

- In view of the given conditions, it would make sense if ACTIP could be reformulated in such a way that its activities would largely follow the concept of the FAO project and be complementary to the ISF approach.
  Furthermore, findings and positive elements of the WUASP project could be included in the new ACTIP concept.

- The explicit attention to the strengthening of female farmers' position in water use management is a crucial element in WUASP.
  Unfortunately, the Women in Development (WID) expertise has been included in Consultants' team in a late stage only. Moreover, funds for the WID component have not been allocated yet, which resulted in another serious drawback.
  However, a promising start has been made in WUASP to incorporate gender-analysis methodology in the training packages for the different target groups.

- The concept of ISSP-1 is sound and will stimulate the sustainable irrigation development in Indonesia. However, several lessons have been learned on the way to reach sustainable irrigation development.

By participating in the Irrigation Sub-Sector Projects (first and possible also the second time-slice), the Government of the Netherlands became a partner, while it can place certain accents within the development strategy.

- Co-financing by the Netherlands of the World Bank's first time-slice of the Irrigation Sub-Sector Project (ISSP-1) has not resulted in a very satisfactorily situation yet.

  The sub-project WUASP will not be continued by the Bank during the second time-slice (ISSP-2), the irrigation institutional strengthening study failed at first to produce acceptable results and has still not yielded any new vision, while of the financial contribution of about US$ 10 million no individual account is available.

  Part of these less-than-optimum results are also related to the monitoring by the Government of the Netherlands and could have been improved by GON-auditing of the construction works.

1.2. Recommendations

- The mission recommends to terminate the Water Users Association Strengthening Project (WUASP) after its first stage ends in March 1991.

  A second phase of WUASP would not be justified under the present project conditions as explained extensively in this report.

  Questions remain, such as the limited project-impact on WUAs, overlap with other programmes, the remaining dependence on project-funds at district level, the need to create new coordinating groups at district and sub-district levels, its relation to the GOI policy on Irrigation Service Fee, termination of World Bank's assistance, etc.

- Three projects, WUASP, ACTIP and FAO's On-Farm Water Use Project, deal with on-farm water use and water management from an agricultural point of view. The projects operate with Netherlands' financial participation.

  It is recommended to investigate the possibilities to reformulate the ACTIP project and to try to include positive elements of WUASP in the new concept which should largely follow the FAO concept of activating and institutionalizing the water users organizations.

- It is also recommended that the main objective of such a larger ACTIP project should be the development of an extensive on-farm water use and water management component in the agricultural extension service.

- Subjects related to the main objective which should also be covered are cropping systems and techniques in irrigated agriculture, the production and supply of good sowing seed as also plant protection.

- It is recommended that the larger ACTIP project should work in close cooperation with the World Bank's ISF project in ISSP-2 and with the ADB's TISP project.

- The proposals for the World Bank's ISSP-2 project could contain sub-projects which are attractive for Netherlands co-financing arrangements.

  However, proper accounting of such a contribution should be arranged before the beginning of the project.

2. INTRODUCTION

2.1. The Joint-Evaluation Mission

Joint-evaluation mission. An evaluation mission on the Water Users Association Strengthening Project (WUASP) has been fielded by the Government of the Netherlands to assess the results achieved so far and to advise on proposals for the second time-slice.

The mission is a joint activity between the Indonesian and the Netherlands Governments and consists of four members.

From the Government of the Netherlands:

ir. P. Ankum, water management aspects / mission leader,
dr.ir. R. Best, training and agricultural aspects,
mrs.ir. W.J. van Leeuwen agricultural extension and Women in development aspects,

From the Government of Indonesia:

ir. Habib Tahir of DAAD, Ministry of Agriculture.

Objectives. The objectives of the mission are, see also the Terms of Reference of the mission in Annex 4:

- to assess and evaluate the results of WUASP achieved in the light of the inception report of December 1988;
- to identify and assess possible constraints which might have hampered the smooth progress of the project activities and to provide ways and means to overcome these constraints during the subsequent project phase;
- in close coordination with the World Bank staff, to study and assess the proposal for the second time-slice and to identify possible aspects which might require specific attention;
- to consider and assess the relation of the project with similar activities (WUTP, FAO, ISF, ACTIP);
- to draw conclusions as regards the results achieved, and to advise on the follow-up action required with the aim to achieve a smooth transition into the next project phase and proper relation pattern with other components of the World Bank Irrigation Sub-sector project and the parallel activities;
- to investigate and assess the state of affairs with reference to the joint co-finance contribution of the Netherlands to ISSP-1.

Timing. The mission was fielded in a period of four weeks, from 10 June to 8 July 1990. The time schedule is presented in Annex 2.

Ackowledgement. The mission wishes to thank all officers of the Government of Indonesia and of the Project with which they met, for their friendly cooperation and warm hospitality.

2.2. World Bank Mission for ISSP

Timing. The joint-evaluation mission on WUASP was fielded at the time of the World Bank's Mission for the second time-slice of the Irrigation Sub-Sector Project (ISSP-2) to communicate conveniently about the Netherlands' participation in the first time-slice (ISSP-1) and a possible cooperation in ISSP-2. The World Bank's mission stayed in Jakarta from 12 to 30 June 1990.

Mission Members. The World Banks's mission consisted of mrs. S. Ganguly, mission leader, mr. H.D. Frederiksen on Special Maintenance components, mr. D.J.W. Berkoff on water users association components including irrigation service fee, mr. A. Raza on construction aspects, and mr. R.D. Crooks on environmental aspects.

Scope. The World Bank's mission had the status of a pre-appraisal mission for the ISSP-2, assigned to have all preparational discussions and negociations with the Ministries of the Government of Indonesia.

An appraisal mission would follow in mid September 1990 to finalize the terms and conditions of the Loan with the Government of Indonesia.

Earlier missions on ISSP-1. Earlier missions of the World Bank were sent out to supervise ISSP-1 and to monitory the implementation of the policy statements of the Government of Indonesia on irrigation.

A mid-term review mission on ISSP-1 was fielded in May/June 1989. The mission assessed the progress of ISSP-1 and evaluated prospects for the second-time slice (ISSP-2). The Government of the Netherlands participated in this mission through ir. P. Ankum.

A supervision mission on ISSP-1 visited Indonesia in January/February 1990, to review the status of ISSP-1.

3. BACKGROUND OF IRRIGATION MANAGEMENT

3.1. Irrigated Agriculture

Agriculture. Agriculture remains a key sector of the Indonesian economy, providing employment 55% of the labour force. It is estimated that 44% of the rural population lives below the absolute poverty income level of US$ 106 per capita (1987).

About 23 million hectares is under cultivation, of which about 5 million hectares is irrigated. Rice is the dominant food crop and accounts for some 62% of the annual harvested area. The cultivation of subsidiary food crops is receiving more attention for future developments.

Importance of O&M. The expansion of irrigation infrastructure in Indonesia over the last two decades has been impressive and has made a major contribution to bringing self-sufficiency in rice.

However, this successful expansion was not accompanied by a country-wide effort to maintain and operate efficiently much of the 5 million hectares of the irrigation systems. Consequently, many systems are poorly functioning.

Unless there is a radical shift of national focus towards Operation and Maintenance (O&M), a massive and much more costly expenditure, in both financial and economic terms would become inevitable for rehabilitation in the next 10 to 15 years.

Sustainable development. The recognition of the importance of Operation and Maintenance (O&M), coming at the time Indonesia has reached rice self-sufficiency, but at the same time is facing severe resource constraints, has lead to a sharp redirection of the Government's priorities away from expansion and modernization of specific irrigation systems, towards efficiently operating and maintaining existing systems.

3.2. Role of Ministries on Irrigation Management

3.2.1. Ministry of Home Affairs

Decentralization. The Republic of Indonesia is divided into autonomous territories, i.e. the provinces (level I regions), and the districts ("Kabupaten", level II regions).

The further division is made into the sub-district ("Kecamatan") and below them the country villages ("Desa").

The provincial Government at level I and II has a number of bureaus and directorates for various needs. The national government also has various offices at level I ("Kanwil") for conducting its services in the province.

Irrigation Committees. The Irrigation Committees ("Panitia Irigasi") have a central position in irrigation management. Based on their water resources policy and on laws, they formulate the detailed instructions for proper irrigation management. These instructions are distributed to the relevant agencies, while also the Irrigation Committee has the task of giving guidance to the law enforcement.

Irrigation Committees exist at the level of the province and district. They are chaired by the Governor or by the Head of the district ("Bupati"), and have members from local departments involved in irrigation matters, see Figure 3.1.

The Committee at the provincial level provides general guidance, formulates policies for managing the irrigation schemes.

For regular decision-making, the Irrigation Committee at the district ("Kabupaten") level appears to be of crucial importance. At this level policy decisions must be made operational regarding cropping pattern, planting dates, etc., and if necessary decisions can be enforced.

Usually at the sub-district ("Kecamatan") level there is an Irrigation Committee too, meant to coordinate the work at this level.

Participation of the farmers in the Irrigation Committees is not widely accepted yet.

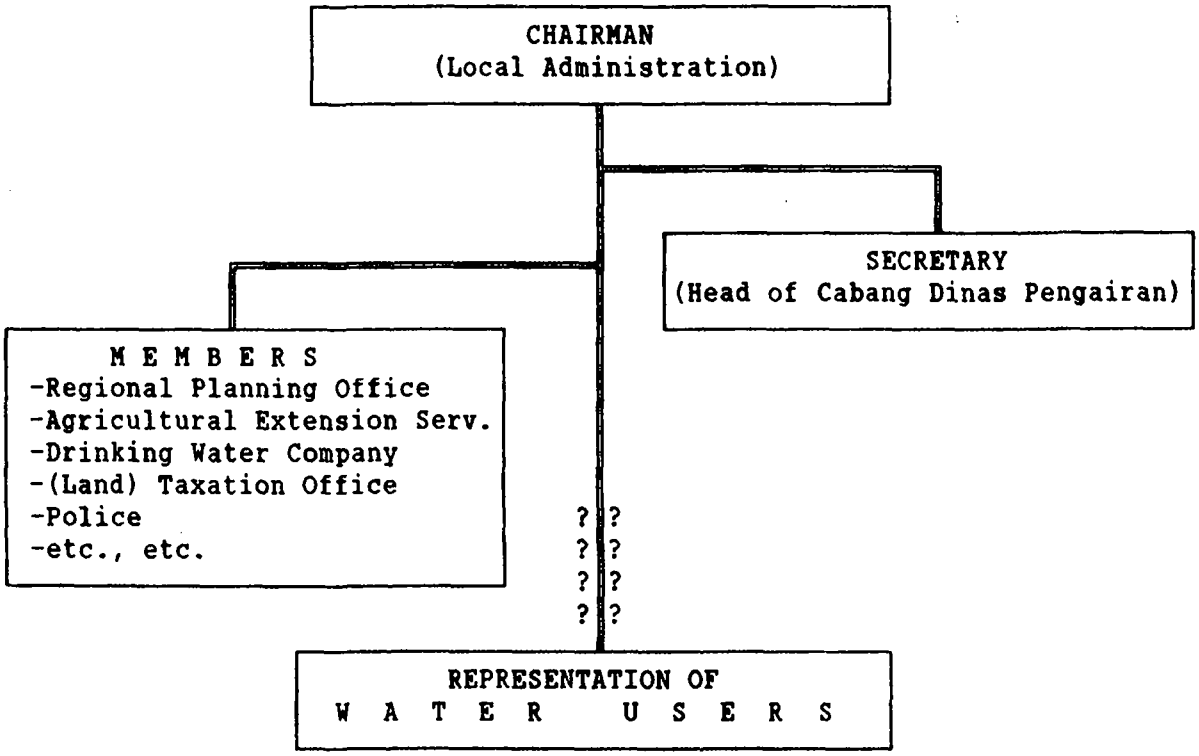


Figure 3.1. Organization of the District Irrigation Committee

3.2.2. Ministry of Public Works

Ministry of Public Works. The Ministry of Public Work in Jakarta through its Directorate General of Water Resources Development (DGWRD) is charged with the overall planning, development and the management of the water resources in Indonesia, and may assist the province on all related aspects.

It maintains an office ("Kanwil PU") in the provincial capital and if necessary, project offices. Foreign-aid projects are usually executed by these project offices.

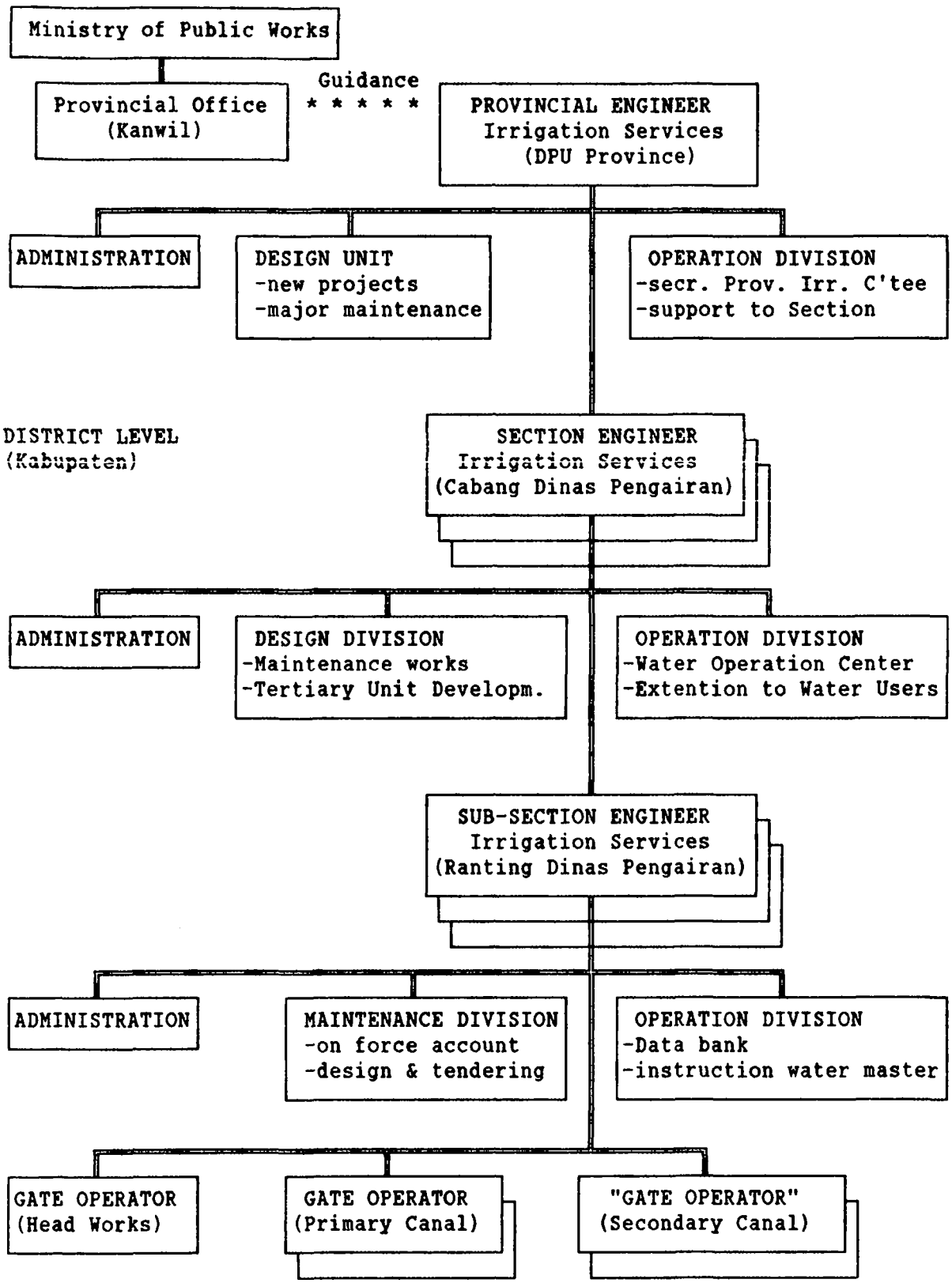


Figure 3.2. Organization of the Provincial Irrigation Services

Provincial Water Resources Department. The provincial Water Resources Department ("DPUP") is charged with the operation and maintenance of the irrigation main system and is the main executive body between the Irrigation Committee(s) and the field.

The provincial Water Resources Department has offices at, see also Figure 3.2:

- provincial level ("DPUP-Pengairan"), with administrative and technical tasks on survey, design and construction of irrigation development, and on supervising and programming the operation and maintenance (O&M);
- sub-provincial ("residen") level in the larger provinces have a coordinating office ("DPU-Wilayah"), covering irrigation areas of 70,000 - 100,000 ha, with administrative tasks in coordinating sections;
- Section level ("Seksi" or "Cabang Dinas Pengairan") controlling irrigation areas of 25,000 - 40,000 ha and involved in the O&M matters,
- sub-section level ("Ranting Dinas"), where the irrigation inspector ("pengamat") controls the day-to-day operation of some 5,000 ha;
- The lowest level is the "kejuron" level where the irrigation overseer ("juru pengairan") is responsible for an area of 500 - 700 ha.

Cabang Dinas. Basically, the Irrigation Section ("Cabang Dinas Pengairan") is the center for the implementation of the O&M. The Section is charged with the proper Operation and Maintenance of the main irrigation and with the (technical) guidance to the Water Users Associations.

It receives a budget and other assistance from the sub-provincial Office or directly from the provincial headquarter, it receives the operation regulations from the district Irrigation Committee, and it instructs its lower fieldstaff to implement the O&M.

3.2.3. Ministry of Agriculture

Ministry of Agriculture. The Ministry of Agriculture is divided into several Directorate Generals and Agencies, of which the Directorate General of Food Crop Agriculture (DGFCA), the Agency for Agricultural Education and Training (AAET) and BIMAS are the most significant for irrigated agriculture, see also Figure 3.3.

Most of the agricultural staff are locally and not nationally employed, since the national ministerial structure is reflected at provincial level.

Sub-Directorate of Water Management. DGFCA has among its Directorates that of Agricultural Area Devevelopment (DAAD), which includes the Sub-Directorate of Water Management ("Tata Guna Air", TGA).

This Sub-Directorate maintains TGA-officers at district level, with duties on:

- direct advise on water management to sub-district agricultural officers, village officers and WUAs;
- advice and training for agricultural extension workers (PPL) in field water management;
- participation at district level in irrigation coordination committees.

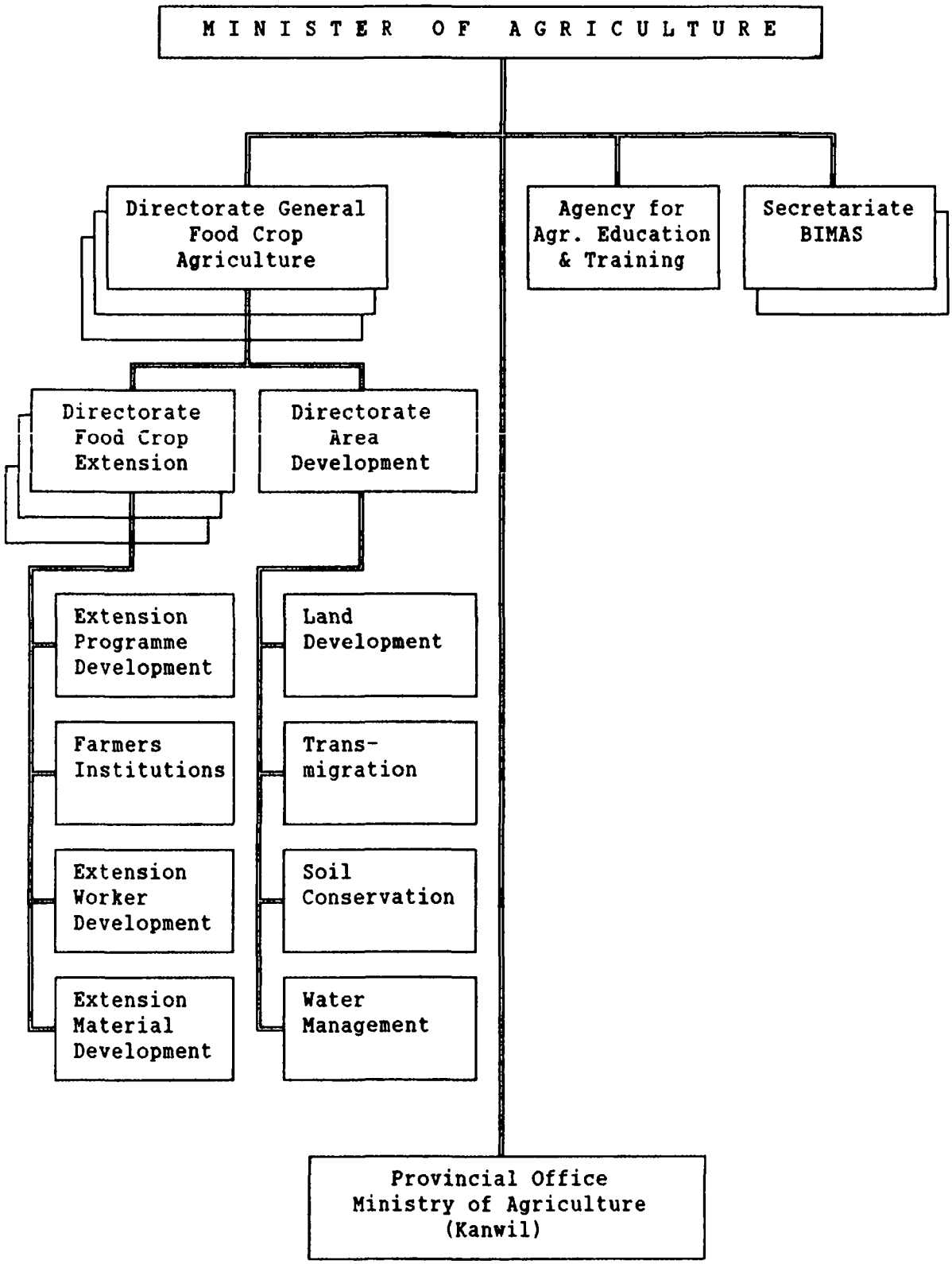


Figure 3.3. Organization of the Ministry of Agriculture

AAET. The Agency for Agricultural Education and Training handles the in-service training of all staff in the Ministry of Agriculture. Training takes place at Regional Centres (BLPP). At present, courses often include a small component on water management.

Agricultural Extension. The BIMAS Agency is responsible for the execution of agricultural extension. The extension has been organised on a Training and Visit system.

At the base of the extension services are the extension workers (PPL), who are intended to be generalists. They usually have a background in crop production. Each PPL serves about 16 farmers' groups. The boundaries of these farmers' groups do not usually correspond with the boundaries of the WUAs.

Roughly ten PPLs have as their base a Rural Extension Center (BPP), which is manned by middle level extension officers (PPUP or formerly called PPM). Training and technical advice to the PPL is provided by the subject matter specialists (PPS) based at district levels.

3.3. The Role of Water Users Associations in Irrigation Management

Role of WUAs. Irrigation efficiency depends mainly on the capacity to effectively distribute water below the tertiary outlet, to settle local disputes, to make collective decisions, to implement balanced cropping plans, etc. These are the tasks and the responsibilities of water users associations (WUA).

The WUA is based on the self-help principle and has as its objective the utilization of the irrigation water available in the tertiary unit.

Inpres nr.2 of 1984. Recently, the President of Indonesia has issued an Instruction (Inpres no. 2, 1984) on the WUA, which states that for technical irrigation schemes, the boundaries of the WUA should be determined by the tertiary unit and not anymore on the village boundaries.

The WUA is independent of the existing village structure and is organized by and for the farmers within one tertiary unit. The role of the village head(s) is limited to guidance and assistance in accordance with his responsibilities and rights.

Guidance to WUAs. In performing these tasks, the WUAs will continue to need guidance and support from local government agencies, see also Figure 3.4.

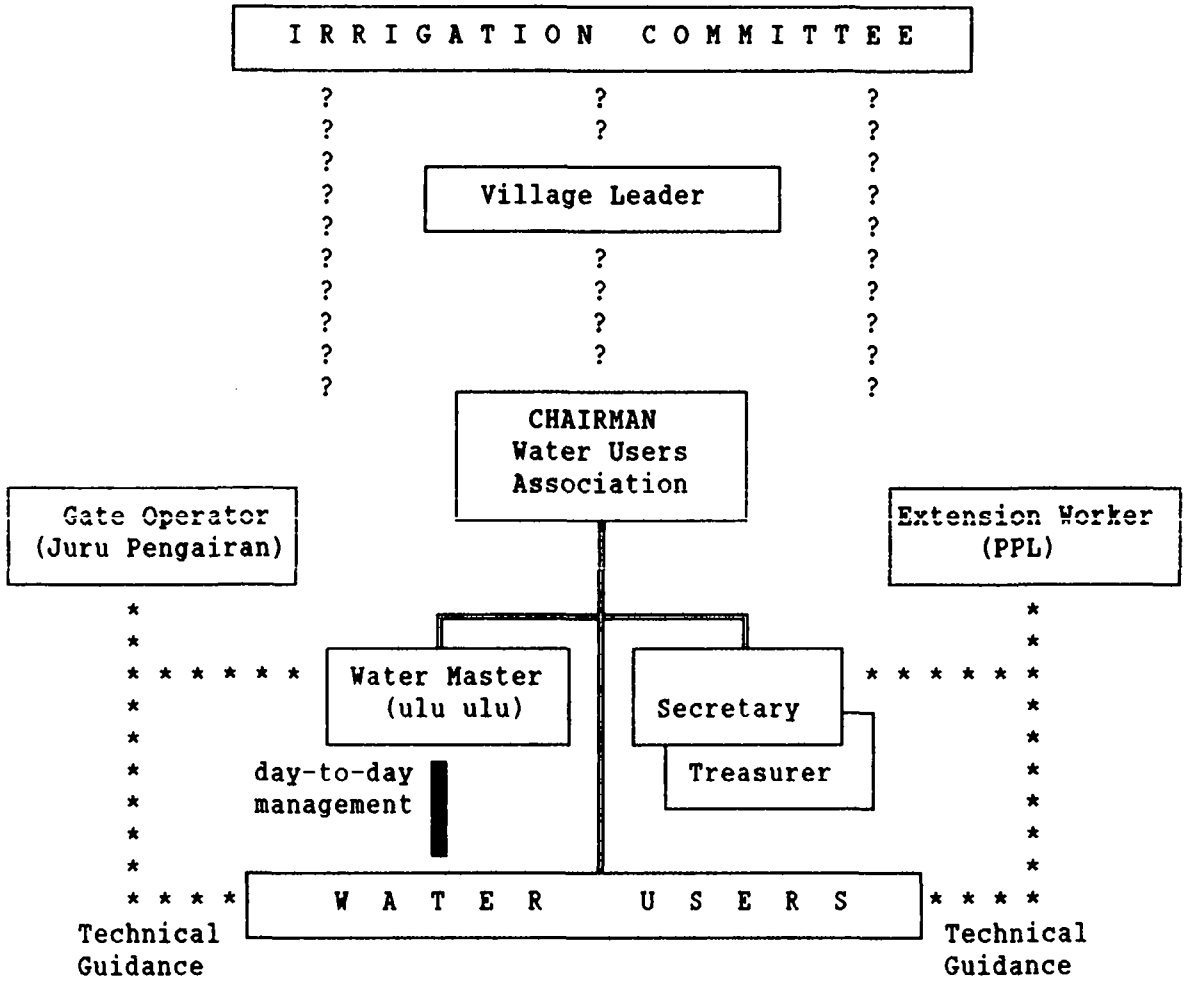
The Head of the district (Bupati) is responsible for guidance and development of the WUAs.

The Head of the sub-district (Camat) coordinates and supervises the well-being of the WUAs.

The village head guides and assists the WUAs in accordance with his responsibilities and rights at village level.

Technical assistance to WUAs. The Ministry of Public Works should assist the WUA on technical matters, connected with survey and design, construction as well as Operation & Maintenance of tertiary irrigation system.

The Ministry of Agriculture should give guidance on the use of irrigation water.



NB.: The relation between the "WUA - Village Leader - Irrigation Committee" should be clarified further.

Figure 3.4. Organization of Water Users Association

Strengthening of WUAs. Much work has to be done on the strengthening of the Water Users Associations in all aspects. In general, the coordination and participation of the WUAs in irrigation management should be strengthened.

Many aspects have to be covered, such as: (i) to strengthen the relation of the WUAs to the village administration, (ii) to collect of WUA-fee, (iii) to set proper operation and maintenance rules, (iv) to improve the infrastructure, (v) to strengthen the relation with other WUAs and with the Irrigation Committees, (v) to follow a pre-set cropping calender, (vi) to develop proper guidelines during water shortages, (vii) to strengthen the technical guidance from the Irrigation department and the Agricultural department, (viii) to strengthen the authority of the WUA-board and its water master (ulu-ulu) over the water users.

Issues. The role of the village head in the management of the tertiary unit is an issue that has not yet been solved satisfactory. He dislikes his loss of power, while the WUA needs some authority to support the water master of the WUA (ulu-ulu P3A) in carrying out his duties.

The payment of the farmers' contribution to the WUA is another issue that has not yet been solved. Often farmers are reluctant to pay when they consider the services rendered are not optimum, and when there are no sanctions for not paying. Moreover, the payment to the WUA is often a new tax imposed, beside the payment to the village head and his administration which includes often already a village water master (ulu-ulu desa).

Boundary Question. The "Boundary Question" has not yet been solved adequately in Indonesia. The above Inpres on WUAs states that the area of operation of a WUA is based on hydrological rather than on administrative boundaries.

However, it remains a major topic whether the organization of tertiary units on water-boundaries is a realistic solution for West and Central Java.

The HIPPA approach in East Java allows for organization on village boundaries with the village leader and the ulu-ulu-desa in charge, and is found to be more practical. The juru coordinates between the villages/HIPPA within one tertiary unit.

4. IRRIGATION SUB-SECTOR PROJECTS

4.1. First Time-slice of ISSP

Government policy. The Irrigation Sub-Sector Project in its first time-slice (ISSP-1) is a first phase of a long-term programme aimed at supporting the Government of Indonesia's effort, see also Annex 3, to:

(a) improve Operation and Maintenance (O&M) to sustain the effectiveness of all irrigation systems through adequate levels of funding, and strengthening of institutions and procedures for O&M planning and implementation,
(b) introduce direct cost recovery from irrigation beneficiaries and increase local revenue generation to reduce the burden of O&M expenditures on central and provincial budgets, and
(c) rationalize existing and programmed investments in the irrigation subsector.

Aim of GOI. The aim of the Government of Indonesia is to complete all public schemes over a 15-year period. It means that by the end of the year 2002, all O&M costs are to be funded from provincial sources through an irrigation service fee (ISF). The O&M responsibility of small schemes will be transferred to water users association (WUA) control.

ISSP-1 components. The Project consists of the following components:

(a) special maintenance works, i.e. deferred maintenance and minor systems upgrading on about 400,000 ha of irrigated land, about 106,000 ha of reclaimed swamp land and five river mouths, so that they can sustain efficient O&M in future;
(b) systematic introduction of efficient O&M on about 700,000 ha of irrigated land and 87,000 ha of swamp land;
(c) completion of about 40 priority on-going projects;
(d) pilot groundwater development through construction of some 900 tubewells for small farmers in primarily rainfed areas;
(e) support for policy reforms and institutional strengthening and training, including privatization of small public irrigation systems, pilot schemes for introduction of direct irrigation service fees, improving local revenue generation via land reclassification and valuation, O&M manpower planning and development, and strengthening of the central, provincial and district ("Kabupaten") level institutions responsible for irrigation O&M, and of water users' associations;
(f) technical assistance and studies (institutional strengthening study, investment strategy study, and environmental impact studies) in support of the above components.

ISSP-1 Costs. The total cost of the first time-slice of the Project, including physical contingencies and expected price increases, is estimated in the project preparation papers at about US$ 359 million.

The World Bank agreed to lend US$ 234 million. The Government of the Netherlands assists with an amount equivalent to about US$ 12 million, being US$ 2.0 million for the Water User Association Strengthening project (WUASP), US$ 0.4 million for the irrigation institutional strengthening study and US$ 9.4 million of joint financing with the Bank for civil works to be undertaken for Special Maintenance and Efficient Operation and Maintenance.

4.2. Second Time-slice of ISSP

General. The first time-slice of the Irrigation Sub-sector Project started in April 1987 and was planned to continue for three years. However, some activities have been extended until the end of March 1991 when the second time-slice (ISSP-2) is planned to begin.

Main topic. ISSP-2 will continue some of the activities initiated under ISSP-1, but will mainly focuss on achieving the improvement of irrigation O&M. While ISSP-1 focussed inter alia on "maintenance", the keyword of ISSP-2 will be "operation".

ISSP-2 would be the second phase of a long-term (10-15 years) program to support the policies on decentralizing O&M related activities.

Objectives. The objectives of ISSP-2 will include:
- support for institutional development entailing the improved water resource management and decentralization effort through strengthening the provincial water resource service, provincial and district Irrigation Committees and Water Users Associations (WUAs);
- strengthening the cost recovery from irrigation beneficiaries to support directly O&M expenditures, and support the turnover of small public irrigation schemes to WUAs in order to reduce the dependence on central and provincial Government budgets for O&M;
- improving all aspects of O&M so that the effectiveness of existing schemes can be sustained.

Provinces. The 17 provinces included in ISSP-1, see also table 4.2, will be reduced to 11 provinces since the other provinces can be covered under a proposed ADB-supported project, or since the proposed works are too small.

Thus, ISSP-2 will cover 11 provinces: West Java (including Jatiluhur), Yogyakarta, Central Java, East Java, Central Sulawesi, South Sulawesi, North Sumatra, West Sumatra, South Sumatra, Lampung and South Kalimantan.

Cost of ISSP-2. The project proposal by GOI for ISSP-2 would cost US$ 548 million, but was considered by Bank's mission to be too extensive. Substantial reductions have been discussed and the present scope of ISSP-2 would require an amount of US$ 364.42 million, see also Table 4.1.

The present financing plan is based on a GOI financing of US$ 85.58 million and a World Bank's loan of US$ 225 million. GOI and other co-financing donor agencies would have to finance the balance of US$ 53.84 million.

In case co-financing on the scale required is not available, further reductions in the project scope may be required.

Appraisal. A pre-appraisal mission visited Indonesia in June 1990 to agree with GOI on the ISSP-2 concept and objectives, as well as on the scope, costs and the provisional financing plan.

Based on the discussions with the pre-appraisal mission, GOI will prepare a revised preparation document on ISSP-2 with the project scope, costs and financial plan by the end of August 1990.

The World Bank is proposing to appraise ISSP-2 around mid-September 1990.

Table 4.1. Estimated costs of ISSP-2.

COMPONENT	CONSULTANCY for. mm	CONSULTANCY loc. mm	COSTS in US$
Surface irrigation systems			
- Upgrading of systems			0
- Construction & Design of Spec. Mainten.			158,450,000
- Design Spec. Maintenance ISSP-3			1,966,000
- Consultancy Services	132	396	
Turnover small schemes			
- Operational costs & system improvement			30,092,000
- Consultancy Services	0	488	
Equipment			5,442,000
Swamps			
- On-going projects & Special Maintenance			10,064,000
- Consultancy Services	36	48	
Rivers			
- River Basin Pilot Project			2,466,000
- Consultancy Services	38	50	
Groundwater			
- Groundwater Irrigation Project			2,744,000
- Consultancy Services	18	34	
Irrigation Service Fee			
- ISF Project			6,585,000
- Consultancy Services	120	216	
PBB - Land and Property Tax			
- Rural PBB Project			2,600,000
- Consultancy Services	12	0	
Training			
- Staff training, WUTP, etc.			5,000,000
- Consultancy Services	0	24	
Management Information System			291,000
Central Coordination & Planning	120	144	
Total Project Costs (excl. Consultancy)			225,700,000
Total Consultancy's	476	1400	13,240,000
Contingencies & Administration			65,230,000
Incremental Efficient O&M Costs			60,245,000
GRAND TOTAL			364,415,000

Wrap-up meeting ISSP-2. The World Bank's mission discussed in the wrap-up meeting with GOI and chaired by BAPPENAS, the agreements made sofar and the actions to be taken.

In addition to the aide-memoire, it was stated by the World Bank mission:

- there would have not been a second time-slice of ISSP without the success of the Irrigation Service Fee (ISF) Pilot project;
- the mission and DGWRD "agree-to-disagree" on several issues, such as: the turnover component (size, timing, etc.), the procurement aspects for contract packages.

  Moreover, DGWRD strongly emphasised to include the Seluna riverbasin (Central Java) in the rivers component of the Project. Otherwise, DGWRD proses that the river basin pilot projects for Cisanggarung and Opak may be removed from ISSP-2. The World Bank, however, does not consider the Seluna basin as a riverbasin with typical problems representative for other basins;
- co-financing should be investigated by GOI in order to close the financing gap of US$ 53.8 million. Financing by Donors of other (additional) components than in the present project scope means that the gap remains the same, and should not be stimulated by GOI.

  Furthermore, it is the wish of the Bank's management that the consultancy's component remains around the specified US$ 13 million.

From BAPPENAS side it was conveyed that:

- the name "Operation and Maintenance of Irrigation Systems Project" should be used from now on, instead of ISSP second time-slice.

  This might be a first step of BAPPENAS to assign similar projects in future directly to the Ministry of Home Affairs which is responsible for O&M through its provincial water resources departments ("Dinas Pengairan");
- the President of Indonesia has already approved the introduction of the Irrigation Service Fee (ISF). This means that the Irrigation Service Fee can now be introduced on large areas in the provinces where ISF had been tested out, and that pilot projects on ISF should concentrate on the new provinces only.

4.3. Other Projects related to ISSP

World Bank. The most significant World Bank's supported projects which directly affect the Irrigation Sub-Sector Projects are:

- East Java Irrigation Project (EJIP), which was the first provincially based irrigation project with objectives of rehabilitating irrigation schemes, developing improved O&M procedures, and strengthening the capability of the provincial irrigation staff. This project has now largely been completed, but laid down the foundations for ISSP-1;
- Central Java Irrigation Project (CJIP) and West Java Irrigation Project (WJIP) are similar province-based projects as the East Java Irrigation Project. These projects started in October 1986, and are planned to continue until September 1991;

- Provincial Integrated Agricultural Development Project (PIADP) is a proposed project that affects the formulation of the second-time slice of ISSP. The ongoing projects originally in ISSP-1 will be transferred to PIADP, together with other ongoing projects from the Second Provincial Irrigation Development Project and other irrigation development programmes;
- Institutional Development and Training Project (IDTP) is about to start. It will deal with the manpower planning and development of the Ministry of Public Works, including the irrigation sub-sector. It will also assist the government policies for decentralization of responsibilities to provincial and district levels.

Table 4.2. Province-based projects with World Bank and ADB support

Province	irrigation area in ha	ISSP-1 (IBRD) 87-90	ISSP-2 (IBRD) 91-95	TISP (ADB) 89-..	NTAP (ADB) ??-..	IISP-1 (ADB) 90-..	IISP-2 (ADB) 92-..	IISP-3 (ADB) 94-..
Aceh	129,000	x		x				x
Benkulu	53,000	x						
North Sumatra	196,000	x	x	x				x
West Sumatra	200,000	x o *				x		
South Sumatra	54,300	x o *	x					
Lampung	169,000	x o *	x					
West Java	902,000	x o *	x					
Central Java	760,000	x o *	x			x		
Yogyakarta	67,000	x o *	x			x		
East Java	967,000	x o *	x					
Bali	86,000						x	
Central Kalimantan	4,000	x						
West Kalimantan	12,000	x						
South Kalimantan	20,000	x o *	x					
North Sulawesi	64,000	x						
Central Sulawesi	67,000	x	x					
South Sulawesi	214,000	x o *	x					
South East Sulawesi	31,000					x		
West Nusa Tenggara	171,000	x o *			x		x	
East Nusa Tenggara	40,000						x	
Maluku	16,000			x				x

Note: o provinces covered by WUASP
* provinces covered by WUTP

ADB. Recent ADB supported projects which affect ISSP-2, see also Table 4.2, include:
- Third Irrigation Sector Project (TISP), which is concentrated on selected districts within the provinces of Aceh, North Sumatra and Maluku. It began in 1988 and will continue for five years. Its objectives and scope are similar to those of ISSP-1, although implementation details are different;
- Nusa Tenggara Agricultural Development Project (NTADP) is based on the province of West Nusa Tenggara and includes several irrigation schemes on Lombok;

- Integated Irrigation Sub-Sector Project (IISP-1) is due to start in mid 1990 and is again similar in objectives and scope to ISSP-1, but is restricted to specific irrigation schemes in Central Java, Yogyakarta, South - East Sulawesi and West Sumatra;
- a second (IISP-2) and a third time-slice (IISP-3) of the Integrated Irrigation Sub-Sector Project are in the planning stage.

  IISP-2 would commence in mid 1992 and would cover part or all of Bali, West Nusa Tenggara and East Nusa Tenggara.

  IISP-3 would begin in mid 1994 and would cover part or all of Aceh, North Sumatra and Maluku.

Bilateral aid. Bilateral aid agencies have been involved in specific irrigation projects in many provinces, but have so far not been concerned with the introduction of an Irrigation Service Fee.

5. WATER USERS ASSOCIATION STRENGTHENING PROJECT

5.1. Introduction

5.1.1. Background of WUASP

WUASP in World Bank's Appraisal Report on ISSP-1. The concept of a Water Users Association Strengthening Project (WUASP) has evolved during discussions between the World Bank and GOI in 1987.

A first outline of WUASP was presented in the Staff Appraisal Report of the World Bank in October 1987:

"At the district and lower levels, the priority activities would be the collection of benchmark information on WUAs and the setting up of Action Groups, which would serve as catalysts of WUA development. These Action Groups would draw their membership from the more senior level staff of the district units of Public Works, Agriculture and Home Affairs.

Depending on the size of the irrigable area in each district, one to four Action Groups would be established in each district. A quick inventory of WUAs to establish benchmark information on activity status, organizational boundaries, awareness of duties and responsibilities, and development problems and constraints, would be carried out by the district and sub-district staff of Public Works, Agriculture and Home Affairs.

The Action Groups would be established by January 31, 1988 and the inventory of at least 10 WUAs would be completed by April 30, 1988. By September 30, 1990, at least 20 new WUAs would be established and 200 existing WUAs be strengthened.

About 200 Action Group members would undergo a 2-month training on community organizion under the project.

To reach the large number of target WUAs, the Directorate of Agriculture Area Development in cooperation with Action Groups, Home Affairs and DOI-II would also train some 1020 DPU-seksi, sub-section and village level staff of the departments of Agriculture and Home Affairs (i.e. the "Field Guidance Group") on WUA organization and development. The target participants would include extension workers (PPLs) who will devote 30-50% of their time to WUA development."

Need for Coordination. The "Report on an Appraisal Mission of ISSP", dated 1987, and prepared for the DGIS of the Government of the Netherlands to provided details on various proposals for Netherlands cofinancing, acknowledged already the need for training coordination:

"Support is to be provided to the agricultural services and agricultural training activities in the tertiary unit of the irrigation systems.

At this moment both the Water Users Training Project of DGWRD assisted by NEDECO/DHV consultants and the On-farm Water Use Project carried out by the Ministry of Agriculture and supported by FAO / Netherlands, are involved in staff training and support of water users associations.

Although some exchange of lecturers of both departments takes place, no coordination of training programmes takes place."

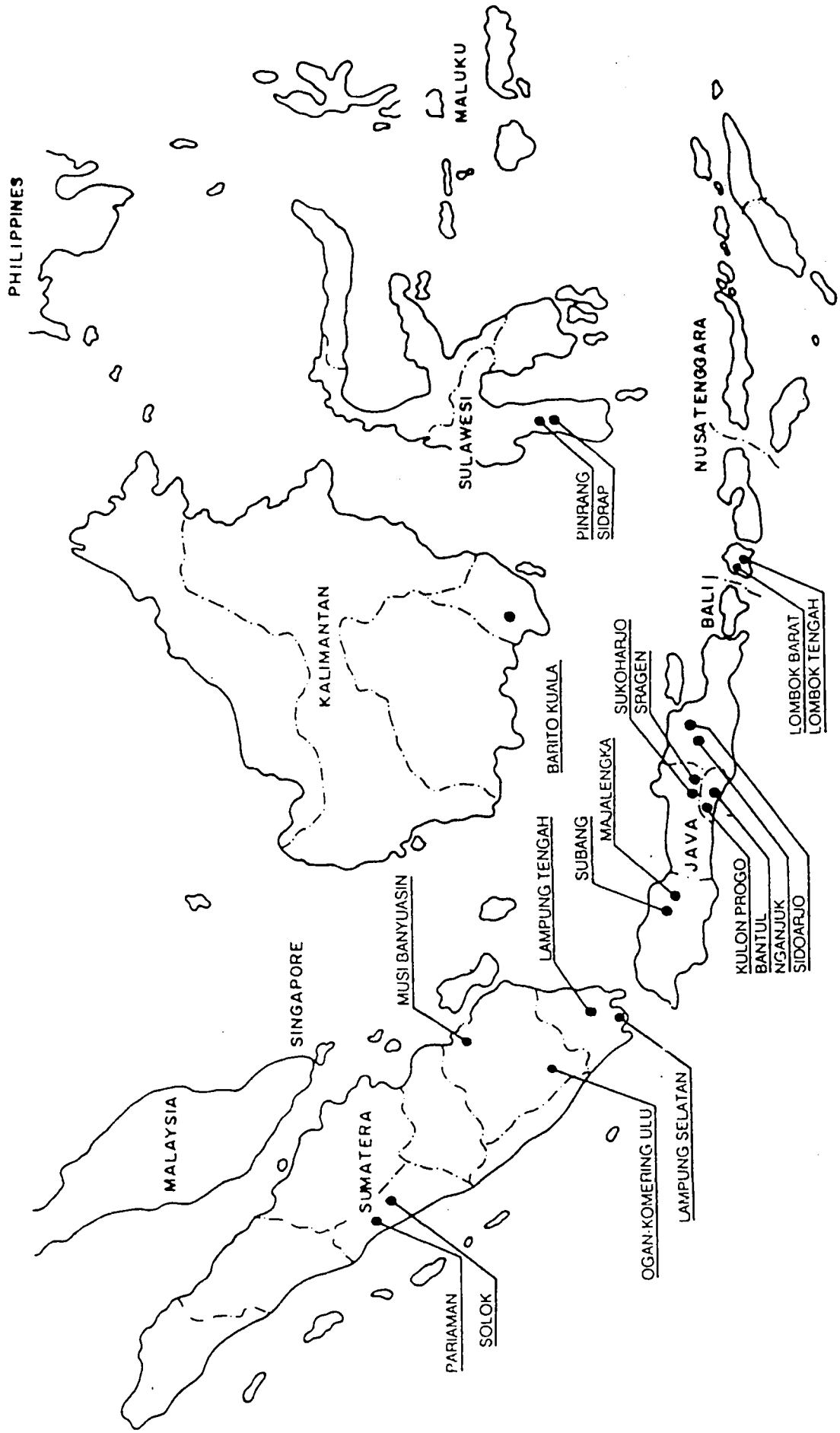


Figure 5.1. Districts ("Kabupatens") covered by WUASP

5.1.2. Organization of WUASP

Organization of the Project. The Water Users' Association Strengthening project (WUASP) has been established in August 1988 as a component of the Irrigation Sub-Sector project (ISSP).

The project is carried out under the sub-directorate Water Management ("Tata Guna Air", TGA) in Directorate of Agricultural Area Development (DAAD) in DGFCA, Ministry of Agriculture.

DHV Consulting Engineers of the Netherlands has been appointed as the expatriate consulting firm, with P.T. Data Search Indonesia and P.T. Hasfarm Dian as associated Indonesian firms.

WUASP's role within ISSP-1. The Ministry of Agriculture, through WUASP, is responsible within the framework of the first time-slice of the World Bank's Irrigation Sub-Sector Project (ISSP-1) for:
- establishment of 20 Action Groups at district level;
- two months' training of about 200 Action Group members in community organization;
- one month's training of 1020 middle/lower level staff in organizing and developing of Water Users Associations (WUAs);
- strengthening of 200 existing WUAs and establishing at least 20 new WUAs.

Objectives of WUASP. The objectives of Water Users Associations Strengthening Project (WUASP) are:
- strengthening of the organization and development of WUAs;
- strengthening of the relation between WUAs and other farmer organizations at village level;
- to increase awareness among and actively involve officials at village, sub-district and district levels, in identifying the constraints which hamper the strengthening of WUAs and to recommend solutions and measures to overcome these constraints;
- improvement of coordination and cooperation between the ministries of Home Affairs, Public Works and Agriculture by making an inventory of the functioning of WUAs and guiding WUAs in line with Inpres no.2 of 1984.

Provinces. The area covered under this project is located in gravity irrigation schemes, groundwater pumping schemes and swamp reclamation areas in the ten provinces of ISSP-1: West Sumatra, South Sumatra, Lampung, West Java, Central Java, East Java, Yogyakarta, West Nusa Tenggara, South Kalimantan and South Sulawesi.

Two districts in each of these provinces have been selected for WUA development activities, see also Figure 5.1.

Consultants' Team. The Consultants' team consists of international and national experts, during 88 manmonths and 460 manmonths, respectively:
- 3 mm (int) Project Director,
- 30 mm (int) Teamleader, Water Management engineer,
- 30 mm (nat) Co-teamleader, Community Organizer specialist,
- 27 mm (int) Community Organizer expert,
- 11x30 mm (nat) Regional Community Organizer (junior consultants),
- 28 mm (int) Training & Extension specialist,
- 30 mm (nat) Training & Extension (curriculum dev.) specialist,
- 29 mm (nat) Water Management, Agricultural expert,
- p.m. (int) Sociologist, Women in Development (junior) expert,
- 11 mm (nat) Resource persons.

Reporting. The approach of WUASP on the strengthening of WUAs is outlined in the English language in the Consultants' Inception Report (version December 1988).

Some other information is available in the Quarterly Reports (nr.1 to 6), in the Status Reports (May 1989, September 1989, January 1990) and in the recent published Project Brochure (undated).

5.2. Institutional setting under WUASP

5.2.1. Need for Action Groups

Need for "top-down" development of WUAs. It is acknowledged by WUASP that the WUA is normally developed "top-down", and is not based on the initiative of the farmers themselves.

Most of the farmers are not aware of the necessity to organize themselves in accordance with the WUA-concept to solve the water management problems they have.

"Action Groups" for WUA development. The Ministry of Agriculture at national level, through its Directorate of Agricultural Area Development (DAAD), has taken up the responsibility for the establishment of Action Groups ("Kelompok Pemantapan P3A") at district level in ten provinces.

Thus, WUASP trains the staff of the Action Group at district level in community organizing, and in organizing and developing of WUAs.

Action Groups for Irrigation Management. In addition to the task on WUA development, WUASP stimulates the Action Group also in performing their task on irrigated agriculture in a wider context. The Action Group is closely related to the Irrigation Committee.

The Irrigation Committee is chaired by the Head of the district (Bupati), with the Head of the Irrigation Section (Cabang Dinas Pengairan) as secretary, and with heads of the district departments as members. Decisions on irrigation matters are made in this Committee.

The follow-up of the decisions of the Irrigation Committee is done by the staff of the departments. The Action Group is logicly also the coordinating body of these officers.

5.2.2. Membership and Task of Action Groups

Members of the Action Group. In general, the Action Group consists of:

- a chairman from the Local Government, directly responsible to the Head of the district (Bupati);
- a secretary from the Food Crop Agricultural Services [N.B. not from the Irrigation Department as in the Irrigation Committee!];

- members from Local Government, BAPPEDA, Food Crop Agricultural Services, Irrigation Department, Bimas, etc.

Thus, the Action Group is the group of "second men" in the Departments who should provide the field data to the Irrigation Committees, should prepare proposals for cropping patterns, and should implement the decisions.

Task of Action Groups. Action Groups are serving as catalysts in the development process of WUAs, and are established to:

- improve the communication and the flow-of-information between district and WUAs;
- identify constraints in the WUA development activities and organize WUA development activities within individual agencies;
- to set up a "Field Guidance Group" (KPL) formed outof sub-district and village officials involved in WUA development, and to give them guidance and to participate in their training;
- guide the formation of some WUAs to be used as demonstration;
- assist in WUA survey as a benchmark, and monitor the performance of WUAs.

Regional Community Organizers. Eleven junior consultants c.q. Regional Community Organizers (RCOs) are stationed in the provinces covered by the project.

Their main task is to assist the district level Agricultural Services and the Action Group in carrying out project activities, i.e. strengthening the WUAs.

5.2.3. Field Guidance Groups

Need for Field Guidance Groups. It is considered that the distance between the Action Group and the WUAs is too far for Action Group members to coordinate effectively on the process of WUA strengthening. This coordination of activities at sub-district level will now take place within the Field Guidance Group ("Kelompok Pembina Lapangan", KPL).

A Field Guidance Group consists of officials of the sub-district and the village involved in WUA development, such as the vice-camat, mantri pertanian, pengamat, PPUP/PPM, Head of LKMD.

Task of Field Guidance Groups. The task of the Field Guidance Group is to solve problems which cannot be solved at Water Users Association level, and to liaise between WUAs and Action Group at district level.

The total number of KPL members to be trained under WUASP is about 1020 (51 per district).

5.2.4. PPL as Community Organizer

Need for CO. As the need for a Community Organizer (CO) is strongly felt by WUASP, the agricultural extension worker (PPL) was considered as a logic choice.

The total number of extension workers to be trained is approximately 500 (25 per district).

5.3. Activities of WUASP

5.3.1. Types of Activities

Main activities. The main activities of WUASP on WUA development are interrelated and have a sequence of implementation:

1. Exposé's at provincial level to inform the Heads of Departments;
2. Formation of Action Groups;
3. In-depth survey of WUAs;
4. Curriculum Development;
5. Training of Action Groups;
6. Training of Field Guidance Groups (KPLs);
7. Training of agricultural extension workers (PPLs);
8. WUA Development.

Integrated Activity: Women in Development. It is widely acknowledged that the gender-issue in irrigated agriculture received limited attention in the past and that the potential role of women within WUAs has not yet been fully identified.

WUASP is the only ISSP project with a component on Women in Development. Chapter 7 will deal extensively with this important issue.

Additional activity: PPUP/PPM training. In addition to WUA development, WUASP provides also for training to the senior extension workers (PPUP/PPM) on land preparation and irrigation practices.

An inventory has been made of present practices for cultivation of secondary crops (palawija) on irrigated rice fields as part of a rice-based cropping calender. Constraints are an unfavourable irrigation infrastructure in the tertiary unit, and the poor soil structure for secondary crops (palawija) on the paddy fields.

Field trials are being carried out and will be used in the training program for the PPUP/PPM.

5.3.2. Sequence of WUA-strengthening activities

Flow chart. Each of the main activities are interrelated. A flowchart of project activities on strengthening of WUAs is presented in Figure 5.2 and shows the relationship and the sequence of implementation. The main activities are described in more detail in the following paragraphs.

Step 1. Exposé's. Prior to the formation of Action Groups, all provincial departments involved in WUA development are to be informed. A formal decree from the Governor as a (follow-up) working order from the Head of the district is needed to form the Action Groups.

Exposé's have been held in the ten provinces. The exposé's yielded in an active support of the Heads of the Departments to form the Action Groups outof their staff members.

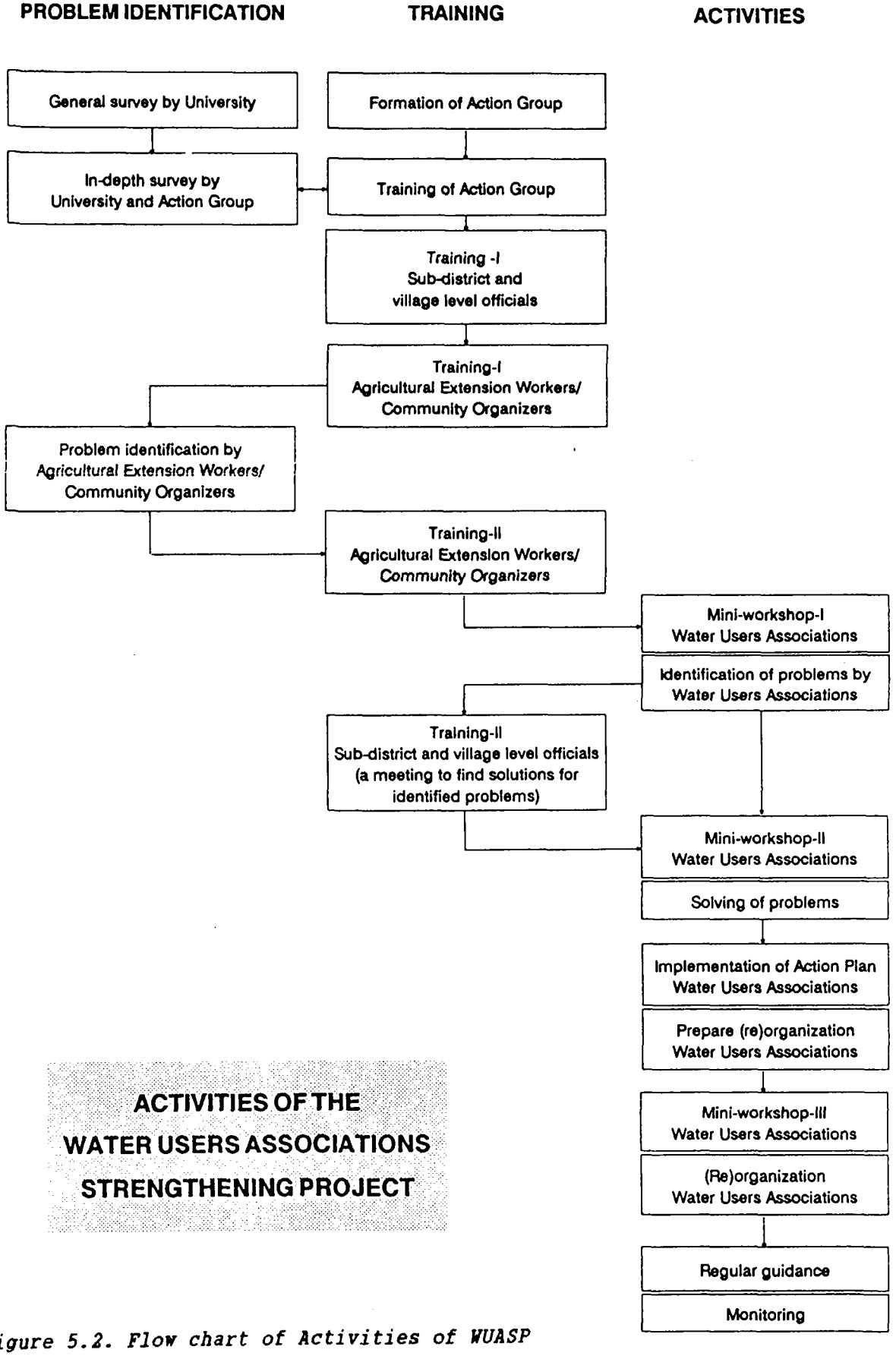


Figure 5.2. Flow chart of Activities of WUASP

Step 2. Formation of Action Groups. The follow-up of the provincial exposé is given through a two-day workshop at district level, where the details on Action Group membership, tasks, working area and work programme are discussed. These topics are the basis for the decree of the district Head on the actual formation of the Action Group.

Answers given on questionnaires concerning the malfunctioning of the WUAs allow the conclusion that most of the district officers have only a faint notion about the background and the causes of such malfunctioning.

Step 3. Surveys on WUAs. The purpose of WUA surveys undertaken by WUASP is to obtain a general picture concerning the condition of the WUAs.

The objectives of the survey are: (i) to assess the present internal organization of WUAs and their external relations, (ii) to analyse the performance of the WUAs, and (iii) to set benchmarks as a means of comparison and evaluation.

The survey is carried out by universities and supervised by the provincial DAAD-staff and the Regional Community Organizers of the Consultants. The survey is implemented in three phases:

- a general survey at provincial and district level, to obtain a general picture of the stage of development of WUAs in two districts per province;
- an in-depth survey at WUA level, to obtain a better understanding of the nature of problems faced by WUAs in their development. Members of the Action Group participate on some selected WUAs as part of their training.
- an evaluation survey to measure the development of a well-functioning WUA. It is acknowledged by WUASP that such a performance is difficult to measure.

Step 4. Curriculum Development. Training curriculae have been developed for the following training programmes:

- Action Group training,
- Field Guidance Group training (KPT)
- Agricultural extension workers (PPL), in their function for WUASP as Community Organizers,
- Senior extension workers (PPUP/PPM).

Most of the training materials are already available at various agencies and projects, such as at:

- the Water Users Training Project (WUTP) by DOI-I;
- High Performance Sederhana Irrigation Scheme (HPSIS) training by DAAD;
- On-farm Water Management for district water management officers, by DAAD;
- training for Community Development Workers, by Pusdiklat Bina Swadaya;
- village development training by KUPERDA.

Step 5. Training of Action Groups. It is realized in WUASP that even though the Action Group training is an important objective of the project, it is only a tool to reach the goal of the project: strengthening of WUAs.

Thus, the training should enable the Action Group members to act as a "catalysts" in the WUA development process through training and guidance of the Field Guidance Group (KPL) of the lower level staff on their task in WUA development.

The training of the Action Group members is done in the regional agricultural training centers (BLPP) through "integrating training" during 2 months, following a sequence of:

- 3 weeks classroom training,
- 2 weeks field training, by means of an in-depth survey on WUA,

- 1 week workshop training,
- 2 weeks field training,
- ½ week evaluation of training.

The training of the Action Group is carried out by "facilitators". Facilitators consist of training instructors from the provincial Agricultural Services, Agricultural Training Center (BLPP), and also specially assigned NGOs.

Step 6. Training of Field Guidance Group (KPL). The Field Guidance Group are trained by special trainers and by members of the Action Group.

The one-month training of the sub-district officers is done in the agricultural training centers at district level, in the following sequence:
- 1 week classroom training,
- 2 weeks field training, to identify the WUA problems and to assist in solving,
- 1 week workshop training, including the exchange of field experience.

Step 7. Training of agricultural extension workers (PPLs). The approach followed by WUASP envisages the agricultural extension worker (PPL) as a community organizer. As he has not received specific training for this task, WUASP provides for additional training.

Step 8. WUA Development. After the field problems on the WUA has been identified by the agricultural extension worker (PPL), a problem-solving sequence of activities is started. The flow-of-information between the PPL, the Field Guidance Group (KPL) and the Action Group is of major importance.

The process of farmers' involvement in the organization of the WUA is streamlined through "mini-workshops", to be held in the village in the evening and organized by the PPL in his function as community organizer.
- mini-workshop 1,
  on problem identification regarding the functioning of the WUA. The PPL acts as facilitator in the discussions, and no other government officials participate as to prevent a passive attitude of the farmers;
- mini-workshop 2,
  on problem-solving regarding the development of the WUA and the preparation of an action programme. The PPL invites staff of various agencies to give technical and administrative support;
- mini-workshop 3,
  on administrative matters, such as statutes and by-laws. The WUAs are now formally "established or re-organized", by means of elections. This last meeting is attended by members of the Action Group in order to see the correctness of the procedures and to speed up the official approval at (sub-)district level.

5.3.3. Time schedule of activities

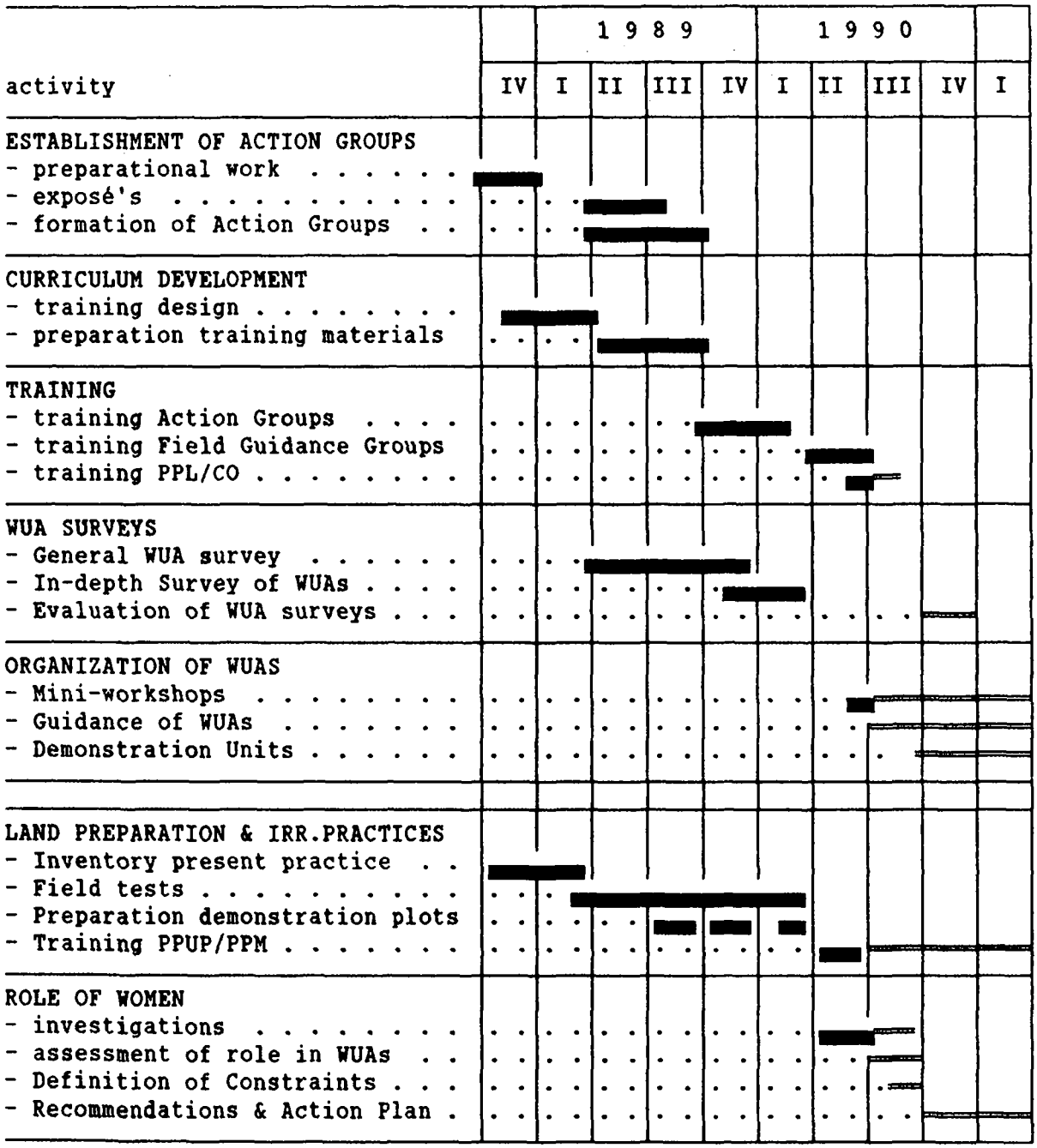
Time schedule. A time schedule has been prepared by the Consultants in their Inception Report and is updated in each quarterly report on the realized progress.

The progress follows well the planned schedule. Only the component of Women in Development has been delayed because of the late arrival of the expert.

Revision of Time schedule. A revised time schedule has been presented in the Quarterly Report nr.6 (April 1990), see also Figure 5.3.

The revision concerns the activities on the WUA Organization, which would start in December 1989. Now, the mini-workshops have been scheduled from July 1990. The activities on Demonstration Units will start only in September 1990.

Figure 5.3. Schedule of WUASP Activities



5.4. Experiences of WUASP

5.4.1. Institutional Setting of WUA strengthening

Staffing of Action Group. Essentially, the Irrigation Committee at district level is formed by the Heads of the Departments involved in all aspects of irrigation management, including the development of WUAs.

However, these Heads of staff cannot work directly on the development of WUAs but they delegate this task to specific staff members. The Action Group was intended to provide the necessary coordination between these staff members.

It was experienced that some members are again executive staff, such as Heads of Sections in the Departements and that they were not able to devote full-time activities for the Action Group. So again, efforts are made to seek replacement by nominating less senior staff.

Role of PPL as Community Organizer. Constraints are met on the involvement of the PPL as Community Organizer, because of his employment by the BIMAS-programme. It means that the PPL is assigned with a new task, and that his routine extension activities will have to be reorganized.

A formal decision on the availability of the PPL as Community Organizer on WUA development is still required.

5.4.2. Action Groups' activities as a "Project"

Organization of Action Groups. Vertical and horizontal coordination at various administrative levels of agencies involved in the development of WUAs on district (Kabupaten) and at sub-district (Kecamatan) level has not yet been considered as "routine" activities, but more as "projects".

Consequently, there is no clear working programme and tasks description of the agencies involved, unless a special project is created. It is observed by WUASP that WUA development is therefore very much dependent on the availability of "project" funds.

Needed Budget for Action Groups. In principle, the activities to be carried out by the members of the Action Groups are included in their routine work.

However, lack of transportation, field allowances and cost for meetings are additional reasons that the WUA-development activities have not been carried out at a regular basis. These costs are covered now under the WUASP budgets.

5.4.3. WUA Surveys

Surveys at training tool. WUASP opted for a set-up in which surveys form a part of the training and would make Action Group and Field Guidance Group members aware of the problems of the WUAs they are supposed to guide in the

future. This approach has been partly followed (5 out of 11 WUAs per sub-district).

Results are somewhat disappointing as participants showed a certain reluctance to analyse sensitive issues.

WUA Survey. General surveys on the conditions of WUAs in the selected districts were carried by local universities. In-depth surveys on some WUAs were carried out by the trainees outof the Action Group or by universities.

However, the Consultants concluded that the usefulness of the surveys is doubtful because of the difficulties in translating the results into a workable programme. Also, the high costs of these surveys should be considered.

In addition, it expected that the problems in the WUA are already known through the training of the PPL and the Field Guidance Group (KPL).

5.4.4. Organization of WUAs

Construction as vehicle for WUA development. It is general experienced that for WUA development more is needed than words only. Small improvements on the (farmers' managed) tertiary irrigation system can become the main reason for them to organize themselves. A condition is that these works are carried out by the farmers and that they have to take care of (part of) the funding.

Thus, it is experienced that some project funds should be available under WUASP to co-finance improvement works in terms of materials and light equipment.

Tertiary Demonstration Units. The Consultants experienced that the use of Tertiary Demonstration Units is essential. These units should demonstrate field layouts, efficient water management, marketing potential of secondary crops, etc.

Demonstration units can best be located in well-functioning WUAs, as to demonstrate the benefits of a good WUA at the same time.

5.4.5. Re-scheduling of activities

Training of trainers. The Inception Report envisaged the training of trainers as a special activity. Members of the Action Group would be trained as trainers, who in turn would train officers from the Field Guidance Group.

However, the Training of Trainer programme has been canceled in early 1990. The finance required for this programme has been re-allocated and will be used for an additional PPL training.

Increase to 500 WUAs. Considering that the PPL is the vehicle for strengthening in WUASP, it is envisaged that the additional training of PPL will have a direct effect on the number of WUA to be strengthened, i.e. an increase from 220 to 500 WUAs.

As these new WUAs will not be located in new districts, no new training of Action Groups and of Field Guidance Groups will be necessary.

Sequence of training. The Consultants experienced that the initial involvement of the Action Groups is not fitting into the proper sequence of activities. Moreover, high costs are involved.

An improved sequence of activities has been developed. The quality of training is improved and the (unit) cost of the WUAs development is reduced.

The presently proposed bottom-up approach is:

1. first: PPL training and simultaneously the training of the Field Guidance Group (KPL);
2. followed by: development of Action Groups.

5.5. Proposal for Second Time-Slice of WUASP

5.5.1. Introduction

General. A proposal, dated December 1989, for a second time-slice of WUASP has been prepared by the Consultants.

The project in its second time-slice should last for four years. The project costs would be US$ ±3 million, excluding the still unspecified ±1000 manmonths for local and foreign consulting services.

5.5.2. Scope of the Second Time-Slice of WUASP

Basic idea. The basic ideas of the second time-slice of WUASP are:

- to strengthen more WUAs at a lower per-unit-cost;
- to reorganize the training sequence of WUA, PPL, KPL and Action Groups, in order to reach fore-mentioned goal;
- to develop WUA-discussion forums along secondary and primary channel lines, in order to solve irrigation problems which cannot be solved by one WUA alone.

Objectives. The objectives for the second-time slice, according to the proposal of the Consultants, would include:

- to develop and/or strengthen 2530 WUAs. This would be implemented through the training of PPLs and the Field Guidance Group (KPL) and by establishment and training 26 Action Groups;
- to form 150 Federations of WUAs;
- to carry out demonstrations for optimum cropping rotation and efficient water use within the tertiary unit.

5.6. Observations on WUASP

5.6.1. Present Position of WUASP in ISSP

Background on WUA Development. The need for active participation of Water Users Associations (WUA) in irrigation management was more and more felt in the beginning of the eighties. The Presidential Decree nr.2 of 1984 defined the position of the WUA and the role of the different Ministries.

However, the implementation of this Presidential Decree met with several problems since it concerned a new activity for both farmers and for the Government.

WUAs in ISSP-1. Setting up and strengthening water users associations are included in Irrigation Sub-Sector Project during its first time-slice.

Specifically, three programme components are more or less directly involved:

- Water Users Training Project on institutional strengthening in water management at the tertiary level (WUTP);
- Water Users Association Strengthening Project (WUASP);
- Irrigation Service Fee Project (ISF).

WUTP. A first major initiative to strengthen the Water Users Associations was the Water Users Training Project (WUTP) of the Ministry of Public Works and supported by the World Bank. The project started in 1983 and was continued under ISSP-1.

The project concentrates on the middle and lower level officials and on WUA board members. The strengthening was initially done through a formal class-room training, but is increasingly focussing on field activities.

WUASP. Another major initiative to strengthen WUAs is the Water Users Association Strengthening Project (WUASP) of the Ministry of Agriculture and supported by the World Bank through ISSP-1 and by the Government of the Netherlands.

The project started in 1988 and has a more or less the same objective as WUTP in the same provinces.

Contrary to the class-room training under WUTP, the strengthening of the water users associations under WUASP is done by activating and motivating middle and lower level officials by means of workshops and some participatory training.

ISF and WUAs. Yet, a third relative new agent has arrived on the scene. For a successful introduction and implementation of the Irrigation Service Fee (ISF) it proved to be vitally important that strong WUAs exist and that they actively participate in irrigation management.

Furthermore, the introduction of ISF appears to be a vehicle for the formation and strengthening of WUAs.

Mid-term review mission of the World Bank. In June 1989, the mid-term review mission of the World Bank on ISSP-1 studied the different approaches to strengthen WUAs. It was reported in the Bank's aide memoire that:

> "*there remains some ambiguity as to the exact role of the WUASP program and its relationship to other water user programs, notably the WUTP. Essentially it aims to catalyze local Government and other agencies to promote and support the formation of WUAs, a role that could be clari-*

fied if its relationship to the Irrigation Committee were to be formalized."

The action/comments on their aide-memoire gives a summary of the required actions:

- review the relationship between WUTP and WUASP in view of an integration of the two programs;
- strengthen and formalize the relationship between WUASP and the Irrigation Committee at the provincial and Kabupaten levels.

Supervision mission of World Bank. In February 1990, a supervision mission of the World Bank on ISSP-1 reviewed again the progress made on WUASP. It was reported in the aide-memoire that:

"there still remains some ambiguity as to the exact role of the WUASP program and its relationship to other water users programs, notably WUTP. The WUTP and WUASP are separate programs which need coordination or integration in the future for any effective overall impact on WUAs."

Draft Report on the Preparation of ISSP-2. The draft report on the preparation of ISSP-2 (May 1990) states that:

"agriculture and on-farm water management will be covered by routine agriculture extension activities by PPL, and is outside the ISSP programme. At present, WUASP and ISF cover organisational activities (in limited Kabupatens) and WUTP covers tertiary level O&M (as well as organisational activities in non WUASP/ISF areas). WUTP is much more established than WUASP and ISF." And further:

"It is felt that due to the strong involvement of ISF in WUA organization, that there is no longer any justification for the WUASP programme."

Pre-appraisal mission on ISSP-2. The pre-appraisal mission of the World Bank (June 1990) stated clearly in discussions that ISSP-1 and ISSP-2 focuss on one input for irrigated agriculture, being "water". Other components are covered by different Bank's programs.

Thus, the involvement of the Ministry of Agriculture in ISSP-1 was a "mistake" that should be redressed in ISSP-2. The mission stated in their (draft) aide-memoire that:

"in the view of the mission, there was considerable overlap with other components and that, as indicated in the Preparation Report, the WUASP as presently defined did not fall within the ISSP-2 proposed scope and objectives. The mission suggested that over the next few months, until the loan closing of ISSP-1, DAAD should focus on how the results of this program should be reflected in other GOI or donor-supported programs."

5.6.2. Relation between WUASP and WUTP

Supposed relation between WUASP and WUTP. The Consultants' Project Proposal of March 1988 presents a clear an logic outline of the integration of the Water Users Training Project (WUTP) under the Ministry of Public Works and the new WUASP under the Ministry of Agriculture. These two projects aim at the same type of target groups in the same provinces.

It was supposed in the Contants' Project Proposal that an optimum coordination would be obtained by an organization of activities under WUASP:
- WUTP should move in first to complete initial introductions at provincial, district, sub-district and village level;
- WUASP should be developed into providing a series of follow-up activities on practical aspects of irrigated agriculture. Consequently, the main participants in WUASP activities are not the members of the Irrigation Committee, but next-in-line senior staff. "WUTP paves the way from top-to-bottom, WUASP offers escort from bottom-to-top".

Overlap of WUASP and WUTP. As the target groups and objectives of the WUASP and the Water Users Training Project (WUTP) are almost similar while both projects have the same target provinces, many fields of overlap have been identified:
- exposé's to introduce of the project programs in the provinces;
- WUTP's target group "A" consists more or less of the same members as the Action Group;
- WUTP's target groups "B" and "C" are very similar to the middle and lower level officials of WUASP;
- the follow-up activities on village level are identical.

Cooperation between WUASP and WUTP. Some of the overlap between WUASP and WUTP could already been removed:
- WUASP focusses on the formation of the Action Group, as an implementation body of the district Irrigation Committee;
- WUTP conducts its "A" and "B" training first on a formal basis to the various officials within the district Irrigation Committee and the Action Group, to provide them with sufficient technical and institutional background for the WUASP training;
- WUASP provides a "catalyst" function for the Action Group on the formation of WUAs;
- the follow-up activities of WUTP concerning their target groups "A" and "B" in WUASP project areas, are taken over by WUASP;
- WUASP focusses on the actual process of the WUA organization and development, since this is not the task of DPUP but more of the Agricultural Department.

5.6.3. Observations on WUASP and its Institutional Setting

Task of Ministry of Agriculture on WUAs. The Working Order of the Ministry of Home Affairs, no. 9611/180/Bangda, dated 4 August 1984, entrusted the task of the formation to the Ministry of Agriculture. This is a basis for the involvement of WUASP in the strengthening of WUAs through Action Groups.

However, the Ministry of Home Affairs through its Directorate General od Area Development (DGBANGDA) specified that such a transfer of task is still in accordance with INPRES nr.2 of 1984, which empowered the Ministry of Home Affairs with this establishment, as the district agricultural office ("Dinas Pertanian") falls under the authority of the district head, thus under the Ministry of Home Affairs.

In view of this organisational set-up, it is questionable whether DAAD of the Ministry of Agriculture (at national level) is the appropriate agency for WUA organisation.

Changing roles of Ministries on WUAs. DGPUOD of the Ministry of Home Affairs takes now an active role on the formation of WUAs in the scope of the introduction of Irrigation Service Fee (ISF).

Under the present conditions, it may even be considered as "wise" for the Ministry of Agriculture to defer from this formation of WUAs with the purpose to collect the fee.

The Ministry of Agriculture should strengthen its task of giving guidance to the farmers on water management matters. This will include guidance on the new position of farmers, WUAs and Federations of WUAs as a "partner-in-irrigation".

Creation of a new coordination network. It is wide acknowledged that there is a strong need for horizontal and vertical coordination between WUAs and the various departments involved.

However, a general consensus has not reached yet whether such a coordination should be created by a new coordination network of an Action Group, Field Guidance Group and a Community Organizer.

These three institutes are new in Indonesia and has to compete with other national programmes within the districts, such as the BAMUS IPAIR of the ISF project, the LKMD, strengthening of Irrigation Committees, etc. A further confirmation from GOI might be needed before this (pilot) programme of WUASP is extended into new areas.

5.6.4. Observations on general WUASP Aspects

Reporting. An inception report has been issued by the Project in December 1989 and six quarterly reports have been written since, as well a Brochure about the project.

It is rather difficult to trace the project approach and to learn the project experiences from the reports. Questions when the project can be taken over by the existing institutions and when the project goal will be reached are nowhere discussed.

Public relations cannot be considered as a strong point of the project, although recently more attention has been paid to this aspect.

Demonstration Plots. Demonstration plots were included in WUASP as training grounds for the agricultural extension supervisors (PPUP/PPM) on subjects like land preparation and irrigation techniques.

The WUASP component on demonstration plots has not yet found its right place in the WUA-development cyclus and is a somewhat isolated affair of the agriculturalist and the rural extension center (BPP). Trial results have not been translated into practical recommendations for farmers.

6. OTHER PROJECTS DEALING WITH WUA'S

6.1. Water Users Training Project

6.1.1. Introduction

Organization of the Project. The Water Users Training Project (WUTP) deals with institutional strengthening in water management at tertiary level. Training is given in coordination among the personnel of the provincial Irrigation and Agricultural Departments and of the Local Government. The programme also includes the training of water users.

The project started in 1983 and is carried out by the Ministry of Public Works, with DHV Consulting Engineers of the Netherlands as Consultants. The project is presently financed under the ISSP-1 and will continue until July 1990.

Objectives. The key activity of WUTP is to support water users through training and follow-up activities, in order to improve the O&M at the tertiary level. The development objectives of WUTP are:

- to achieve a common understanding of the O&M of inter-farm water distribution systems by the personnel of the provincial Irrigation Department, the provincial Agricultural Department and the Local Government, as well as by the Water Users' Associations and key farmers;
- to strengthen the Water Users' Associations (WUA) and the Irrigation Committees;
- to further stimulate the development of the legal framework of irrigation management, in order to achieve a better understanding for increasing the food production through irrigation.

Provinces. WUTP is dealing with training in ten provinces: West Sumatra, South Sumatra, Lampung, West Java, Central Java, Yogyakarta, East Java, West Nusa Tenggara, South Sulawesi, South Kalimantan.

6.1.2. Approach of WUTP

Target groups. The main target group for the training by WUTP is the water users. However, to obtain an optimal impact of this training, it is also necessary to train staff of Local Government and staff of the Departments of Agriculture and of Public Works at provincial and district levels.

The training approach of the project accordingly includes the following target groups:

- GROUP A: Middle level officials (±1,900), involved in irrigation management at provincial and district levels. Training is given in the form of a two-days workshop;
- GROUP B: Lower level government officials (±5,300) who are involved in irrigation management at sub-district (Group B1) and at village level (Group B2). Training is given in courses with a duration of 3 weeks;
- GROUP C: Board members (±10,000) of Water Users Associations (WUAs), key farmers and informal leaders at the tertiary unit or village level. This training is done in classical courses of 3 weeks and by additional field training;

- FOLLOW-UP: Ex-trainees (±1,500) of Group C receive a practical training;
- GROUP I: Participants (±450) selected from Group A are trained as instructors for the groups B and C. The training is given at national level during 3 weeks;
- GROUP O: WUTP project staff (±80) is trained during one week on training management.

Training infrastructure. Most of the training is held at 27 fully equipped training centers, located in the provinces, and in 7 mobile training units. There are now 450 instructors.

The provincial project management is carried out by 10 regional offices, having a total staff of about 400 officers.

Tertiary Demonstration Units. WUTP uses well-functioning water users associations for demonstration purposes, whereas at least one tertiary unit per training center has been selected as a demonstration plot for O&M.

At the moment, WUTP uses a total of 22 tertiary demonstration units in 10 provinces.

Design of training programs. The project has developed a large number of training materials, including training modules and training manuals, video programs, 16mm films, slide series, wall charts. All modules and manuals were produced and printed in two languages, Indonesian and English.

Training materials were developed for each target group and include:
- Irrigation:
  water distribution in a tertiary unit, maintenance of tertiary systems, construction of tertiary structures, drainage systems, annual cropping programming, etc.;
- Agriculture:
  water requirements and farming techniques for rice, sugarcane and secondary (palawija) crops, fish cultivation, agricultural mechanization, control of soil erosion, agricultural support programs, etc.;
- Legal framework:
  the role of the village leader and the WUA, illegal offtakes, etc.;
- WUA development:
  organization, tasks, administration, work programming, etc.;
- Swamp development:
  water management, maintenance, WUA, soil/water/plant relation, etc.;
- Groundwater irrigation:
  pumping stations, water distribution, supplementary groundwater supply, etc.;
- Fish cultivation:
  fish cultivation in irrigation systems and in brackish ponds, water management, organization of farmers, etc.

Training of Group C. The training of Target Group C (board members of WUA) has four distinct phases:
- setting up standards, on good water management, agricultural practices, well-managed WUAs and existing legal framework (one week, in the training center);
- problem identification (2 weeks, within their own tertiary unit) which should be supported by representatives of Target Group B: identication of problems, development of alternative solutions;
- problem solving (2 weeks, in training center), discussion of alternative solution as formulated in the field, followed by training on modules that

will meet the problems;
- field implementation (five times 2 days), the trainees are implementing their action plans in the field. They are supported by Target Group B and by representatives of WUTP.

6.1.3. Evaluation of training

Self-assessment of knowledge. WUAs participants of Group C were asked to formulate their problems with regard to organizational, O&M and agricultural aspects of their own WUA:
79% of the participants mentioned a lack of skill and knowledge to carry out proper O&M in the tertiary unit;
71% of the participants mentioned an inadequate knowledge transfer between the PPL and the WUA;
64% of the participants have difficulties to understand why there should be a WUA;
21% of the participants observe that the WUA has difficulties in raising funds, and 13% of the WUAs have insufficient funds to carry out proper O&M;

Number of WUAs. WUTP trained some 10,000 board members, representing 2,600 WUAs. This is about 5% of the estimated total of WUAs which could be established in the country. Thus, there seems ample justification in expanding the training.

Changing approach of group C training. It is felt by the WUTP staff that the whole approach to the training of the target group C should be changed in future.

Instead of conducting a 15-days continuous classroom training as is currently done, the course will be split into three phases:
- The first phase is conducted in the classroom for 6 days to teach the standards of good water management;
- The second phase is conducted at various tertiary units in a period of 2 weeks. The trainees have to be identify the existing problem in their own tertiary units;
- The last phase is again conducted in the classroom and focusses on solving problems.

6.1.4. WUTP under ISSP-2

Organization of WUTP. The organizational setting of WUTP under ISSP-2 is not yet very clear. WUTP came under the competence of the Directorate of Irrigation II since 1983. Early in 1990, WUTP was transferred to the Directorate of Irrigation I.

The (draft) final report on the Project Preparation ISSP-2 locates WUTP

under the Training Agency of DGWRD ("Bidang Diklat Pengairan", BDP), which has provincial training centers for training of provincial staff.

Scope under ISSP-2. The scope of WUTP under ISSP-2 has not been clearly specified in the above report, where a request is made for consultancy's input of Water Users Training under BDP, as part of their whole package for Central and Regional Consultants.

However, discussions between World Bank and DGWRD led to the conclusion that the proposed training component of ISSP-2, including WUTP, can be substantially reduced in view of the support already given by the World Bank and other donors.

It was stressed by the World Bank that WUA establishment and strengthening by WUTP should be integrated within the responsibilites of the provincial agencies directly involved.

It was also stressed that activities under WUTP would be transferred to the provincial Irrigation Department to provide technical support and training on tertiary level O&M to WUAs.

WUTP as ISSP-2 component. The World Bank's mission suggested that the training component should be scaled back to a cost of about US$ 5 million and to 24 local manmonths. Emphasis should be given on WUA establishment / strengthening and some training of trainers and lower level provincial Irrigation staff.

6.1.5. WUTP and an Irrigation Extension Service

Re-orientation. It has been recognized within the Ministry of Public Works that more efforts should be made to re-orient and institutionalize the training program of WUTP.

Irrigation Extension Service. Discussions within DGWRD have been initiated on setting up a new "irrigation extension service". The proposed tasks of such a service have been specified in a draft proposal of WUTP (June 1990) and would include:

- inventorizing the infrastucture of tertiary units;
- inventorizing the technical shortcomings of tertiary units;
- arranging for survey, design and supervision of construction work within the tertiary unit;
- providing WUAs with advise on matters pertaining to O&M;
- advising WUAs on organizational and administrative matters;
- providing short courses for WUA board members and lower level Public Works staff on irrigation aspects (O&M, construction).

Furthermore, it is proposed that such a new Irrigation Extension Service would operate, financially independent, within the existing provincial Water Resources Department and would make use of existing and new WUTP staff. Additional training programs would be developed on a pilot basis.

Observations on Irrigation Extension Service. First of all, consensus has not yet been reached on the establishment of such an Irrigation Extension Service, neither within DGWRD nor within the Ministry of Agriculture or

with the Ministry of Home Affairs. This makes any financial involvement of a Donor questionable.

The draft final report on WUTP (July 1990) does not yet specify the involvement of WUTP in this new Irrigation Extension Service, and does not even mention plans to create such an institute.

Moreover, the proposed tasks of the Ministry of Public Works within the tertiary unit through an Irrigation Extension Service, such as on inventory, survey, design and construction, is not in accordance with the general policy of the Government that the farmers are responsible at that level.

An Irrigation Extension Service lacks any legal ground and has even not been recommended in the recent Irrigation Institutional Strengthening Study of the ISSP-1.

6.2. Irrigation Service Fee Pilot Project

6.2.1. Introduction

Organization of the Project. The Irrigation Service Fee (ISF) pilot project started only recently, in February 1989. In the short period since then, considerable experience has been gained.

The pilot project is entrusted to the Ministry of Home Affairs, where it comes under the competence of the Directorate General of Public Administration and Regional Autonomy (DGPUOD), with close relations to Bappenas. Euroconsult of the Netherlands has been appointed as the expatriate consulting firm.

Terms of Reference. The Terms of Reference of the ISF pilot project focus only on issues related to (i) the ability to pay and (ii) the willingness to pay, based on experience in other Asian countries.

However, the following five important issues require have also been included in the present project:

- the relation between the introduction of the Irrigation Service Fee and the quality of the provided services on water delivery;
- activation of the Water Users' Associations towards the ISF principles;
- the relation between the stage of water resources development and the ISF potential;
- the institutional ability to provide and monitor services to users;
- the ability and willingness to collect fees.

ISF as a "study" and as an "action". The Terms of Reference of the project mention both, a study on fee collection, and an action to introduce an Irrigation Service Fee on 125,000 ha of technical irrigation systems.

The areas for ISF are located in four provinces: Subang in West Java, Sukohardjo in Central Java, Nganjuk in East Java, and Sidrap in South Sulawesi.

6.2.2. Key elements of the ISF concept

ISF service cycle. Irrigation service fee activities are attuned to the agricultural cycle, i.e. the cropping calender. The irrigation service fee can thus be divided into consecutive phases: (i) the introduction phase, (ii) pre-implementation phase, (iii) implementation phase, and (iv) final assessment.

Introduction phase of ISF. For ISF to be introduced, a number of basic conditions need to be fulfilled:

- formation and activation of an inter-department body at district level ("BAMUS IPAIR"), which is responsible for ISF implementation. This body is chaired by the district head ("Bupati") and is composed of heads of several government agencies, like in the Irrigation Committee;
- beginning of organizational work in the field: specially assigned community organizers start with courtesy calls to formal and informal leaders, and conduct house-to-house visit to as many farmers as possible and assist in the information campaign.

  Working committees at village level are formed, such as a WUA registration committee, financial management committee, walk-through committee;
- socio-hydro mapping to obtain a clear picture of the land tenure situation, as well as on crop-mapping.

System walk-through. An important element of ISF is the so-called "system walk-through", i.e. a periodic site inspection tour along the irrigation main system by both parties in the O&M service agreement.

The main idea behind a walk-through is that the "service supplier", i.e. the representative of the provincial Irrigation Department, and the "service recipient", the representatives of the WUAs, jointly determine what needs to be done in terms of repairs and maintenance to ensure adequate water delivery during the next cropping cycle.

Service agreement. The acceptance of the system O&M workplan and the needs-based budget is recorded in the "service agreement". This provides the formal basis for the irrigation supplies and the fees to be paid.

ISF Tariff Formula. The ISF tariff calculation is based on a number of factors such as the level of service performance, water security, cropping intensity.

The ISF tariff formula reads: ISF = f(i) x f(s) x F x A

where:

f(i) is the introduction factor, based on a 5-years introduction on a scheme basis, so 100% in year 5;

f(s) is the service factor ("water security factor") which depends on the performance of the Public Works irrigation and drainage systems and is related to the agreed cropping pattern;

F is the basic flat fee, as derived from the needs-based budget of the irrigation system (presently set at annually Rp 40,000 per ha);

A is the area, in ha.

Fee collection. Each season's ISF activities are concluded with fee collection and depositing. The procedures still need some further testing and legalization. They are at present:

- shortly after harvesting, the WUA receives the ISF assessment bill from the Revenue Departement. The WUA starts billing its members;
- collected fees are deposited in the name of the WUA with the district Treasure Office, only to be released at the discretion of the Bupati. Funds are put at the disposal of the Irrigation Section (Cabang Dinas Pengairan) to meet subsequent expenditures on the O&M of the system concerned.

6.2.3. Experiences with ISF

Collection results. Preliminary collection results are achieved during the 1989/90 cropping season. Against targets, the collection efficiency ranges from 55% in the Subang to 97% in Sukohardjo.

Subang is a test case for ISF exemption as most of the area was stricken by a pest attack (insects) in February 1990 which is estimated by the provincial Agricultural Department to have destroyed 45% of the yield.

Flat fee. The ISF in the pilot areas has been set for the first year at a flat fee of ±Rp 15,000/ha, because of certain reduction factors. Ultimately, the ISF would amount to ±Rp 40,000 ha per year when the irrigation service provided by the provincial Irrigation Department (through its office at district level: Cabang Dinas Pengairan) is fully.

Nation-wide. Based on the experiences in the pilot areas, the ISF concept has been constantly adjusted to suit area specific conditions, as and where considered necessary.

The present concept has matured to an extent that it is replicable in other areas, even though local variations may continue to be required.

Pressure is coming from Bappenas to finalize its pilot character and to empose ISF on a nation-wide scale in a relative short time.

Expansion program. Rather than opting for an extensive nation-wide approach of ISF introduction, it is felt that an "oil-stain" approach will better suffice. The ISF activity should spread from a nucleus, i.e. from the pilot districts into adjacent areas, thus compassing an ever-growing contiguous ISF covered area.

6.2.4. ISF and Government Organization

General. The ISF programme is the responsibility of DGPUOD of the Ministry of Home Affairs, through the Directorate for Regional Finance.

However, ISF is essentially a provincial programme inplemented at the district level.

Bupatis are directly responsible for ISF introduction, ISF collection and fund administration. During the introductional stage, a district ISF implementation team will assist the Bupati.

Irrigation Section (Cabang Dinas Pengairan) as partner. Under ISF, the Irrigation Department at district level (Cabang Dinas Pengairan) becomes dependable for its annual budget on the willingness to pay by the water users.

The willingness to pay ISF is essentially dependent on the assumption that a constructive dialogue will take place at field level between the WUA and the Irrigation Department at district level.

WUA as partner. From the farmers point of view, ISF gives them the right to become a partner in irrigation management. The annual system walk-through to agree on the maintenance program and the discussions on the service agreement, gives them an ample opportunity to become an active partner. An condition is however, that the water users are prepared to pay the ISF.

6.2.5. ISF as a vehicle to organize WUAs

General. In the past decade, a great deal of effort has been put into the formation and strengthening of WUAs. The overall result of these efforts, measured by the yardstick of "activity", is on a country-wide basis so far rather disappointing.

However, farmers can organize themselves whenever they feel that this is beneficial for them. One such strong motivation in the process of development of WUAs has turned out to be the introduction of the Irrigation Service Fee concept.

Strength of ISF. The strength of ISF seems to be in the introduction of a new user-oriented concept. Elements like user participation in main system O&M, representation on O&M related decision-making bodies, cost reconciliation, a service agreement with inherent rights and duties for both parties, mutual accountability, and recycling ISF into the O&M of their own system, obvious satisfy long-felt needs.

Organization of WUAs. ISF becomes a vehicle to WUA formation and strengthening by making the WUA an instrument in both the collection of ISF, as well as negociating its rate and the service agreement with the Government.

The WUA will ensure that all users are fully familiar with their inherent duties and rights. No user will be allowed to deny his share in the collective responsibility for O&M of the main system. By cultivating irrigated land, he is entitled to the service and liable to pay a fee for it.

WUA federations. WUAs have not only responsibilities but also need the right to representation in decision-making. "WUA federations" will be needed to effectively represent the water users above the tertiary level.

Such federations have been established under the ISF pilot project and found to satisfy a long-felt need, i.e. having a voice in main system O&M.

This is an essential step towards user-participation in main system management. WUA federations should also be represented in Irrigation Committees.

6.2.6. ISF and ISSP-2

ISF component. The World Bank pre-appraisal mission was of the opinion that the draft proposal of DGWRD for ISSP-2 was in several aspects not very well-balanced. An illustration of this was a major reduction in the ISF component.

The present ISSP-2 proposal includes an extension of ISF to systems adjoining the present ISF pilot systems in the provinces of West Java, Central Java, East Java and South Sulawesi, on about 700,000 ha.

ISF project costs would amount to US$ 6.6 million, including 120 international manmonths and 216 national manmonths technical assistance.

ISF as a condition for ISSP-2 Appraisal. To stress the importance of ISF for ISSP-2, World Bank requested GOI to comply with ISF collection before appraisal. The required actions are the second collection of ISF in Sukohardjo (995 ha) and Nganjuk (2,224 ha), and the payment request in Sidrap (14,700 ha).

6.3. Turnover of small irrigation systems

6.3.1. Introduction

Background. Nation-wide, 70% of all Public Works irrigation schemes are smaller than 500 ha. Together they serve ±900,000 ha, or 21% of the total public irrigated area in Indonesia.

The Government of Indonesia decided in 1987 that Public Works irrigation systems of less than 500 ha will be gradually handed over to the water users associations (WUAs) within about 15 years. As a first step, most of the systems of less than 150 ha will be turned over to the WUAs.

Organization of the Project. The Turnover Project started with pilot activities in 1987 in West Java and West Sumatra, and has now been expanded into Central Java, Yogyakarta, East Java, West Nusa Tenggara and South Sulawesi. The first schemes will be formally turned over in mid 1990.

The executing agency for system turnover is the Directorate of Irrigation I, DGWRD of the Ministry of Public Works. Responsibility for field implementation has been assigned to the provincial Irrigation Departement.

The turnover project activities are being funded by ISSP-1. The Ford Foundation provides the foreign experts component.

The Institute for Social and Economic Research and Information (LP3ES) has conducted training programmes and has provided coordination for Public Works field staff. The consultancy by LP3ES has been extended until April 1991.

The International Irrigation Management Institute (IIMI) has contributed significantly to the project by conducting research at pilot sites, and provided information and data of analyse to assist the learning process of the project.

6.3.2. Approach of Turnover Project

Groups. Three groups of existing schemes are identified:
- Group A, i.e. schemes in good physical condition, and owned by farmers. Turnover would involve merely a reclassification by Public Works;
- Group B, i.e. schemes in good physical condition, and owned by Public Works and/or receiving O&M from Public Works. Turnover to take effect after strenghtening the WUAs;
- Group C, i.e. schemes from group A and B requiring improvement. The majority of the schemes fall in Group C.

Training programme. The training programme concentrates on schemes in Group C and uses a four stage training approach with motivators / community organisers (TP4). The training subject matter are:
- part 1: Carrying out farmer organization inventories and working with farmers;
- part 2: Carrying out socio-economic profiles;
- part 3: Carrying out surveys and designs with farmers construction activities;
- part 4: Preparation for turnover of schemes to farmers, and O&M.

Training implementation. All training is very participative. All training materials (manuals, notes, etc.) have been prepared centrally. The project uses existing provincial Public Works facilities and equipment.

Most of the motivators (TP4) are the ditch riders ("juru pengairan") for the respective schemes.

Procedures of system turnover. A set of standard procedures for implementating turnover has been formulated. Turnover project activities are divided into seven distinct phases:
- System selection for turnover;
- Collection of in-depth information on social and technical aspects;
- WUA establishment and development as an ongoing activity;
- Design and construction, to bring the system in good working condition. This is a key-activity for farmers' participation and an impetus for WUA development;
- O&M training for farmers;
- Preparation of administrative documents for turnover, including WUA registration by the Bupati;
- Actual turnover by provincial Irrigation Departement to the WUAs, through the Bupati.

Development approach. It is recommended to concentrate the expansion efforts within certain Irrigation Section offices at district level (Cabang Dinas Pengairan), rather than spread them out in a piecemeal manner throughout the entire province.

Ideally, system turnover within the area should proceed irrespective of system size, with an "oil-stain" approach.

Irrigation Extension. The involvement of the provincial Irrigation Department will not be ended on all aspects. The field staff will provide technical assistance to the farmers on water distribution, maintenance design and construction, as well as financial support for larger structures.

The control of the intakes sharing the same river, will remain a responsibility of the Irrigation Department.

6.3.3. ISSP and the Turnover Component

Progress during ISSP-1. The 22 small irrigation schemes which were selected in 1987/88 will be ready for turnover by mid 1990. The total area is 3,000 hectares.

The second stage of the project started in 1988/89 with 185 additional small schemes, with a total area of ±15,000 ha. The third stage started in 1989/90 with another 13,000 ha (167 schemes).

The initial target set for ISSP-1 of 20,000 ha will not be reached due to a number of reasons, such as the time required to develop and institutionalize policies and procedures for this new activity. It is expected that ±14,000 ha will be ready for actual turnover to water users by mid 1990.

Turnover and ISSP-2. The pre-appraisal mission of the World Bank proposes an expansion of the turnover program to about 165,000 ha under ISSP-2. Moreover, an inventory will be made of 220,000 ha. The turnover component will cost about US$ 30 million, i.e. US$ 180 per ha. Consulting services of 488 national manmonths are envisaged.

6.4. FAO's On-Farm Water Use Project

6.4.1. Introduction

Organization of the Project. The On-Farm Use and Water Management Training Project started in March 1986 as a follow-up of the FAO Water Management Training Project, and would be completed in December 1990. The project has been recently extended until April 1991, to await further decisions on a second stage.

The project is assisted by FAO, with a financial contribution from the Government of the Netherlands.

The Directorate for Agricultural Development (DAAD) of the Directorate General of Food Crops Agriculture, Ministry of Agriculture, is the executive agency, through its sub-directorate of Water Management ("Tata Guna Air", TGA).

Objectives. The project aims at strengthening the operational and functional capacity of the provincial and district staff of the Ministry of Agriculture on water use management and on water users associations.

The project concentrates on village-managed irrigation systems with little or no assistance provided by other agencies.

The project objectives are:

- to improve irrigation and water management at the farmers' level by improving the functional and operational abilities of the agricultural Water Management (TGA) staff at provincial and district levels;

- to assist DAAD to start an implementation programme in the field, including:
  * formation, training and follow-up guidance to village WUAs for better water management, through training of PPL-staff and village leaders,
  * improving simple works for better water management in farmer-managed irrigation systems, through training of PPL-staff and village leaders;
- to assist AAET in establishing PPL-training on water use management in the regional training centers.

Provinces. The On-Farm Water Use project covers all of Java and since 1988 also Aceh.

6.4.2. Approach of the On-Farm Water Use Project

Training of Staff. The project uses a flexible problem-solving approach of district TGA officers as a main activity. These officers are allocated to "starter projects" during and after their training.

Starter Projects. Small traditional irrigation schemes are used as "Starter Projects" for demonstration purposes and case studies, as well as for the actual field implementation. A Starter Project is intended to cover physical improvements, improvements in WUA organization, and also improved irrigated agriculture.

Starter Projects provide practical experience for the Water Management (TGA) staff and demonstrate that local communities can be stimulated to do more for themselves.

A budget for technical improvements is available under the project, but the WUA is expected to provide a similar amount. GOI has contributed roughly US$ 1000 for a contracted design survey of each scheme, and GON/FAO have made available in materials US$ 1000 for structural improvements.

Agricultural training centers. Existing agricultural training centers are used for training purposes under the project.

6.4.3. Results of On-Farm Water Use Project

Training. Some 100 district TGA officers have completed the two-year training cycle and became operational. Some 25 provincial TGA officer are now under (on-the-job) training. Some 200 agricultural extension workers have been trained on basics of water use management through one-week training programmes.

Key-farmers. Some 1200 key-farmers, members of WUAs and local leaders have joined extension activities in the Starter Projects.

6.4.4. Follow-up of the On-Farm Water Use Project

Evaluation Mission. A tripartite evaluation mission of the Government of Indonesia, FAO and the Government of the Netherlands was fielded in March 1990. The mission concluded that the project has achieved substantial effects, in particular in practical training to 96 water management staff (TGA) in Java and Aceh. The concept of self-help projects to improve village water management has also been introduced with success.

The tripartite mission recommended a four-year follow-up phase of the project. The project should assist in institutionalization its training programme, as well as broadening the project scope to cover senior staff and extension personnel.

Project assistance would be gradually extended to an additional two to three provinces.

Formulation Mission. A (draft) plan of operation has been prepared recently by FAO, based on the above evaluation report and field visits.

The duration of the project would be four years, requiring a preliminary budget of US$ 5 million as a donor contribution and US$ 2.5 million as a contribution by the Government of Indonesia.

6.5. ADB's ACTIP Project

6.5.1. Introduction

Scope. The main objective of the Agricultural Component of the Third Irrigation Project (ACTIP) is to accelerate integrated agriculture development. More specificly, it aims at diminishing constraints for farmers in irrigated agriculture.

Irrigation water supply is the domain of the Ministry of Public Works, while the on-farm water use lies in the hands of the Ministry of Agriculture. ACTIP aims at having a coordinating function between the two Ministries.

Organization of the Project. The Government of the Netherlands co-finances the Agricultural Component of the Third Irrigation Project (ACTIP) with a grant in a parallel co-financing arrangement for technical assistance, administered by GON, and with a loan on a joint-financing basis for the financial assistance, administered by ADB.

The project started in September 1989 and is carried out by the Directorate General of Food Crops Agriculture (DGFCA) of the Ministry of Agriculture, with Euroconsult of the Netherlands as Consultants. The project will continue until December 1991.

Objectives of TISP. The Third Irrigation Sector Project (TISP) has components:

- Irrigation development component, dealing with rehabilitation of existing schemes, special maintenance, efficient O&M, irrigation service fee pilot areas, turnover of small projects, etc.;

- Agricultural component covered by ACTIP, dealing with land development, tertiary demonstration units, seed production, training and extension, women in development, etc.;
- Land tax improvement component.

Provinces. The location of the project areas of ACTIP is derived from the areas covered of TISP, i.e. the provinces of Aceh, North Sumatra and Maluku.

Related projects. Several projects with a strong agricultural component are at present ongoing, such as:
- Irrigated Command Area Development Project,
  in Lampung and Bengkulu, assisted by ADB, also has a land development component. The executing agency is the Agency for Agricultural Education and Training (AAET) of the Ministry of Agriculture;
- Seed II project,
  in 12 provinces, assisted by World Bank. The executing agency is the Directorate of Food Crops Production of the Ministry of Agriculture;
- Rice Seed Production and Marketing Strengthening Project,
  in five provinces, assisted by EEC. The executing agency is the Directorate of Food Crops Production of the Ministry of Agriculture;
- Third National Agricultural Extension Project (NAEP III),
  is nationwide and is assisted by the World Bank. The executing agency is the Agency for Agricultural Education and Training (AAET) of the Ministry of Agriculture;
- Crop Intensification and Diversification Programme,
  is assisted by ADB. The executing agency is the Ministry of Agriculture;
- On-Farm Water Use and Water Management Training Project,
  in Java and Aceh is assisted by FAO and the Government of the Netherlands. The executing agency is the Directorate of Agricultural Area Development of the Ministry of Agriculture;
- Water Users Training Project (WUTP),
  in ten provinces, assisted by the World Bank. The executing agency is DGWRD of the Ministry of Public Works;
- Water Users Association Strengthening Project (WUASP),
  in ten provinces, assisted by the World bank and the Government of the Netherlands. The executing agency is the Directorate of Agricultural Area Development of the Ministry of Agriculture.

6.5.2. Approach of ACTIP

Land development. Land development converts unirrigated land into irrigated land. However, the realization of land development requires inputs, such as credit.

The new policy is now to use an assisted self-help land development system. One part of the budget is provided through the Government, such as for design, land clearing, land levelling and supervision. The other part is contributed by the farmers themselves, such as for field lay-out, farm roads and the tertiary and quarternary irrigation system.

Generally, land development has been done in the past by farmers in 70% to 90% of the project areas without any Government assistance.

ACTIP would provide for land development on ±3,400 ha, in small plots (10%) of newly developped irrigation areas. These plots would have a pilot function.

Although land development has been included under ACTIP, the project encountered several difficulties in trying to reach the targets for land development. Difficulties include the proper selection of areas, lack of irrigation water supplies, insufficient volume of construction contracts.

Tertiary Demonstration Units. The Tertiary Demonstration Unit (TDU) is a key element in ACTIP. TDUs will be established to show the effect of an integrated approach to irrigation development by Local Government agencies and the farmers.

Apart from serving as demonstration units, TDUs will serve also be used for seed production and as areas where research can be conducted.

A total of 38 Tertiary Demonstration Units will be established, ranging in size from 50 to 120 ha each.

Seed Production. The seed production is an integral element of the national strategy for agricultural improvement and provides for the production and supply of high quality seed of improved varieties.

6.5.3. Training Aspects of ACTIP

Training and Extension. The training and extension programme of ACTIP focusses on:
- agriculture: for the introduction of improved technology and practices;
- water use: to make optimum use of the available irrigation water;
- seed production.

Target groups. There are three target groups for the training under ACTIP:
- rural extension workers at district and sub-district level (by in-service training);
- provincial and district staff, with formal off-the-job training, for seed control;
- key-farmers (on-site training and extension through the PPL, and through them to the progressive farmers and the common farmers).

Audio-visual Unit. An audiovisual training unit is available at the Directorate of Food Crops Extension. The Unit is meant to produce the necessary extension, training and information materials. However, the existing equipment is far from professional and the production staff has no professional training.

6.5.4. Re-formulation of ACTIP

Slow progress. ACTIP progresses very slowly. This is mainly caused by two factors.

The Third Irrigation Project (TISP) is well behind schedule in all

three provinces with, as a result, that the same applies to the Tertiary Demonstration Units and the land development components.

The second factor is the lack of operational funds for the ACTIP Consultants.

Relation with ISF. The forces released by ISSP and its ISF pilot project, affect the role of the Ministry of Agriculture (and of Public Works) in the development of the tertiary unit. The power of the farmers is getting stronger and their federations of WUAs negotiate "service contracts" with the Irrigation Department. The concept "a service for a fee" turned out to be the key to a mobilization of active participation of the farmers.

Reformulation Mission. The need has been identified by the Consultant to re-formulate ACTIP.

Consultants will prepare a document which will contain an analysis of the present situation and a framework for the evaluation and the formulation of the project. The document will be informally discussed with the main agencies involved, i.e. Bappenas, DGFCA, DGWRD and DGPUOD.

7. WOMEN-IN-DEVELOPMENT COMPONENT IN WUASP AND IN OTHER PROJECTS

7.1. Introduction

General. It is increasingly recognized that female farmers play an active role in agricultural production, water management being one important aspect of it.

However, many programmes dealing with agricultural and water management development are not geared towards the interests, constraints and opportunities for female farmers. This may not result in an optimal use of human resources, existing knowledge and structures.

Consequently, to improve the efficiency and effectivity of the organisation of O&M the role and function of female farmers has to be taken seriously into account.

Policy of GOI. Policies and programmes of the REPELITA V regarding the role of women in nation building indicate that: "women should have the same rights, responsibilities and opportunities as men".

Ongoing Projects. An inventory on Women in Development (WID) specific and WID integrated agricultural projects has been carried out in January 1990 as a consultancy to the Embassy of the Netherlands in Indonesia.

Concerning water resource management related projects funded by the GON the following are relevant:

- Water Users Association Strengthening Project (WUASP) in ten provinces;
- Women and Food Crop Production (WFCP) with the Rawa Sragi Swamp Reclamation (RSSR) in Lampung;
- Women and Food Crop Production with the Cidurian Irrigation Rehabilitation & Water Management Project (CIR&WP) West Java;
- Pompengan Integrated Area Development Project (PIADP) in South Sulawesi;
- Agricultural Component Third Arrigation Sector Project (ACTIP), in Aceh, North Sumatra and Maluku;
- Kali Konto Watershed Management (KKWM) in East Java;
- Central and North Aceh Rural Development Smallholders Coffee Development and Pumplift Irrigation (CANARD), Aceh;
- FAO-On Farm Water Use and Water Management Training and Development Project in West, Central and East Java, Yogyakarta and Aceh.

The WID component in the majority of these projects was incorporated at some stage during implementation.

Planned Projects with WID components. Several other projects are planned :

- Telang Saleh, South Sumatra;
- Rongkong-Lamasi Integrated Ares Development Project (RIAD), South Sulawesi;
- North Aceh Integrated Drainage and Agricultural Development (AIDA), North Aceh;
- Waterahed Way, Dekampung Hulu, Lampung;
- Cimandiri, West Java.

There is a clear trend to incorporate the WID component as well as WID expertise in early stages (planning, formulation, appraisal stages) in order to involve women in the project right from the start.

However, close monitoring of incorporation of the WID expertise in project preparation procedures is recommended by officers concerned.

Coordination of WID projects. The projects contain many similarities, and

of course differences. Most activities are geared towards providing access to resources (information, land, water, decision-making power) and to institution building of WID.

Exchange of experiences between the project officers concerned is therefore very relevant and important. Sufficient funds should be provided for coordinating WID activities, documentation, inter-agency information channeling etc. Such a budget could be incorporated in the overall project budgets or at the Netherlands Embassy.

Project for Integration of Women. Very recently a draft project proposal has been submitted for funding by the FAO to the Netherlands Embassy titled "Preparatory Phase Project for the Integration of Women in the Mainstream Agricultural and Rural Development Programmes", estimated at US$ 202,000 for three months.

The current focal point on women related activities within the entire Ministry of Agriculture is located in one of the sections of the Agency for Agricultural Education and Training (AAET). Although this agency is carrying out effective support for specific women's activities, the institutional integration of women's concerns in the planning and implementation into the entire department is strongly advocated by the Ministry of Agriculture and the Ministry of State for the Role of Women in Indonesia.

The project proposal aims at preparing a project document focussed on this institutionalization by a.o. Gender Analysis Training for higher level staff, followed-up with policies and action plans and their translation into concrete proposals.

Overall WID institutional strengthening project. Many of the above mentioned projects concentrate on specific WID activities and development of strategies and methodologies but have as an ultimate goals the incorporation of their findings within the line ministry concerned. An overall institutional strengthening project of the specific projects could greatly benefit from and give support to each other.

The mission therefore recommends that the project proposal would be seriously considered for funding.

7.2. Organisation of WID component in WUASP

WUASP Proposal on WID. The WUASP project proposal recognized the important role of female farmers in irrigated agriculture and their decisive say in male farmers' decisions in this respect.

It indicated on the Women in Development (WID) component that "the consultants will promote the participation of women in public decision-making events to stress the ultimate perspective of good irrigation management as basis for communal welfare".

Inception Report on WID. The objective on Women in Development has however not been operationalised in terms of staffing and budget requirements. Only in the Inception Report (December 1989) a proposal has been submitted to contact a junior female sociologist who will pay explicitly attention to the role of women in water management in general and in WUAs specifically. Again, no budget for the WID component has been allocated which is a serious draw back for effective functioning.

WID Resource Person. In September 1989 a short-time consultancy was done on the role of women in WUA development. Funds reserved for resource persons were used to this purpose.

The Consultants' project team, including the WID expert, was not impressed by the quality of this report while it provided not the intended basis of an action program to be implemented.

The course element in the training of Regional Community Organizers (RCOs) on the involvement of women in agricultural development was however well received and created some awareness on the importance of gender issues in their work.

WID expert. Due to unfortunate time-consuming procedures, the WID-expert only could start her activities in April 1990. At that time, Action Groups have been trained, surveys been carried out, selection of WUAs have been done and curriculae have been developed.

It was too late to effectively support the efforts of other staff members in this respect and follow more thoroughly gender based strategies.

Counterparting on WID. The counterpart situation for the WID-expert is even worse than for the other project team members. Within the Ministry of Agriculture, there are no staff appointed to collaborate with, there is no framework or strategy in which project approach and results could fit in. Under these circumstances the Mission has great appreciation for the motivated and dedicated way the expert is operating.

7.3. Activities on WID in WUASP

WID in ISSP. WUASP is the only ISSP project which pays explicitly attention to the role of women in the development of WUAs. Unfortunately, there is not any institutional framework as to have the other components benefit from the WUASP findings and incorporate gender based strategies in their set-up.

WID in WUASP. The way of integrating gender issues in the planning and execution of the various project components of WUASP has not resulted in an optimal use of the possibilities to explicitly involve women:

- hardly any women were interviewed in the WUA surveys;
- the gender of PPLs and other participants involved in training not been considered as a criterium for selection;
- only superficial attention has been paid on the issue in the various training curricula.

WID in the WUASP questionnaire. The regional community organizers (RCOs) have been trained in collection of data about the involvement of women in water resource management.

A questionnaire has been distributed, which deals with questions about women's village organisations, willingness of WUAs to involve women, role of women in agriculture and in water management and the willingness of women to be involved in WUA development. It specifies to whom which questions have to be asked.

Similar data will be collected through the PPLs: 1 week of fieldwork is

allocated for gender issues in the PPL training.

The questionnaire is of good quality and if well executed may form a relevant input to set-up an action programme.

Data collection. The approach of data collection followed has several advantages and seems valuable:
- it is part of the training programme of PPLs and in the future of KLPs and Action Group;
- it raises awareness among the female water users about their (non) involvement in decision-making about water distribution at tertiary level;
- it provides bench mark data and makes monitoring of the impact of project activities easier.

7.4. Proposal Women and Water Use Management pilot project

Draft Proposal. In addition to this WUASP questionnaire, a draft proposal has been made by the WUASP-team for a Women and Water Use Management (WOWUM) pilot project. This proposed project aims to inform and train women in water management issues and involve them actively in WUA development.

The proposal follows the encouraging way of designing appropriate programmes which is used in the Women and Food Crop component in the Rawa Sragi Project.

Instead of postponing actions until after surveys have been carried out and analysed, data collection on the role of women is combined with small-scale action plans with the women farmers' association (KWTs) in response to the interests and abilities of the members.

To benefit fully from the lessons learned by the Rawa Sragi Project close interaction between the two projects seems very useful.

Action-research with KWTs and in-service training of field staff (PPLs) and supporting resource persons are the major activities.

Budget for WOWUM. The budget proposed preliminary amounts to about Rp 71 million, i.e. Rp 54 million for workshops with 200 female farmers, Rp 6 million for training of 10 trainers and Rp 11 miliion for small scale activities.

Action-research. It is proposed to carry out the action-research with 5 existing functioning KWTs per province and concentrate on two provinces.

The first part of the action-research serves the purpose to collect information about views, training needs and opportunities of female farmers involvement in agricultural production and water management.

The second part will focus on the development of action plans as required by the female farmers as well as analyse in what way they may be involved in the WUA development.

Staffing. The RCOs and PPLs concerned will be responsible for the training. Nine facilitators and resource persons per province from NGOs, BLPP, Action Groups and other relevant persons from the Department of Agriculture will be recruited and trained for three days.

The training will be developed in coordination with the Institute of Sciences in Indonesia (PDII/LIPPI) and with the NGO Center for Women Resources Development.

Provinces. A start will be made in provinces where also other Netherlands funded agricultural projects with WID components are carried out:
- West Java with the Cidurian project, and
- East Java, where the FAO On Farm Water Use and Water Management Training and Development Project is working and where the LESMAS project will start as follow-up of the Kali Konto project.

This seems a good choice to make effective use of the various efforts and experiences gained so far.

Expected results from WOWUM. The results expected from this action-research pilot project are in summary:
- the KWT development and the opportunities for female farmers to get access to production resources strengthened;
- information gathered on the position, knowledge, views, needs for supportive actions and opportunities of women in agricultural production and water management;
- training approach, methodologies and course curricula developed to be integrated into the general training of MAO staff;
- institutional linkages between institutions, for the provision of locally relevant training;
- awareness and skills of government officials enhanced as regards the need to actively involve female farmers in training and extension activities related to agriculture and water management;
- experience gained as regards monitoring of impact of interventions regarding water resource management on the allocation of resources (labour, capital) and decision making within farming households.

Integration of WID activities. This pilot project is only one link in the strategy to integrate the WID component in the regular tasks and activities of the many parties and persons involved in the development of WUAs at the various levels.

It is realistic and wise to start with a pilot project at a small scale in order to gain experience in this field and to make continuous and close monitoring possible.

It fits perfectly in the overall approach to support the Ministry of Agriculture in integrating women in mainstream agriculture and rural development programmes in Indonesia.

Options. The WOWUM proposal gets the full support of the mission. Strong efforts have to be made to start implementation as soon as possible. The possibility to allocate funds reserved for resource persons should be considered seriously. In fact, the approach proposed has a much wider scope and impact than the short-term consultancy funded out of the same budget. Another option is to put the various components of the pilot project under the various posts regarding training, surveys, WUA organisation, etc.

7.5. Supportive actions required on WID component in WUASP

WID-expert. The WID component is rather new and needs to be strengthened through other experiences in this field and through a sound monitoring of the approach and activities of the WID junior expert.

It is therefore recommended to support the expert with two times two weeks external consultancy in fall 1990 and spring 1991. The main tasks will be:
- to give support in the analysis of the results;
- to assist in the development of strategies to make optimal use of the analysis in the larger framework and objectives of the pilot project.

WID-network. It is further recommended that the expert should get the opportunity to contribute to the development of the network between governmental and non-governmental organisations and development projects dealing with women and agricultural and water management development activities. This will allow for an efficient use of resources, of experiences gained so far and makes minimalization of overlap or duplication more probable.

WOMUM. It is recommended that the option to continue support to the WOWUM activities beyond the actual time-slice of the WUASP and consider the possibilities to include in an eventual new programme. It required to have WID expertise included in an eventual formulation mission.

7.6. Women in Development Components in other Projects

WID-component in WUTP. It has not been questioned by the Water Users Training Project (WUTP) if different approaches might be needed to finally reach male or female water users. Consequently the various training elements do not reflect on the different interests, constraints and opportunities of male and female farmers to contribute to an effective functioning O&M system. Inclusion of female farmers in the institutional strengthening of water management at tertiary level is not taken into consideration. The final impact and benefits for male and female farmers can not be monitored.

WID-component in the ISF pilot project. The ISF study aspect is mainly concerned with the fee collection procedures and regulations itself. It is not meant to make an impact analysis on the water users level. At farm-household level this means an analysis of the impact on resource allocation changes and constraints. Distinction should be made between farm-household of different economic classes.

It has to be questioned too if male or female household members prove to be accountable for payments and what effect it has on expenditure patterns.

Incorporation of expertise in socio-economic research and WID seems to be crucial to get a clear picture about the effects of the introduction of ISF.

WID-component in the FAO On-Farm Water Use Project. Involvement of female farmers is not mentioned in the FAO project objectives, nor explicitly elaborated in terms of approach, institutional framework and activities / expected outputs.

Lately WID expertise is added to the project team. This consultant will make a study on the role of women in on-farm water use management.

8. JOINT CO-FINANCING BY GON OF CONSTRUCTION WORKS UNDER ISSP-1

8.1. Classification of Construction Works

General. The Irrigation Sub-Sector Project aims at the sustainable development of the irrigation systems. Therefore, the systems should be brought into a good workable condition.

ISSP provides for "Special Maintenance" (SM) to upgrade the irrigation systems so that they can be operated as designed. Through "Efficient Operation and Maintenance" (EOM) the upgraded systems should be able to perform in a sustainable way.

Differentiation of works in "Special Maintenance". Several stages in Special Maintenance have been developed in the course of the ISSP-1, each with their own names, such as EOM, SM, SM2, SM3, DEOM, PROM. These names can only be understood with some background knowledge of the process, and their definitions will be presented in the following, see also Table 8.1.

However, questions may arise whether such a differentiation of works is realistic to be continued in the future.

Efficient Operation and Maintenance (EOM). "Efficient O&M" (EOM) applies to areas ready for sustainable functioning. The provincial government can handle these systems, without further involvement of the central government.

Efficient Operation is to ensure the adequate (or equitable) supply of water to farmers in all parts of the irrigation system. Efficient Operation should be based on workable operational guidelines, and on proper staffing of the agnecies involved and with clear job descriptions and responsibilities.

Efficient Maintenance is to ensure the inspection, servicing and repair of the systems and facilities to warrant that they are in a suitable condition to perform their functions.

The maintenance costs should be related to the actual needs of each system, based on inspections of all parts of the system. Proper programming, budgeting and implementation should ensure that systems do not deteriorate.

Table 8.1. Classification of areas for preparation on the EOM stage.

TYPE OF AREA	CONDITION OF SYSTEM (before re-rehabilitation)	EXPERIENCES (during re-rehabilitation)	UNIT COSTS
DEOM Area	Good	Good	US$ 0 /ha
DEOM + SM3 Area	Good	Poor	US$ 50 to 300 /ha
PROM Area	Reasonable	Good	US$ 60 /ha
SM Area	Average	Good	US$ 100 /ha
SM + SM2 Area	Average	Poor	US$ 130 to 300 /ha

Direct Efficient O&M (DEOM). "Direct Efficient O&M" (DEOM) areas are rehabilitated areas that can be brought under EOM, without further preparational actions, such as SM or PROM.

DEOM areas may include on-going schemes at the time of handover from construction, provided that the Plan of Operation and Maintenance, a needs-based-budget, staffing, etc. are available.

Preparation for Efficient O&M (PROM). PROM refers to "Preparation for O&M". PROM areas only need preparatory activities on the Plan of Operation and Maintenance, needs-based-budget, staffing, etc. before they can enter their EOM-stage. These areas do not need any Special Maintenance (SM) to be carried out.

Special Maintenance (SM). Special Maintenance ("SM") is needed to bring recently rehabilitated or completed irrigation systems up to the technical standard required for Efficient O&M.

Special Maintenance can best be regarded as deferred heavy maintenance, and it does not cover rehabilitation or upgrading of the systems. Typical works to be included are, inter alia:

- completion of system maps, schematic diagrams, structure inventories, and as-built drawings;
- repair of control structures and gates;
- repair of cross drainage and silt-control facilities;
- repair or provision of additional flow measurement structures, where required for Efficient O&M;
- repair and desilting of canal sections to ensure adequate capacity and freeboard;
- regularisation or elimination of illegal offtakes.

Special Maintenance 2 (SM2). Special Maintenance 2 ("SM2") refers to the additional budget needed to complete the necessary works in the SM-areas.

In the concept of Special Maintenance it was considered that the average cost of construction, needed to bring selected areas up to a standard which would allow Efficient O&M, would be about US$ 100 per ha. However, it appeared that the actual average cost far exceeded this amount.

To cope with the budget constraints, in a number of cases the original selected areas were reduced and all the works needed in these reduced areas were executed. In other cases, the work was spread out over the whole area but only a part of the required work was carried out. SM2 will concentrate on these remaining works.

Special Maintenance 3 (SM3). Special Maintenance 3 ("SM3") refers to some deferred maintenance work still needed in DEOM areas which were considered earlier as ready for EOM without any SM-work. So, SM3 is work to be done in the DEOM areas.

Upgrading. The term "upgrading" stands for the conversion of a semi-technical or a village-managed irrigation system into a fully technical system inwhich water discharges can be controlled and measured throughout the entire system including the tertiary offtakes.

ISSP-1 and ISSP-2 do not include an upgrading component in its construction activities. It is anticipated that upgrading of irrigation systems has a marginal economic viability.

8.2. Preparation for Construction Work under ISSP-1

Design for Construction. Design work on Special Maintenance is executed through contracts to local "SM" consulting firms which make the designs on the basis of guidelines of the ISSP-1 Consultant on Training, and with an input from the field staff of Irrigation Section (Cabang Dinas Pengairan) and the Irrigation Sub-Section (Ranting Dinas).

The local Consultants are selected by the DGWRD at national level, on the basis of a short-listing by the provincial Public Works Department (DPUP).

DGWRD at national level, through its Directorate of Irrigation I (DOI-I), is not involved in the quality control of the design, although DOI-I approves the payment. A fine is given only by DOI-I for a delayed completion of the design.

The quality of design work produced by local design Consultants varies considerably. Invariably, more checking of designs is required than should be necessary, increasing the already heavy workload of the provincial Public Works staff.

Coordination of Design. The design activities for Special Maintenance are not kept in one hand, but responsibilities are spread over Consultants, DGWRD at national level, the provincial Public Works and the Irrigation Section (Cabang Dinas Pengairan) with their field staff.

The design for Special Maintenance of large systems, e.g. over 10,000 ha, is often split into more design packages in order to allow provincial Consultants to be appointed. The background is that the smaller Consultants should also gain experience with this type of work.

It means that much guidance on design should be given to the provincial Consultants before the results meet the standards. Moreover, means should be found to combine the mapping and system planning to avoid a multiplicity of design reports and coordination between Consultants.

It seems more appropriate to refrain from Consultants and to make the users of the system, i.e. Irrigation Section (Cabang Dinas Pengairan), fully involved in the planning, design and construction of the works. It means that the implementation speed should be lowered, and that the (donor) projects should meet the lower implementation capability.

Delay of Construction. Not all areas for which designs have been completed are taken up for construction in the following year, due to budget constraints. If construction is delayed, there is a risk that the designs will have to be revised to take into account that changes occurred in the system in the meantime.

Another problem concerns the time schedule. Design work of the annual SM-packages should be finalized by the provincial Consultants within five months. It means that no other work on SM is available for the Consultants design staff during the remainder period of the year.

Cost for Special Maintenance. It has been found that under the given conditions of the systems coming up for Special Maintenance, the present level of funding at about US$ 100 per ha, is inadequate, even to bring the system up to minimum required levels. Analysis indicates a requirement of at least 70% to 100% more than the present level of funding.

However, where the cost of necessary works is less than this figure, non-essential lining is added to bring the costs up.

It is recommended that Special Maintenance should meet the actual needs of the individual irrigation schemes, but that the overall average costs per hectare for all irrigation schemes should be kept at the allocated level.

8.3. Quality of Construction Work

Selection of Contractors. The construction work is carried out by local contractors, selected by the provincial Public Works Department. Usually the contract amount is limited to Rp 500 million each, which permits the selection of provincial contractors.

Construction supervision. Construction supervision is done by the field-staff of the provincial DPU, under guidance of the ISSP-1 Consultant on Training.

Some three groups of supervisors are involved in the supervision of each construction package, coming from the provincial DPU, from the sub-provincial Public Works Department (DPU-Wilayah), and from the Irrigation Section (Cabang Dinas Pengairan).

The construction packages are spread over large areas. The supervision staff, consequently, faces serious difficulties with their transport. This is sometimes solved by having the Contractor to supply the necessary transport facilities. The danger exists that the construction supervisors become dependent on the contractors with, as a result, that the proper quality control is endangered.

Construction qualities. Construction quality is largely dependent on three different but interrelated factors: (i) contractor capability, (ii) adequate supervision, and (iii) implementation of penalties for bad work.

It is experienced by the Consultant for Coordination of ISSP-1 that the achievement of good quality is very difficult, given the currently prevalent situation in regard to the selection of contractors, inadequate supervision and the reluctance to impose penalties.

8.4. Construction work in ISSP-2

Physical component under ISSP-2. The physical components of the ISSP-2 would include, see also Table 8.2:

- the completion of Special Maintenance (SM2) works on irrigated areas brought under ISSP-1, covering about 250,000 ha;
- Special Maintenance (SM) in new areas covering about 555,000 ha;
- Additional Special Maintenance (SM3) in areas brought directly under EOM under ISSP-1, covering about 65,000 ha, to be financed by GOI out of its own resources;

- Areas requiring PROM activities would be about 160,000 ha;
- SM designs about 430,000 ha under ISSP-2 construction and on 90,000 ha for a follow-on project would be prepared.

EOM areas under ISSP-2. The EOM areas will be extended, so that by the end of ISSP-2 about 1.8 million ha of irrigated land is provided with planned service to the users and which system is well maintained into the future.

Table 8.2. Areas and unit rates of SM-Programs under ISSP-2

	Special Maintenance				PROM& DEOM		SM2		SM3	
	Design		Construct.		Construct.		Construct.		Construct.	
	ha	$/ha	ha	$/ha	ha	$/ha	ha	$/ha	ha	$/ha
West Sumatra	16,000	22	20,000	193	0	-	15,000	216	8,000	293
South Sumatra	9,000	22	16,000	195	8,000	54	17,000	187	0	-
Lampung	21,000	22	26,000	198	8,000	55	13,000	48	0	-
West Java (÷POJ)	83,000	21	96,000	198	36,000	55	41,000	145	11,000	200
Jatiluhur (POJ)	74,000	22	71,000	198	0	-	25,000	25	0	-
Central Java	81,000	20	117,000	200	43,000	55	41,000	29	14,000	50
Yogyakarta	19,000	22	23,000	198	0	-	10,000	111	8,000	56
East Java	76,000	22	118,000	202	11,000	55	37,000	50	25,000	46
South Sulawesi	40,000	22	57,000	225	28,000	55	60,000	65	0	-
Central Sulawesi	13,000	22	11,000	198	24,000	55	0	-	0	-
Total area	432,000		555,000		158,000		259,000		66,000	

Table 8.3. Proposed SM-Programs under ISSP-2, in US$ million.

	Special Maintenance		PROM& DEOM	SM2	SM3	TOTAL
	Design	Constr.	Constr.	Constr.	Constr.	Design & Constr.
	US$10^6	US$10^6	US$10^6	US$10^6	US$10^6	US$10^6
West Sumatra	0.36	3.90	0	3.16	2.41	9.83
South Sumatra	0.20	3.09	0.44	3.20	0	6.93
Lampung	0.46	5.13	0.44	0.62	0	6.65
West Java (excl.POJ)	1.76	19.07	1.95	6.00	2.13	30.91
Jatiluhur (POJ)	1.63	14.00	0	0.61	0	16.24
Central Java	1.64	23.36	2.39	1.17	0.72	29.28
Yogyakarta	0.43	4.56	0	1.11	0.46	6.56
East Java	1.70	23.82	0.63	1.84	1.13	29.12
South Sulawesi	0.87	12.90	1.53	3.89	0	19.19
Central Sulawesi	0.28	2.13	1.33	0	0	3.74
Total Costs	9.33	111.96	8.71	21.60	6.85	158.45

Provincial Construction Programs. The proposed provincial construction programmes under ISSP-2 is presented in Table 8.3.

These construction programmes are based on inventories received from the provinces and on designs made by local Consultants. The implementation of these programmes require careful planning of budgeting and tendering procedures. Moreover, designs may have to be reviewed and revised as necessary.

Procurement aspects. The discussion between the World Bank, the Consultants on ISSP-coordination and DGWRD is still continuing on construction contract packages. Mutual agreement has not been reached yet on all aspects.

The World Bank and the Consultants stress that SM or EOM works in single irrigation schemes should not be split into more than one contract. However, DGWRD prefers the use of smaller (regional) contractors.

The World Bank proposes that the SM construction works should be packaged generally into a series of contracts in excess of Rp 500 million, as to allow for national (class A) contractors. However, DGWRD prefers also here the use of the local and smaller contractors. Consultants of the ISSP-1 ongoing projects observed that there is no relation between the quality of works and the size of the contractor's firm.

Technical Assistance. The total cost of the irrigation construction component under ISSP-2 will exceed US$ 150 million and cover about one million hectares in 10 provinces over a four year period. In view of the size and the extent of this programme, it is vital that adequate inputs of experienced technical staff is provided, or by the provincial irrigation department, or by Consultants.

Experience on ISSP-1 has shown that there is a continuing need for advice and assistance to the provincial staff in the activities described above. The overall approach to the consulting services is to have regional Consultants based in the provincial centers, led and coordinated by a small technical team within DGWRD in Jakarta.

Requests were made for about 500 foreign manmonths and 1300 local manmonths. However, the pre-appraisal mission of World Bank reduced this input to 132 foreign manmonths and 396 local manmonths, see also Table 4.1.

Quality Assurance. The World Bank proposes to establish a "quality assurance office". The objective of this office would be to examine the construction work under ISSP-2, to report findings, identify deficiencies, determine the causes and recommend remedial measures.

The quality assurance office would be staffed by one foreign and one local Consultant for a period of 36 months, while a GOI engineer should be assigned to participate and ultimately continue this activity.

However, DGWRD considers that this function is already covered by the Inspector Generals' Office of the Ministry of Public Works.

The Consultants on ISSP-coordination observed that the present construction supervision by Consultants lacks support from DGWRD and the World Bank, while also adequate staffing is lacking. It is observed that under ISSP-2 the situation will only be poorer because of the severe reduction in Consultancy inputs.

8.5. Observations on joint GON co-financing Construction Component

Construction works financed by GON. The joint co-financing under ISSP-1 by the Government of the Netherlands for construction works at a cost of some ƒ 20 million (US$ ±10 million) has been spent following the procedures set by the Government of Indonesia and the World Bank.

All auditing of this spending is an integral part of the Loan Administration as set up by the World Bank: Consultants have been assigned at several levels, and accounts are controlled by DGWRD and the World Bank.

Physical works by joint GON co-financing. It is impossible to point the specific works in the field that has been constructed from the joint co-financing budget from the Government of the Netherlands.

In fact, it has never been intended that those works could be individually traced in the field because of this joint co-financing character.

It was intended that the Government of the Netherlands would participate in ISSP-1, through the organization set up by the World Bank, and not through a special assigned organization by GON.

It means that general ISSP-1 observations on quality of the works, etc. are also valid for the Netherlands contribution.

GON as Partner in ISSP. The concept of ISSP-1 is sound and will stimulate the sustainable irrigation development in Indonesia. However, several lessons have been learned on the way to reach sustainable irrigation development.

By participating in the Irrigation Sub-Sector Projects (first and possible also the second time-slice), the Government of the Netherlands became a partner in development. It means that the Government of the Netherlands can place certain accents within the development strategy, while at the same time GON receives first hand information on the latest developments.

9. DISCUSSION

9.1. General Considerations

WUA-projects under ISSP-1. In the first time-slice of the Irrigation Sub-Sector Project (ISSP-1) of the World Bank, three sub-projects dealing with water users associations were included, namely: the Water Users Training Project (WUTP), the Water Users Association Strengthening Project (WUASP) and the Irrigation Service Fee (ISF) Project.

Sequence in ISSP-1. WUTP was an ongoing project to train officials at provincial, district and sub-district levels, and board members of water users associations in institutional, organizational and technical aspects of water use.

WUASP was intended to strengthen the water users associations by themselves, while finally the ISF project would come in to introduce the irrigation service fee in the established and well-functioning water users associations.

Coordination of WUA activities under ISSP-1. To coordinate the activities with ISSP-1, the World Bank appointed Consultants for general coordination, as well as consultants for training coordination. Moreover, the Consultants for WUTP and WUASP has intendedly been selected from the same firm.

However, coordination between WUTP, WUASP and ISF activities has never been effected.

As a result, WUTP continued its training programme at provincial training centers, while WUASP trained in fact the same group of officials at district and sub-district levels with a somewhat different approach, bringing trainees together in "Action Groups" at district level and in "Field Guidance Groups" at sub-district level.

Impact of WUASP. WUASP activities were very thinly spread out over 10 provinces. Altogether 200 existing WUAs were covered and 20 new ones were to be established. Much time was spent on the training aspect which focussed initially on district and sub-district officers.

Water users associations themselves had insufficiently been reached when the ISF project started its activities. The ISF project found a situation in which WUASP had not prepared its introduction because WUASP had been too slow and worked on a far too small scale.

Consequently, the ISF project had to develop its own concept. This concept had to be efficient because ISF had to be introduced in large areas in a short time.

ISF project on WUAs. The ISF concept includes training of officials at district and sub-district levels (again the same group as the one reached by WUTP and WUASP), but organizes and activates the WUAs themselves in a special way.

In some areas untrained officials, WUTP-trained officials and WUASP-trained officials were included in the ISF project training programme. No difference in results could be observed between these groups. ISF in fact had to squeeze activities which were originally assigned to WUTP and WUASP into a very concise programme.

Future developments. After its introduction in an area, the ISF programme has to be completed in a short time, after which the project moves to an adjacent area.

There is one element in the area covered by the ISF project which is likely to remain, namely that the water user has to pay for the irrigation services he receives.

How the ISF concept, which in itself is sound, will develop in the coming years, remains to be seen. But it is obvious that the present WUTP and WUASP activities are no longer relevant in ISF areas.

9.2. Projects dealing with WUAs

Similar projects. In addition to the Water Users Association Strengthening Project (WUASP) under the Ministry of Agriculture and assisted by the World Bank and the Netherlands, five other projects which also deal with water users associations have been briefly described in Chapter 6, namely:

- Water Users Training Project (WUTP): under the Ministry of Public Works and assisted by World Bank;
- Irrigation Service Fee Project (ISF): under the Ministry of Home Affairs and assisted by World Bank;
- On-Farm Water Use Project: under the Ministry of Agriculture and assisted by FAO and the Netherlands,
- Agricultural Component Third Irrigation Sector Project (ACTIP): under the Ministry of Agriculture and assisted by ADB and the Netherlands.
- Turnover of Small Irrigation Schemes: under the Ministry of Public Works and assisted by World Bank.

Corresponding features. WUASP and the five other projects have in common that their activities are largely concerned with water users, either as formal associations in government-managed systems or as traditional associations in village-managed systems.

The projects have furthermore in common that they concentrate their activities largely on district, sub-district and village levels.

Other important features of the projects are:

- strengthening of the water users associations, which deal with the management of tertiary irrigation systems;
- training of district and sub-district officials in relevant aspects of irrigation and water management;
- aspects of community organization to improve the organization of the water users.

"Strengthening". The term "strengthening" is used in these projects in the sense of improving the knowledge of the official concerned in various aspects of irrigation, water management, organization of water users associations, as well as the identification and solving of constraints.

Need for incentives. The impact of strengthening and training is generally difficult to measure since neither of these activities necessarily lead to specific actions. Only when there is an incentive, training becomes meaningful for the person who has been trained, and results become apparent.

Slow progress. Of the formal water users associations, it has been reported that not more than 10-15% are active. The projects deal with active formal or with traditional water users organizations and reach at most a few percent of the officials at provincial and district levels who deal with irrigation. Nationwide, the effort of these projects amount at most to the training of about 5% of the target groups (WUTP after 7 years).

However, there are two projects which are exceptions to the general picture.

9.3. On-farm Water Use Project and Irrigation Service Fee Project

Promising approaches. The exception to the general picture outlined above are the FAO On-farm Water Use Project and the Irrigation Service Fee (ISF) project.

ISF concept for WUA strengthening. At first sight the latter seems odd, since having to pay a fee is generally not regarded as an incentive, but it is the way this fee has been introduced, which may explain for its effect.

The procedure is to approach each farmer, asking him what constraints in the irrigation and drainage system he thinks affect his farm, the listing of these constraints and the rating of the irrigation service he receives according to these constraints (with a corresponding adjustment of the service fee he will have to pay). These are among the first steps in this concept.

The registration of the constraints and the say the farmer has in determining which priorities should be set for the improvement of these constraints, can give him the feeling that for the first time his opinion has been asked and that he has a voice in the solution of his own irrigation and drainage problems and those of his fellow members of his water users association.

However, this effect can only be expected if the money paid by the farmers is really spent on improving their irrigation system. It can be expected that in the coming year this aspect will become clear. It will determine the fate of this young project.

ISF on institutional improvements. The ISF project also covers the institutional improvements at district and sub-district levels needed to meet the requirements of the activated water users associations.

The concept has the advantage that not only the 10-15% of active water users associations are being reached, but that all associations in a district are included.

ISF in less-functioning systems. There are irrigation systems, in particular on islands outside Java, where full-ISF cannot be introduced yet in the coming 10 to 15 years because the irrigation main system and/or tertiary units are still in an insufficiently advanced state.

Yet even in those cases, preliminary organizational structures which can identify and stress the irrigation and/or drainage requirements of the government-managed part of the systems can be established with either a greatly reduced fee or no fee as all during the early stages.

Psychologically important in this concept is that, through their own organizations (the WUAs and federations of WUAs), the farmers can put pressure on the provider of the irrigation services, the department of Public Works, to provide the required service to them.

FAO Project. The FAO On-farm Water Use Project has worked for more than three years with a very successful concept of activating farmers in traditional water users associations to use improved water management and cropping systems.

The main characteristics are first to investigate socio-economic conditions to remove constraints and in a final phase to introduce technical improvements. Farmers pay and provide materials and labour to improve the irrigation system in their tertiary unit.

An important aspect of the FAO project is that it institutionalizes the changes which it brings about and assures that the necessary activities are being included in the budgets at district level. This concept can, in principle, also be used for technically more advanced irrigation systems.

Bottom-up approach. The ISF concept and the FAO project have introduced a movement from lower to higher levels, which implies a structural change in the organization of irrigation.

The ISF project has only been operational during 16 months and has covered about 30,000 ha. In the second time slice of the World Bank's ISSP, the area has been planned to be extended to 700,000 ha.

9.4. Longer-Term Requirements

Need for Extension. Active water users associations have a clear demand for services from the irrigation system on which they depend. In addition, in the longer term, also other services will be required. These services are mainly concerned with irrigation extension and agricultural extension in water use and water management.

"Irrigation" Extension Service. An irrigation extension service could provide advice to farmers and WUAs on how to improve their irrigation and/or drainage system and its operation. Such a service could be located at the office of the Irrigation Department at district level (Cabang Dinas Pengairan).

In fact, WUTP could have been oriented towards the development of such an irrigation extension service. Ideas in this direction have been mentioned, but had not been prepared in sufficient detail as a proposal for the second time slice of ISSP.

Moreover, the Irrigation Institutional Strengthening Study (1989) has not included an irrigation extension service in the proposed institutional framework.

According to the proposals of the World Bank's pre-appraisal mission for ISSP-2, WUTP will entered its last stage with few activities to be continued for a short period after ISSP-1.

Under these conditions it can be expected that it will take some time before the idea of an irrigation extension service can be taken up again.

Agricultural Extension Service on water management. In the field of agricultural extension the situation is different.

There is an established extension service, but specific knowledge in the field of water use/water management and interrelated aspects of agricultural production, is still insufficiently available at the field level to meet the farmers' requirements. This applies in particular to the situation which arises after the introduction of ISF in formal water users associations (WUAs).

Possible role of GON. The mission has concentrated on the agricultural sector to investigate possibilities for future involvement of the Netherlands in irrigated agriculture now that the World Bank mission proposed to terminate the involvement of the Bank in WUASP during ISSP-2 (see also section 5.6).

For the traditional water users associations in village-managed ("simple") irrigation systems, the need for services in water management have been covered adequately in the concept of the FAO On-farm Water Use Project.

However, an adequate and comprehensive WUA development programme in government-managed ("technical") irrigation systems has not yet evolved.

9.5. Water Users Associations Development Programme

Need to re-consider GON financing. On-farm water use and water management in relation to water users associations are subjects covered by three projects which are partly or largely financed by funds from the Netherlands, viz. the FAO On-farm Water Use Project, the World Bank's water users strengthening project (WUASP) and the Asian Development Bank's agricultural component third irrigation sector project (ACTIP).

There is overlap between the fields in which these projects work. However, WUASP and ACTIP operate in different provinces.

Now that it has been proposed to terminate the World Bank's involvement in WUASP in March 1991 (or a few months later), it is in the opinion of the mission time to reconsider the three parallel projects, which operate with funds from the Netherlands.

Termination of WUASP. The mission recommends to terminate the Water Users Association Strengthening Project (WUASP) after its first stage ends in March 1991.

A second phase of WUASP would not be justificated under the present project conditions of limited impact on WUAs, overlap with other programmes, the need to institutionalize, its relation to the GOI policy on Irrigation Service Fee, termination of World Bank's assistance, etc.

Strengthening of ACTIP. After having studied the three projects in some detail, the conclusion was reached that the ACTIP project, which is to be continued with ADB support, should be reformulated to meet the need for agricultural extension in water use/water management and that the new con-

cept should adopt much of the concept of the FAO project. Positive elements of the WUASP project could be included into the improved and enlarged ACTIP concept.

Continuation of FAO Project. The FAO On-farm Water Use Project should at least be continued for another four years.

Re-formulation of ACTIP. For the reformulated Agricultural Component of the Third Irrigation Project tentatively the name "Water Users Associations Development Program" was chosen.

Its main objective will be to improve on-farm water use and water management.

In addition, to introduce the corresponding improvements in cropping systems and cropping techniques. This can be achieved through an analyses of socio-economic factors in each tertiary unit, the removal of constraints in this field, training of key farmers, training of the agricultural extension officers (PPL, PPM/PPUP and PPS) and the use of tertiary demonstration units and on-farm trials.

The project would also improve the PPL-curriculum in on-farm water use and water management at the regional agricultural training centers (BLPP).

Comprehensive Extension. Factors which can significantly affect the results of proper water use and water management include the availability of good sowing seed of superior varieties (in most places in Indonesia still in short supply or not available at all) and, closely related to water management, cropping patterns and synchronization of planting and harvesting dates, plant protection (which includes the introduction of resistant varieties through the sowing seed program).

It is proposed in this respect to maintain and extend the sowing seed program of ACTIP, which should also include the mechanism of seed distribution to the farmers. In addition, the project should include training in better plant protection. For both, the sowing seed and the crop protections, more advanced curricula should be developed for the BLPPs.

Land development. No land development component is envisaged in the new project since this activity would not directly be related to its main objective.

Cooperation with Bank's assisted projects. The program of the new project should be developed in close cooperation with the World Bank's ISF project and with the Third Irrigation Sector Project and possibly other relevant projects of the Asian Development Bank to ensure the largest possible impact in the sub-sector of irrigated agriculture in Indonesia.

A N N E X E S

ANNEX 1. GLOSSARY

AAET (=BPLPP)	- Central Agency for Agricultural Education and Training, of the Ministry of Agriculture,
ACTIP	- Agricultural Component of Third Irrigation Project,
ADB	- Asian Development Bank,
Agraria	- "Directorat Jenderal Agraria", Directorate General of Land Affairs, Ministry of Home Affairs,
AOU	- Advanced Operation Unit, i.e. advanced Ranting Dinas,
APBD I and II	- "Anggaran Pendapatan dan Belanja Daerah", provincial budget at provincial and district level, respectively,
APBN	- "Anggaran Pendapatan dan Belanja Negara", Central Government Budget,
BAMUS IPAIR	- Inter-agency district level consultive body for implementation of Irrigation Service Fee,
Bangda	- "Pembangunan Daerah", Directorate General of Regional Development, Ministry of Home Affairs,
Bangdes	- "Pembangunan Desa", Directorate General for Rural Community Development, Ministry of Home Affairs,
Bappeda I and II	- "Badan Perencanaan Pembangunan Daerah", provincial and district Development Agency,
Bappenas	- "Badan Perencanaan Pembangunan Nasional", National Development Board,
BBI	- "Balai Benih Induk", Central Seedfarm,
BDP	- "Bidang Diklat Pengairan", Agency for Water Resources Development training of the Ministry of Public Works,
BIMAS	- "Bimbingan Massal Swasembada", Mass Guidance for self-sufficiency in foodstuffs, a farm input-credit package program,
Bina Marga	- Directorate General of Highways, Ministry of Public Works,
BPLPP (=AAET)	- "Badan Pendidikan, Latihan dan Penyuluhan Pertanian", Central Agency for Agricultural Education and Training, of the Ministry of Agriculture,
BLPP	- "Balai Latihan Pegawai Pertanian", training center for agricultural officials,
BPP	- "Balai Penyuluhan Pertanian", Rural Extension Centre,
BULOG	- "Badan Urusan Logistik", National Logistic Board,
Bupati	- District Chief, Head of Kabupaten,
Cabang Dinas	- or "DPUP Seksi", Irrigation Section, administrative area for irrigation management within the DPUP Wilayah (KPKD), covering 20,000 - 30,000 ha,
Camat	- Sub-district Chief, Head of Kecamatan,
Cipta Karya	- Directorate General of Human Settlements, Ministry of Public Works,
DAADR (new name)	- "Direktorat Perluasan Areal Pertanian dan Rehabilitasi", Directorate of Agricultural Area Development and Rehabilitation in DGFCA, Ministry of Agriculture,
DAAD (old name)	- "Direktorat Perluasan Areal Pertanian", Directorate of Agricultural Area Development in DGFCA, Ministry of Agriculture,
Dalam Negeri	- Ministry of Home Affairs,
DEOM	- Direct Efficient Operation & Maintenance, i.e. areas for which no additional activities are required to bring them under EOM,

Desa	- Village,
DFCE	- Directorate of Food Crop Extension, of DGFCA, Ministry of Agriculture,
DGIS	- Directorate General of International Cooperation, Government of the Netherlands,
DGFCA	- Directorate General of Food Crops Agriculture, Ministry of Agriculture,
DGPUOD	- "Direktorat Jenderal Pemerintahan Umum Otonomi Daerah", Directorate General of Public Administration and Regional Development, of the Ministry of Home Affairs,
DGWRD	- "Dirgen Pengairan", Directorate General of Water Resources Development, Ministry of Public Works,
Dharma Tirta	- Water users association in Central Java, based on village boundaries,
DIK	- "Daftar Isian Kegiatan", Routine Budget Allocations,
DIKLAT	- "Pendidikan dan Latihan Tenaga Kerja", Education and training agency of a Ministry,
DIP	- "Daftar Isian Proyek", Project Implementation Budget,
DIPDA	- "Dinas Isian Proyek Daerah", Regional Project Implementation Budget,
DIPENDA	- "Dinas Pendapatan Daerah", provincial Government Revenue Department,
DIPERTA	- Provincial Agricultural Services,
DIPP	- "Daftar Isian Pembaiyaan Proyek", Additional Project Budget,
DOI I&II	- Directorate of Irrigation I&II, of DGWRD,
DPUP	- "Dinas Pekerjaan Umum Propinsi", provincial Public Works Department,
DUP	- "Daftar Usuhan Proyek", Budget Proposal for Project Implementation,
EOM	- Efficient Operation and Maintenance,
E&P	- "Exploitasi dan Pemeliharaan", Operation & Maintenance,
FAO	- Food and Agriculture Organization of the United Nations
FY	- Financial year, 1 April - 31 March,
Gabungan P3A	- Federation of water users associations,
GOI	- Government of Indonesia,
Golongan	- Sub-irrigation area for staggering planting dates and/or water supply,
GON	- Government of the Netherlands,
HIPPA	- "Himpunan Petani Pemakai Air", Water Users Association in East Java, based on village boundaries,
HYV	- High yieding varieties,
IBRD	- International Bank for Reconstruction and Development, World Bank,
ICB	- International Competitive Bidding,
IJI	- "Iuran Jasa Irigasi", Irrigation Service Fee,
INMAS	- "Intensifikasi Massal", a farm input program,
Inmen	- "Instruksi Menteri", Ministerial instruction,
Inpres	- "Instruksi Presiden", Presidential Instruction,
INSUS	- "Intensification Khusus", special intensification, a farm-input credit program for groups of farmers with improved infrastructure facilities,
Ipeda	- "Iuran Pembangunan Daerah", land productivity tax,
IPEP	- Irrigation Service Fee,
IPPA	- "Ikatan Petani Pemakai Air", Water users association in

	Lampung, based on the boundary of the tertiary unit,
ISF	- Irrigation Service Fee,
ISSP	- Irrigation Subsector Project,
Juru Pengairan	- "Mantri Pengairan", irrigation sub-foreman for the O&M in the sub-district of the Ranting,
K-factor	- Ratio of crop water demand to water availability,
Kabupaten	- Administrative district within the province,
Kakanwil	- "Kepala Kantor Wilayah", Head of the provincial Office of a Ministry,
Kanwil	- "Kantor Wilayah", provincial office of the Ministry,
Kecamatan	- Administrative sub-district within the Kabupaten,
Kelompok Tani	- Farmers group,
Kepala Desa	- Village Head,
Kepmen	- "Keputusan Menteri", Ministrial working order,
Keppres	- "Keputusan Presiden", Presidential working order,
Keputusan	- Letter of Decision, working order,
Kontak tani	- key farmer, farm group leader for extension purpose,
KPL	- "Kelompok Pembina Lapangan", Field Guidance Group, existing of sub-district and village level officials, for guiding the WUA,
KPKD	- sub-provincial office of the provincial Public Works (DPUP), to coordinate different Irrigation Sections (Cabang Dinas Pengairan),
KTPT	- "Kelompok Tani Petak Tersier", Water users association in South Sulawesi, based on hydrological boundaries but located within village boundaries,
KTW	- "Kelompok Tani Wanita", women farmers' association,
KUD	- "Koperasi Unit Desa", Village Unit Cooperative,
LKMD	- "Lembaga Ketahanan Masyarakat Desa", Village development committee,
Lurah	- Village Head,
Mantan	- "Mantri Tani", Officer for Agriculture Affairs,
Mantri Pertanian	- Head of the sub-district agricultural services,
Mitra Cai	- Water users association in West Java, based on village boundaries,
NAEP	- National Agricultural Extension Project,
NGO	- Non-Governmental Organization, typical charitable or research orientated,
O&M	- Operation and Maintenance,
OPPA	- "Organisasi Petani Pemakai Air Bina Tirta", Water users association in Yogyakarta, based village boundaries,
Palawija	- Non-rice crops or secondary crop after paddy or sugarcane: maize, cassave, soybeans, groundnut, etc,
Panitia Irigasi	- Irrigation Committee,
Pasten system	- Water distribution system based on the actual water need in the tertiary unit, which is determined by observing the stage of the crop and converting into the Palawija Relative Factor (PRF),
PBB	- "Pajak Bumi dan Bangunan", Property and Building Tax,
Pemda	- "Pemerintah Daerah", provincial Government,
Pengairan	- Water Resources Development,
Pengamat	- Head of the Ranting Dinas,
Pertanian	- (Ministry of) Agriculture,
POJ	- "Perum Otoritas Jatiluhur", state enterprise for Jatiluhur reservoir operation,

PP	- "Peraturan Pemerinta", Government Regulation,
PPA	- "Penjaga Pintu Air", gate operator,
PPB	- "Pajak Bumi dan Bangunan", Land value tax,
PKK	- "Pembinaan Kesejahteraan Keluarga", Family welfare guidance,
PPL	- "Penyuluh Pertanian Lapangan", Agricultural extension worker at village level,
PPM (now PPUP)	- "Penyuluh Pertanian Media", Senior extension workers, field extension supervisor of PPL's,
PPUP	- Senior extension workers, supervisor of PPLs,
PPS	- "Penyuluh Pertanian Spesialis", agricultural extention specialist,
PROM	- Prepation activities for Efficient O&M (EOM) stage of a scheme, without construction works (SM),
PU	- "Perkerjaan Umum", (Ministry of) Public Works,
PUSDIKLAT	- "Pusat Pendidikan dan Latihan Tenaga Kerja", center of education and training of a Ministry,
P3A	- "Perkumpulan Petani Pemakai Air", water users association based on water boundaries of the tertiary unit following the INPRES No.2 of 1984,
Ranting Dinas	- Irrigation Sub-Section, administrative area for irrigation management within the Cabang Dinas Pengairan (Irrigation Section), area of pengamat,
Repelita	- "Rencana Pembangunan Lima Tahun", five-year development plan,
Residen	- Assistent Governor, for coordinating ±5 Kabupaten,
Rupiah	- Currency of Indonesia, the current rate in June 1990 is US$1.00 = Rp 1830,
SK	- "Surat Keputusan", decree letter issued by Minister, Governor or Bupati,
SM	- Special Maintenance, needed to bring a scheme into the Efficient O&M stage,
SM2	- Additional Special Maintenance to SM areas,
SM3	- Additional Special Maintenance to DEOM areas,
Subak	- Water users association on Bali,
TGA	- "Tata Guna Air", Water use management,
Tingkat I	- first level of government administration: provinces, special areas,
Tingkat II	- second level of government administration: Kabupaten and Kotamadya,
TISP	- Third Irrigation Sector Project
TP4	- motivator or community organizer at village level,
Ulu ulu desa	- Water master on village level, within the staff of the village leader,
Ulu ulu P3A	- Water master of the P3A,
Ulu ulu vak	- Water master of the tertiary unit,
UU	- "Udang udang", law,
Wedana	- Assistant Bupati, for coordinating some five Kecamatan,
Wilkel	- "Wilayah Kelompok", Sub area of the Wilud,
Wilud	- "Wilayah Unit Desa", Village unit for agricultural extension,
WUA	- Water users' association, usually following the village boundaries,
WUASP, WASP	- Water Users' Association Strengthening Project,
WUTP	- Water Users' Training Project.

ANNEX 2. TIME SCHEDULE

9-6-90 Saturday	Departure of ir. Ankum from the Netherlands.
10-6-90 Sunday	Departure of dr. Best from the Netherlands. Arrival of ir. Ankum in Jakarta.
11-6-90 Monday	Arrival dr. Best in Jakarta. Briefing at Netherlands Embassy with ir. L.F. Kortenhorst. Meeting with mr. T.F. de Vries, teamleader WUASP, and mr. A. Miedema, institutional development specialist WUASP.
12-6-90 Tuesday	Visit to WUASP, meeting with consultants' team. Meeting at Directorate of Irrigation I, DGWRD of the Ministry of Public Works, chaired by the Director of DOI-I (ir. Soenarno), with World Bank's ISSP II mission and all agencies involved in the ISSP. Meeting at the Ministry of Agriculture with ir. Munawir, director of Rehabilitation and Land Development, DAAD.
13-6-90 Wednesday	Meeting at DGWRD, with World Bank's mission on the principles of ISSP-II. Meeting at Bappenas with ir. Ali Rachman. Meeting with mrs. Ganguly, mission leader of the World Bank.
14-6-90 Thursday	Discussions with mr. T.F. de Vries, teamleader WUASP. Discussions with ir. R.A.M. Oppermann, representative of DHV, on WUTP.
15-6-90 Friday	Meeting at Directorate of Swamps, DGWRD of Ministry of Public Works, chaired by the Director Swamps (ir. Walyono) with World bank's mission on the Swamp component of ISSP. Discussions with ir. L.F. Kortenhorst at the Embassy of the Netherlands.
16-6-90 Saturday	Meeting at Directorate of Irrigation I, DGWRD of PU, with the World Bank's mission and DGPUOD on Irrigation Service Fee and Turn-over of small schemes to WUAs. Meeting at Directorate of Irrigation I, DGWRD, with World Bank's mission on construction quality and construction supervision. Discussions with ir. Daud of DAAD and mr. T.F. de Vries of WUASP. Arrival mrs.ir. van Leeuwen in Jakarta.
17-6-90 Sunday	Study of documents.
18-6-90 Monday	Discussions with the World Bank's resident staff (ir. Wiranto Soehendro) on WUASP and on institutional aspects related to Water Users Associations development programs. Discussions with ir. Hartono, co-teamleader of WUTP consultants. Discussions at the Embassy with ir. Kortenhorst and mrs. J.H.M. van Hussen. Meeting at Ministry of Public Works with ir. Sarbini and ir. Slameto on the water users training project.

19-6-90 Monday
Meeting at PU, with the World Bank's mission on water users associations, WUASP, institutional strengthening and the ISF component of ISSP.
Discussions with dr.ir. J. Gerards of ISF project.
Departure of mrs. van Leeuwen, to visit of WUASP activities in Yogyakarta.

20-6-90 Wednesday
Discussions with ir. E.E. Spiker and ir. H.H.N. Bonarius of ACTIP on ADB's Third Irrigation Sector Project.
Discussions with mr. J. Berkoff of Bank's ISSP mission on the WUA components and on ISF.
Mrs. van Leeuwen in Yogyakarta:
- Meeting with RCO Mr. Mandyatno;
- Meeting in district Bantul with Action Group and KPL from subdistrict Srandakan;
- Meeting with members of Women's Farmers Group (KTW) in village Poncosari, Kecamatan Srandakan and PPL;
- Meeting with KTW Kecamatan Jetis, village Candra;
- Discussion with facilitator NGO.

21-6-90 Thursday
Meeting at DGWRD, with World Bank's mission on the Action Plan of ISSP-1.
Discussions at the Embassy with ir. Kortenhorst.
Mrs. van Leeuwen in Yogyakarta:
- Meeting with Action Group and KPL in district Kulon Progro;
- Meeting with members KTW, village Nomprejo, Kecamatan Galur;
- Meeting with researchers University of Yogyakarta about surveys.

Return of mrs. van Leeuwen from Yogyakarta.

22-6-90 Friday
Meeting at DAAD, with World Bank mission on future involvement of WUASP in second time-slice of ISSP.
Discussions with mr. de Vries, teamleader WUASP.
Mrs. van Leeuwen departs from Jakarta, to visit of WUASP activities in West Nusa Tenggara.

23-6-90 Saturday
Meeting at DGPUOD, Ministry of Home Affairs, with World Bank mission, on Irrigation Service Fee and role of the Ministry of Public Works.
Mrs. van Leeuwen in West Nusa Tenggara:
- Meeting at Department of Agriculture with provincial staff (Head of Department, Project Director WASP, Head of Extension Services and Facilitator Action Groups and KPL training).

24-6-90 Sunday
Study of documents / report writing.
Mrs. van Leeuwen in West Nusa Tenggara:
- field trip to the Gebong irrigation scheme (5037 ha).
- discussions with staff of the Irrigation Department.

25-6-90 Monday
Discussion with mr. B. Roelofsen of DHV on WUTP.
Report writing.
Mrs. van Leeuwen in West Nusa Tenggara:
- meeting with Agricultural Service of district West Lombok;
- meeting with Camat Kecamatan Kediri;

- meeting at the BPP Rumak, kecamatan Kediri with PPLs;
- meeting with sub-district and village officials in Jagaraga;
- reception with dance and music by villagers Jagaraga;
- meeting with WUA;
- discussions with NGO facilitator.

26-6-90 Tuesday
Meeting at Embassy, chaired by mr. Kortenhorst, with mrs. Ganguly of the World Bank mission, ir. Slameto of DGWRD on Second Time-slice of ISSP.
Mrs. van Leeuwen in West Nusa Tenggara:
- meeting with head of BPP and PPUP on mini trials
- Observation of mini-workshop P3A and discussions with wives of P3A members in the kitchen

Mrs. van Leeuwen returns to Jakarta.

27-6-90 Wednesday
Discussions with ir. Wiranto of World Bank's residents mission.
Report writing.

28-6-90 Thursday
Wrap-up meeting of World Bank Mission on ISSP-2 chaired by Bappenas with participating Ministries.
Dinner with WUASP team.

29-6-90 Friday
Meeting with ir. Soelbijati Soebroto, Director of Directorate of Food Crop Extension, DGFCA, Ministry of Agriculture.
Meeting with messrs. Spiker and Bonarius of ACTIP.
Discussions with messrs. Hieselaar and Wolf of Euroconsult on ISSP-2.
Mid-term briefing of ir. Kortenhorst and mrs. van Hussen of the Netherlands Embassy.

30-6-90 Saturday
Report writing.

1-7-90 Sunday
Departure to Solo, Central Java. Visit to ISF Consultants' office in Sukoharjo: discussions with ir. Harun Ramli.
Visit to ISF pilot area: discussions in Kudu with the WUA members and village leader, discussions with members of Water Users Association "Tirto Dadi Mumpuni".
Discussion with staff of Ecological Study Project (NGO) on ISF and on the organization of WUAs.

2-7-90 Monday
Meeting with the Action Group members in Sukoharjo.
Visit to the water users association "Tirta Aji Jaya" in Tegalmade.
Meeting with the Action Group members in Sragen.

3-7-90 Tuesday (Holiday)
Return to Jakarta.
Report writing.

4-7-90 Wednesday
Discussions with ir. J. van Heeswijk of ADB on ACTIP and on other ADB assisted programs with components on water management at farm level.
Wrap-up meeting at DGFCA, chaired by dr.ir. A. Muin Pabinru (Director General), and with ir. Munawir (Director DAAD), mrs.ir.

Soelbijati (Director DFCE), ir. Daud (Head of TGA), ir. L. Kortenhorst and mrs. J. van Hussen (Embassy).
Social evening at the House of ir. Kortenhorst to meet other missions and key persons.

5-7-90 Thursday
Meeting at DGBangda with mr. Nazaruddin, Head of Sud-directorate for Cooperative Development, on the involvement of the Local Government in the organization of WUAs.
Meeting with ir. I. Sewrajsing and ir. A.P.M. Bastiaansen of the FAO on-farm water use Project, and with ir. S. Yunan of DAAD.
Meeting with ir. E.E. Spiker and ir. H.H.N. Bonarius of ACTIP, on the ACTIP-evaluation.

6-7-90 Friday
De-briefing at the Netherlands Embassy, with ir. L. Kortenhorst, mrs. J. van Hussen, mr. Miedema.
Departure of ir. Ankum to the Netherlands.

7-7-90 Saturday
Departure of mrs. ir. van Leeuwen.
Meeting at the Netherlands Embassy of ir. Kortenhorst with dr. Best.

8-7-90 Sunday
Departure of dr. Best to Rome.

9-7-90 Monday
Discussions at FAO, Rome, of ir. M. Smith and dr, Best about the FAO On-Farm Water Management Project in Indonesia (meeting requested by the Netherlands Embassy in Jakarta).

ANNEX 4. FIRST TIME-SLICE OF IRRIGATION SUBSECTOR PROJECT

A4.1. Government Policy on Irrigation

Introduction. The Government of Indonesia has formulated in 1987 and signed by the ministers of Finance, Agriculture, Home Affairs and Public Works after receiving approval of the President, a set of policies which address six fundamental issues related to the financing of O&M and other expenditure in the irrigation subsector, under the following topics:

Policy 1: Funding of Operation and Maintenance. The Government recognizes that in order to realize the full potential of irrigation systems and to maximize the contribution of existing investments to agricultural production goals, future policy should ensure expenditure on O&M that should be applied in line with the actual needs of irrigation systems.

Policy 2: Cost recovery for Irrigation O&M. The Government policy is that the beneficiaries will eventually finance O&M costs of the main irrigation systems.

Policy 3: Irrigation Service Fee. In order to directly recover the O&M costs from irrigation beneficiaries in relation to the benefits they receive from a regular and assured supply of water, the Government will extend the collection of Irrigation Service Fees from the beneficiaries in other areas after the Pilot Scheme period.

Since the new Property and Building Tax (PBB) may not be a dependable source, the implementation of direct cost recovery system, which eventually finances all costs of efficient O&M of irrigation systems, should apply Irrigation Service Fee. These fees are expected to gradually reduce the need for Government funding subsidies and become the main source of efficient O&M budget for main irrigation systems.

Policy 4: Institutional Development. The Government recognizes the critical importance of effectively carrying out irrigation O&M, and will implement effective measures and reforms to strengthen O&M institutions at all levels. This will be done to create adequate institutional capacity for improving the performance of the existing irrigation infrastructure and efficient utilization of increased O&M allocations, in order to continue to provide adequate irrigation service and reliable water supplies to farmers.

Policy 5: Budgeting and Programming for O&M. The Government will simplify and rationalize the present budget mechanisms for O&M funding by reducing the number of funding channels and improving O&M budget planning administration.

Policy 6: Rationalization of Investment Expenditures. The Government will rationalize expenditure programs in the irrigation subsector, and formulate and implement a more realistic irrigation investment strategy for Repelita V.

A4.2. The Project

The Irrigation Subsector Project (first time-slice) is based on the above policies of the Government of Indonesia, and has been specified in the Staff Appraisal Report of the World Bank, Report No.6813-IND of 15 October 1987 and on the Loan Agreement between the Government of Indonesia and the Bank, Loan No.2880-IND of 3 December 1987.

The Irrigation Subsector Project is a first phase of a long-term program aimed at supporting the Government of Indonesia's effort to:

(a) improve Operation and Maintenance (O&M) to sustain the effectiveness of all irrigation systems, through adequate levels of funding, and strengthening of institutions and procedures for O&M planning and implementation,
(b) introduce direct cost recovery from irrigation beneficiaries and increase local revenue generation to reduce the burden of O&M expenditures on central and provincial budgets, and
(c) rationalize existing and programmed investments in the irrigation subsector.

The Project consists of the following:

(a) special maintenance works, i.e. deferred maintenance and minor systems upgrading on about 400,000 ha of irrigated land, about 106,000 ha of reclaimed swamp land and five river mouths, so that they can sustain efficient O&M in future;
(b) systematic introduction of efficient O&M on about 700,000 ha of irrigated land and 87,000 ha of swamp land;
(c) completion of about 40 priority on-going projects;
(d) pilot groundwater development through construction of some 900 tubewells for small farmers in primarily rainfed areas;
(e) support for policy reforms and institutional strengthening and training, including privatization of small public irrigation systems, pilot schemes for introduction of direct irrigation service fees, improving local revenue generation via land reclassification and valuation, O&M manpower planning and development, and strengthening of the central, provincial and district ("Kabupaten") level institutions responsible for irrigation O&M, and of water users' associations;
(f) technical assistance and studies (institutional strengthening study, investment strategy study, and environmental impact studies) in support of the above components.

The total cost of the first time-slice of the Project, including physical contingencies and expected price increases, is estimated in the project preparation papers at about US$ 359 million.

The Bank agreed to lend US$ 234,000,000, i.e. 94% of the foreign exchange costs and 45% of the local currency costs of the project. This represents 69% of the total project costs, exclusive of taxes (US$ 18.5 million).

The Government of the Netherlands assists in an amount equivalent to about US$ 12 million, being US$ 2.0 million for training, US$ 0.4 million for the institutional strengthening study and US$ 9.4 million of joint financing with the Bank for civil works to be undertaken for Special Maintenance and Efficient Operation and Maintenance.

The Government of Italy assists to about US$ 3.2 million for technical assistance for the Lombok groundwater component (US$ 1.4 million) and for

equipment (US$ 2.0 million).

The Ford Foundation provides about US$ 0.6 million for consultant teams needed to assist with the implementation of the turnover of small irrigation schemes.

The Government of Indonesia finances the remaining project cost of US$ 109.7 million from its development budget. This contribution is mainly required to maintain the present level of O&M expenditures in real terms, amounting to US$ 83.2 million over the three years.

A4.3. The Objectives of the ISS Project

Special Maintenance. Special Maintenance on selected surface irrigation systems will bring these systems up to technical standards for which an Efficient Operation and Maintenance program can be implemented. The Special Maintenance (SM) would include:

- repairing water control structures and their regulating mechanisms;
- improving structures, such as bridges, cross drains and silt control structures which need repairs;
- repairing canal prisms and embankments to ensure smooth flow and adequate freeboards;
- functional improvements, such as discharge measuring structures, where required for improving water distribution control and efficiency;
- elimination or regulation of any water outlet not borne on the original design (i.e. "illegal offtakes");
- completion of the system maps and updating of the structures' inventories;
- housing for operational staff;
- transport for section offices.

Criteria for selection of schemes included for Special Maintenance have been based on size, rehabilitation and tertiary development status, and availability of mapping and records.

About 400,000 ha of rehabilitated technical systems larger than 500 ha in the nine provinces of West and South Sumatra, Lampung, West, Central and East Java, Yogyakarta, South Sulawesi and West Nusa Tenggara would be covered under the project.

Special Maintenance of Swamps. The project would also assist in carrying out Special Maintenance works on 87,000 ha in selected swamp schemes in the five provinces of West, North and South Sumatra, Lampung and South Kalimantan.

These works would include additional canal structures, desilting of drainage canals, flood protection works, access improvement, and construction of additional flushing canals where necessary for reclaiming acidic soils.

Efficient O&M. The aim of Efficient Operation & Maintenance is to institute O&M procedures so that the performance of the irrigation system meets its planned requirements, and the physical infrastructure is maintained in a good condition such that this service can be provided indefinitely.

Efficient Operation and Maintenance (EO&M) of the irrigation schemes would be based on adequate staff responsible for O&M at the Irrigation

Section ("Cabang Dinas Pengairan"), Irrigation Sub-Section levels ("DPU Ranting Dinas") and field level, clear definition of their duties and responsibilities in maintenance work identification, water scheduling, discharge measurements, and data collection and reporting.

The project would address the organizational and funding constraints systematically on 1,300,000 ha of irrigation schemes.

The areas covered under Special Maintenance each year under the project would be included under Efficient O&M in the subsequent year. Also, some areas currently being rehabilitated under ongoing Bank and ADB-financed projects would be included.

Efficient O&M of Swamps. About 86,000 ha of swamps in Lampung, South Kalimantan, North, South, and West Sumatra would be covered by Efficient O&M under the project.

Completion of Ongoing Projects. The project would support the completion of only priority ongoing projects which are viable and have so far been wholly funded by GOI, but are now held up for lack of funds.

Pilot Groundwater Development. The project would provide funds to carry out pilot groundwater development in East Java, Sulawesi and Lombok.

Small River Mouths. The project would test alternative and effective measures by training walls to replace the traditional dredging methods used to control siltation and littoral drift, which choke and obstruct river mouths and cause flooding of agricultural lands.

Turnover of Small Irrigation Systems. The project would support the turnover (or privatization) of small irrigation systems to Water Users' Associations (WUAs). The Government has developed a total of 6731 irrigation systems, which has an average size of about 700 ha each. It is generally believed that the farmers through their WUAs are capable of managing these small and simple irrigation systems if the WUAs are active and if the conditions of the systems are upgraded.

Irrigation Service Fee. The project would support the introduction of irrigation service fee in selected pilot areas, and lay the basis for its nationwide extension. Such a pilot approach would focus on:

- the farmers' payment capacity in order to determine the appropriate levels of the fee;
- the variations in tha application of the fee, ranging from a per hectare charge to explicit water charges on bulk sales;
- the organizational arrangements needed for the collection of the fee.

Land Valuation and Strengthening of PBB. The project would support the introduction of the new Property and Building Tax (PBB) system, which includes the implementation of the new land reclassification and valuation system based on the market value of the land.

Manpower Development for Systems O&M. To strengthen O&M capabilities, the staffing in district and lower level units would be increased to meet the requirements as assessed by Directorate General of Water Resources Development, Ministry of Public Works (DGWRD) and Provincial Public Works Department (DPUP). About 3000 middle and lower level O&M staff would undergo training in basic O&M duties and practical skills.

Strengthening of WUAs and Irrigation Committees. At the district level, the priority activities would be the setting up of "WUA Action Groups", which would serve as catalysts of WUA development. These Action Groups would draw their membership from the more senior level staff of the district units of Public Works, Agriculture and Home Affairs.

Institutional Strengthening Study. In view of the changing nature and direction of irrigation expenditures increasingly towards O&M, a review and reassessment of the roles of the various organizations involved in planning, organizing, directing and controlling O&M activities is needed. A study to define the necessary changes and adjustments would be initiated.

Investment Strategy Study. An in-depth review is needed to improve upon the existing criteria for project selection. The study would provide the basis for making the right choices on maintaining the proper balance between investment and recurrent O&M expenditures.

ANNEX 4. TERMS OF REFERENCE OF THE MISSION

TERMS OF REFERENCE FOR THE JOINT EVALUATION OF THE WATER USERS ASSOCIATION STRENGTHENING PROJECT (WUASP) IN INDONESIA

1. INTRODUCTION

The Water users Association Strengthening Project also known under the acronym WUASP is a sub-project of the World Bank 'Irrigation sub-sector Project' (ISSP). WUASP is co-financed by the Netherlands.

In Indonesia the activity is placed under the responsibility of the sub-directorate of water management of the Directorate for Agricultural Area Development (DAAD) which comes under the DG Food Crop Agriculture (DGFCA) of the Ministry of Agriculture (MOA). The project area covers 10 provinces (see location map attached). Further details, as extracted from the inception report of December 1988, are appended.

The activity started in September 1988 with an inception phase. The inception report was produced in December 1988. On the basis of this report implementation started for the subsequent project period of 26 months hence terminating in March 1991. A second implementation phase (second time slice) with a duration of four years (1991 - 1995) is foreseen.

It was decided to evaluate the project in June 1990 in order to assess the results achieved and to advise on the proposals for the second time slice.

2. ORGANISATION

2.1. Composition

The mission will be a joint Indonesian/Netherlands activity, the Indonesian members will be appointed by the Authorities concerned. On the Netherlands side the following mission members will participate:

- Ir P. Ankum : Water management aspects/mission leader
- Dr ir R. Best : Training and agricultural aspects
- Ms ir W.J. van Leeuwen: Agricultural extension and WID aspects

2.2. Time planning

A period of upto *four weeks* (Ms van Leeuwen three weeks) is allocated to complete the assignment in Indonesia. The mission is scheduled to start with a briefing at the Netherlands Embassy in Jakarta on Monday 11 June Field visits to one or two project target areas and a debriefing in Jakarta towards the end of the assignment will be included in the mission's programme.

2.3. Project documentation

(i) The inception report of December 1988.
(ii) The latest progress report (nr 6) for the period January-March 1990.
(iii) The proposal for the second time slice of December 1989.
(iv) The internal WUASP/TAAD project status report of January 1990.
(v) The draft of the final report on the project preparation for ISSP-II of April 1990.

Supporting documentation

- IAC advice to DGIS on Inception report dated 24.05.1989.
- Report of the mid-term review of the Irrigation Sub-sector Project (and related issues) by ir P. Ankum of June 1989.

3. OBJECTIVES

3.1. To assess and evaluate the results achieved in the light of the inception report cum plan of operations of December 1988.
3.2. To identify and assess possible constraints which might have hampered the smooth progress of the project activities and to provide ways and means to overcome these constraints during the subsequent project phase.
3.3. In close coordination with the WB staff in Jakarta to study and assess the proposal for the second time slice and to identify possible aspects which might require specific attention.
3.4. To consider and assess the relation of the project with similar activities as summarised in section 4.
3.5. To draw conclusions as regards the results achieved and to advise on the follow-up action required with the aim to achieve a smooth transition into the next project phase and a proper relation pattern with the other components of the WB Irrigation Sub-sector Project and the parallel activities as meant in objective 3.4.
3.6. (for Mr Ankum): To, en marge of this mission, investigate and assess the state of affairs with reference to the joint cofinance contribution of the Netherlands to the ISSP to the amount of Dfl 20 million.

4. POINTERS

4.1. Related activities

Presently three other projects are implemented which more or less all focus on similar target groups, project areas and activities. These projects are:
(i) *The WB Water Users Training Project (WUTP)*. This project is financed by the World Bank and implemented by the Nether-

lands Consultants DHV in a direct appointment construction. The project comes under PU and is active in the same provinces (10) as WUASP but directs its activities to all districts.

(ii) *The FAO On-farm Water Use and Water Management Training and Development Project*. This project aims at education and training of all the parties at district level which are involved with the water division on the tertiary level. The project comes under DAAD and is aimed at all districts in 5. provinces viz. West, Central and East-Java, D.I. Yogjakarta and D.I. Aceh.

(iii) *The ADB Agricultural Component of the Third Irrigation Sector Project* also known as ACTIP. The project comes also under the Directorate of Food Crops Extension with the supporting component under DAAD and is implemented by the Netherlands Consultants Combination EC/DHV with EC as leading partner. The activity is aimed at selected areas in three provinces viz. D.I. Aceh, North Sumatera and Maluku. ACTIP is a component of the ADB sponsored Third Irrigation Sector Project (TISP) which comes under PU/DGWRD.

Comparing the projects it shows that the four provinces of Java are covered by both WUASP and WUTP as well as by the FAO On-farm Water Management Project. As regards D.I. Aceh it appears that both ACTIP and the FAO project are active in this province. This will require coordination and synchronisation in order to avoid overlap and duplication. The mission is requested to assess this matter via consultation with key staff of the projects involved.

4.2. WUASP as a component of the WB/ISS Project

As indicated in the internal project proposal for 'the second time slice' the WB Irrigation Sub-Sector Project (ISSP) consists of various components, WUASP being one of them.

All the project components will enter the 'second time slice' at the same time which means that on this occasion there will be an opportunity for adjustment and synchronisation of the various sub-activities.

According to the available information the World Bank has already reviewed the ISS project, some of the results are summarised in the above mentioned proposal. According to a recent draft final report on ISSP-II, however, the World Bank and the GOI are now considering the incorporation of WUASP into the Irrigation Service Fee Component of ISSP-II.

The mission will consult the Indonesian Ministries concerned and the WB staff in Jakarta on this matter in order to compare their recommendation with the findings of the WB project review mission which is in Indonesia from June 4 to 28th, 1990.

4.3. Consulting services; scope and costs

4.3.1. *Scope*

Usually the scope of the consulting services contains a 'task' concept (direct responsibility) and an 'assistance' concept (supervisory duties). The IAC advice of 24.05.1989 already touched on this subject in section 2.7.

In the proposal for the second time slice it seems that the scope has completely shifted to the assistance concept. In section 6.2., which deals with this matter, terms like to implement ..., to carry out ...., to execute ... etc. are missing, only sych expressions as to supervise ..., to develop ..., to coordinate ..., to assist ... etc. are used. This make the responsibility of the consultant more indirect.
The mission will establish with the Indonesian Authorities concerned whether this shift has come about by chance or by design.

4.3.2. *Costs*

The consulting services are paid from a grant of the Dutch Government. Guilder budgets are missing from the status report and the proposal for the second time slice. Only Rupiah budgets (counterpart funds via ISSP) are mentioned.

In order to get an idea of the extent of this budget component in relation to project results achieved the mission is requested to collect, analyse, assess and present this information.

5. TASKS

In mutual consultation with the Indonesian parties involved such as BAPPENAS, the Ministry of Agriculture, the local governments on provincial and district level as well as the WB representatives and the Netherlands Embassy in Jakarta, the mission will carry out the following tasks:

To elaborate on the components as mentioned under the objectives (section 3) with due consideration for the following aspects:

5.1. To analyse and assess whether such components as (i) the position of the rural women and (ii) the ecological aspects have found their rightful in the project concept.
5.2. To assess and evaluate the approach and quality of the training programmes for the field staff and the effect of this programme on the target group viz. the farmers/water users.
5.3. To assess and evaluate the approach and the effect of the 'Action Group/Community Organisers' concept of the project on the established administrative organisation patterns in the field (Irrigation committees etc.).

5.4. To assess and evaluate in how far the projects' training programme has reached the agricultural extension workers (PPL) as regards the irrigation aspects of crop production.

5.5. To assess and evaluate the effect of the project on the functioning of Water Users Associations (P3A).

5.6. To give special consideration to the aspects as mentioned in section 4. viz.:

5.6.1. The liaison with the related projects (4.1.).

5.6.2. The adjustment and synchronisation with the other ISSP components (4.2.).

5.6.3. The shift in the responsibility of the consultants (4.3.1.).

5.6.4. The costs of the consultants (guilder budget) versus the project results achieved (4.3.2.).

5.6.5. The incorporation of the recommendations of the IAC advice of 24.05.'89 in the project plan (see annexes).

5.7. On the basis of the findings of the foregoing points to draw conclusions as regards the project results achieved thus far and to give recommendations on the approach, the staff and budget requirements and the action programme for the second time slice and to indicate the follow-up action required.

6. REPORTING

Before terminating the assignment in Indonesia the mission will draft and sign a summary of conclusions and recommendations. This document will be discussed during the debriefing with the competent Indonesian Authorities and the Netherlands Embassy. The document will be finalised in the Netherlands. A draft report will be submitted to DGIS (not later than 16 July 1990) the Indonesian authorities, the Netherlands Embassy and the Indonesian mission members. Comments (not later than 15 August 1990) will be incorporated in the final report, to be submitted not later than 31 August 1990.

I. Drafted (IAC) : 21.05.90
II. Revised (DGIS): 22.05.90
III. Revised (Emb.): 06.06.90
IV. Final draft : 07.06.90

Enclosures: 3
- Location map
- Extract inception report
- IAC advice of 24.05.1989

IAC/AD/GV/gvwaspto/IV

ANNEX 5. STRENGTHENING WATER USERS ASSOCIATIONS IN INDONESIA
by J. Ambler, Ford Foundation, January 1990.

I. Introduction

Farmers have organized themselves into informal water users associations (WUAs) for centuries in Indonesia. Some of these are quite effective, but are invisible to outsiders because they do not conform to a bureaucratic conception of what a "modern" organization is supposed to look like. With the exception of formal farmer organizations such as the subak in Bali most traditional farmer water users' associations are not widely known. Sometimes traditional water users' associations exist as part of the village administrative structure, but often they are completely independent.

Traditional organizations may have local names, such as subak (Bali, Lombok), panriahan pamokahan and bendang (North Sumatra), and panitia siring (South Sumatra). Within each organization are various levels of specialized personnel.

In some areas, traditional water users' associations have no formal name at all, but they usually have key personnel that play critical water management roles. These key personnel have specialized names, such as ulu-ulu (Java), jogoterto (Central Java), raksabumi (West Java), raja bondar (North Sumatra), tuo banda, siak banda (West Sumatra), keujruen blang (Aceh), malar, punggawa (Sumbawa), lala (Rote), etc. In some cases, their duties are confined to routine operations and maintenance tasks, while in others they are responsible for overall system planning and macro decision-making.

Even in irrigation systems in which there is no formal name for either the organization or specialized personnel, as long as irrigation water is being managed according to rules and procedures then the farmers have an organization. Because of the informality of many organizations, whether they are in farmer-managed systems or in tertiary blocks of government-managed systems, they are often overlooked by outsiders.

Research during the last ten years in Indonesia has shown that traditional water users' associations in small systems are usually able to manage water efficiently and equitably and often produce high yields. Thus, traditional water users' associations are a rich source of knowledge about how farmers manage scarce common property resources, especially in small systems.

Indonesia needs strong WUAs to achieve the potential of the expensive infrastructure that the government has built during the last two decades. The P3A, as a more formal form of WUA, should grow from, not supplant, the principles farmers are already following in their management of irrigation. Thus, by examining these principles, especially in farmer-managed systems, lessons can be learned about how and under what conditions formal P3As need to be formed. Examination of principles followed in small irrigation systems (<500 ha.) provide insights not only into how to develop small systems, but also holds lessons for P3A development in larger systems.

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[1]The author is a program officer with the Ford Foundation in Jakarta, Indonesia. The views expressed in this paper are personal and presented only to stimulate discussion. They do not necessarily reflect the position of the Ford Foundation or the programs it supports.

II. Why Develop Formal WUAs?

Why not just leave existing WUAs informal? By developing formal WUAs it is hoped that certain benefits can be achieved. From the government's perspective, the expected benefits may include the following;

-greater efficiency in on-farm water utilization
-more equal distribution of water within tertiary blocks
-better routine maintenance of irrigation structures
-better coordination and enforcement of cropping patterns
-higher payment of irrigation service fees
-reduction of conflict over water distribution

While farmers may also be concerned with these issues, farmers often have other reasons for developing WUAs', which include the following:

-better equity in water distribution
-better enforcement of water rights within and between systems
-better mobilization of labor for emergency and periodic maintenance
-greater voice in the management of larger systems
-more involvement in government-sponsored projects to improve the system

A fundamental difference between these two perspectives is that many of the government's reasons for forming formal WUA's involve trying to raise productivity through increasing duties and enforcement, while the farmers' usually concern matters of rights and equity. Farmers will only form viable formal WUAs if they think that a formal organization will answer some of their problems. If the concerns of the farmers are not the same as the concerns of the government, then forming viable and active WUAs will be difficult. If the government wishes to increase the WUA's duties, it should also consider how to increase the rights of the WUA.

III. Key Principles of Developing Formal Water Users' Associations: Implications for Training and Strengthening Programs

Programs to develop strong WUAs must start from the perspective of the farmers, not the government. If the objectives and needs of the farmers are first considered, then the government will have a better chance of achieving its own objectives. Thus a successful program starts by identifying farmer needs. To do this, basic principles of organization must be understood.

(1) Farmers themselves must benefit from organizing into formal WUAs

Organization is a response to a need to manage resources. If farmers do not have a strong locally-felt need to carefully manage water resources, then they will see no benefit from organizing into formal WUAs. Attempts to make formal WUAs in these situations usually only create paper organizations. Where the need to manage water is urgent, strong water users' associations are common, and efforts to improve them can bear fruit. Thus, it is necessary to understand which field conditions encourage strong WUAs and which do not.

Both external and internal factors play a role in how much the farmers need to organize. Some conditions promote strong organization, while others do not. Below are a few important factors that influence the need to organize.

A. Factors that tend to promote strong WUAs

(a) High need to mobilize resources. Farmers in small systems with headworks or long main canals that need frequent maintenance tend to have strong organization in order to mobilize resources for these tasks. Organizations tend to be particularly strong if the head-enders need tail-enders for labor. Thus, tail-enders can demand equitable distribution of water in return for their labor. Organization in small hill systems tends to be quite strong because of the need to mobilize resources to keep the system operating under difficult topographical conditions. Interestingly, eliminating all the major maintenance burdens by improving the physical structures in such systems can in some cases actually weaken the WUA because it eliminates the need to perform group labor (a solidarity-building task) and only leaves the conflict-generating task of dividing water.

Pump irrigation also requires a strong WUA because every drop of water costs money. However, while the need to mobilize resources is high, this does not automatically translate into strong organization. Outsiders (e.g., PPL, juru pengairan, etc.) are usually needed to work intensively on WUA development before the installation of the pumps. In new pump systems, if the social approach is right, the potential for developing a strong WUA that strengthens the positions of normally weak farmers (e.g., sharecroppers, renters, etc.) is particularly good.

(b) Low water supply. When water supply is low it must be divided carefully. Many organizations appear quite strong during the dry season, but are "weak" or invisible during the rainy season when water supply is high. However, even if water supply is low, the WUA may be weak if headenders can abuse their position and take more than their share of water.

(c) High degree of control over water. Organization tends to be stronger if the farmers can control the water from the headworks down throughout the canal network. This is often the case in small-systems. Similarly, organization tends to be stronger when water supplies are stable, irrespective of their levels, because farmers can predict how much water they have to work with.

B. Factors that do not promote strong WUAs

Conversely, the following are some of the conditions that tend to make it difficult to form strong WUAs, because farmers do not have a strong need for formal organization:

(a) Low need to mobilize resources. When water is easily obtainable then farmers may have little need to mobilize resources for water acquisition and conveyance (e.g. in flat areas, areas with many new permanent structures, areas where the canals are short). Water division may still be a problem in these systems, but that divisive task is not balanced by the potentially unifying task of performing group labor to bring the water to the fields. It may be difficult to organize farmers in these situations. In government systems, if the government does all the maintenance work for the WUA, then the WUA will probably be weak.

(b) Abundant water resources. Farmers will not waste their time organizing if the water supply is high. Thus, organizational activity often declines during the rainy season, especially in flat areas fed by gravity systems. Outsiders may think that a WUA is "weak" or "not active" if they evaluate it when water

supply is high, whereas the same WUA may be quite "strong" or "active" if it is evaluated during the dry season.

(c) Low control over water. Farmers who have no control over water--e.g., tertiary blocks in large systems that have no assured supplies or schedule of water delivery, and no representation in the management of the main system--often have trouble organizing. Without some control over how and when they will receive water, the farmers have difficulty making a workable plan of operations and maintenance. In such cases, the problem is not inherently weak WUAs or untrained farmers, but rather poor main system management.

(d) Different administrative units served by the same system. Systems that cross administrative boundaries have a special need for organization, especially as it relates to coordination through the whole hydraulic unit. However, this may be difficult if the WUA is based on desa (as in Central Java and East Java), rather than on the system as a whole. Still, external actors can help catalyze more effective forms of WUAs in systems that cross administrative boundaries.

One conclusion from examining these principles is that WUAs only need to be as strong as the challenges they face. WUAs in mountain areas may be active in mobilizing resources for canal maintenance during the rainy season to handle landslides along the main canal and damage to the weir. The same WUAs may be relatively inactive during the dry season if their water supply is good. In flat areas, on the other hand, WUAs may be inactive during the rainy season because water is plentiful, but very active during the dry season because of the need to carefully distribute scarce water. Similarly, many WUAs only collect fees from the members if there is damage to repair. They may not need to have routine collection of fees, especially if they can maintain their system primarily through investments of labor, not cash.

To the extent that farmers see that organizing will help them overcome some of the constraints that they face in systems operation and maintenance, then they will be receptive to formal WUAs. Thus, any program to strengthen WUAs must start from identifying the farmers' constraints and then stimulating organization that can devise solutions to their problems.

The government, of course, may have its own priorities in WUA strengthening. These should be made explicit and ranked in importance. Thus, for example, if the primary goal of strengthening WUAs is to increase agricultural productivity, the areas where water use efficiency is a problem should be first identified. From these areas, planners would choose a subset of systems with the conditions that the analysis above suggests are likely candidates for successful WUA strengthening.

The organization of each WUA needs to be kept as simple as possible. Some traditional WUAs have mutli-tiered hierarchies, numerous specialized personnel, bookkeepers and treasurers, "police", and religious leaders. The premier example of this type are some of the large subak in Bali. The WUA in other systems have only a two tiers, the head and the members at large. Such is the organization in very small subak. The complexity of the organization is a function of the need for organization, which depends in large part of the size of the system and the factors mentioned above. Thus, standardization of the form of the organization is unwise. The Anggaran Dasar of the WUA should be standardized regarding the very basic minimum requirements, but should not try to regulate in detail the form of the organization for all of Indonesia. As the Anggaran Rumah Tangga regulates the internal operation of the

WUA, as long as it does not contradict existing laws and regulations, its form should be left completely up to the WUA. Cases where the Bupati has rejected the AD/ART of a WUA because it was not standardized should be avoided in the future.

Implications for Programs:

Distinguish between the objectives of the government and the objectives of the farmers in establishing formal WUAs.

Prioritize systems according to the expected benefits from strengthening the WUAs, both from the governments' and the farmers' perspectives.

Concentrate intially on strengthening WUAs in systems that have high need to mobilize resources, have low water supply, and/or have good control over water. For example, do not spend excessive time and money trying to strengthen WUAs in systems with high water supply, low need to mobilize resources, or no control over how much or when they will receive water. Good candidates for WUA strengthening are mountain systems, and systems in low rainfall areas.

Pay attention to increasing the control of the WUA over water throughout the whole system, such as by targetting strengthening for WUAs that cross village boundaries.

If the problem is control over water in tertiary blocks, first make sure that main system management is good, before spending much attention on WUAs at tertiary level. WUAs cannot become strong if main system management is not in order.

Concentrate on balancing any new responsibilities for the WUA with increased rights for the WUA.

Keep the form of the WUA as simple as possible, while still enabling it to meet the challenges of local conditions.

(2) Farmers need a policy environment conducive to building effective WUAs

An effective climate for developing WUAs is one in which supports giving increased rights to WUAs. These rights can be divided into several categories:

-legal status
-representation in decision-making
-effective organizational boundaries
-organizational autonomy
-supportive relations with other local institutions

Each of these is discussed below.

(a) Legal status

WUAs need to have formal legal status to effectively carry out the increasing responsibilities they must bear. This means that WUAs should be legal bodies. The advantages of WUAs being legal bodies are the following:

(i) They can formally receive government assets, as is necessary to successfully carry out the turnover program.

(ii) They can open bank accounts in the name of the WUA (now they can only open them in the name of the head of the WUA). Bank accounts are especially important for systems that have high cash flow needs, such as in pump irrigation.

(iii) They can get commercial bank credit to improve their system or carry out emergency repairs. In turned over systems this is especially important because farmers are responsible for the maintenance of the headworks of the system as well as the canal systems.

(iv) They can get formal rights to abstraction of water from the river. This is especially important in areas where there is competition for water between agricultural and non-agricultural uses, or between large and small systems.

(v) They can make contracts with third parties, such as with government agencies, to carry maintenance or development activities on the main system or tertiary level.

(vi) They can enforce agreements in court. For example, contractors who fail to build proper structures can be held accountable through the legal system for damages they cause to the WUA. With firm legal status the WUA can also better protect its water rights and water permits (see below).

(vii) WUA leaders can have more control over their members, especially important when it comes to resource mobilization and payment of ISF.

(viii) Sharecroppers and other disadvantaged farmers can gain a stronger position through formal representation.

Making WUAs legal bodies means that there is a commitment on the part of the government to developing WUAs as partners in water management. There is the risk that WUAs as legal bodies may increase their demands, but this is a logical extension of the process of decentralization and debureaucratization now set in motion, and one which can be effectively handled by consultation through representational bodies (see point "b" below).

(b) Representation for WUAs

If the WUA is seen only as a mechanism to get farmers to do what the government wants, then it will never be an effective organization for managing water. This means that the WUA should not be developed

primarly for enforcing programs that benefit the government alone (e.g., tax collection and crop plans). The WUA does have responsibilities (e.g., paying the irrigation service fee, observing water rotation rules, maintaining tertiary structures, dividing water equitably, etc.), but it also needs the right to representation in decision-making.

In large systems, WUAs need representation above the tertiary level. WUAs need to have a voice in main system management, including a mechanism for conveying their ideas about water division, scheduling, maintenance, and system development. Thus, in large systems, there should be federations of WUAs with representatives at secondary and primary levels. Farmer representatives of the WUAs would work with Public Works officials in allocating water and devising maintenance plans for the system. Federations of WUAs within systems have been pioneered by Udayana University and the Bali Irrigation Project, and by the ISF team under the Irrigation Sub Sector Project. In the long run, WUA federations are a necessary component of efforts to improve main system management.

At the intersystem level, there should also be federations of WUAs (or federations of federations of WUAs) that would deal with issues of intersystem water allocation, headworks construction and water abstraction, crop timing, and dispute resolution. The number of intakes in hilly areas is so high that PU does not have the manpower to monitor every weir. Thus, farmers must be organized to work hand-in-hand with PU officials to handle intersystem water issues. But again, such federations are only needed where water supply is a problem. Thus, for example, they would generally not be needed along the West Coast of Sumatra from Aceh to Lampung because the irrigable land is limited and rainfall high. Pilot experiments with intersystem federations are now taking place in a rain shadow areas of West Sumatra (Tanah Datar) and in south Bali (Tabanan). A farmer representative from these WUA federations should be present on the Panitia Irigasi at Kecamatan and Kabupaten levels.

(c) Water permits and water rights

Existing legislation requires water permits for each party abstracting water from a water source. The formal mechanism for issuing these permits for the most part has not been developed yet. As competition between agricultural and non-agricultural water consumers intensifies, a mechanism must be put into place that assures that farmer water rights are honored. Special attention must be directed toward preserving the water rights of small farmer-managed systems in upstream areas, most of which have been in existence for a long time, but which are likely to be overlooked in the formal permitting process.

The first stage of the permitting process should be the formal registration in the office of the Camat/Bupati of each canal/pump taking water from a water source, regardless of whether there is a formal WUA or not in the system. Registration of the irrigation systems can begin immediately, with the understanding that the registry will be updated after a full field inventory has been completed. Once a watershed is completely inventoried, formal permits can be issued to each system.

(d) WUA boundaries

Another structural or policy consideration concerns WUA boundaries. WUAs need to have managerial control over the whole hydraulic network of their system. For this reason, among others, it is recommended that WUAs be based on hydrologic boundaries, not village boundaries. The following facts support the recommendation for hydrologically-based WUA boundaries:

(i) Even small systems often cross village boundaries.
Data from four provinces (West Sumatra, West Java, Central Java, DIY) for 261 PU systems under 150 ha that will be turned back to farmers indicate that about 45% cross village boundaries. For systems between 150 and 500 ha, the percentage is certainly higher.

(ii) Tertiary units in larger systems also often cross village boundaries.

(iii) As population increases, especially in Java, the number of villages increases (pemekaran desa). Village boundaries have also frequently shifted in many provinces, e.g., West and South Sumatra. For example, when the nagari and marga were broken apart into desa in West Sumatra and South Sumatra respectively as part of the implementation of UU No.5/1979, the number of the lowest level administrative units increased six-fold, causing many irrigation systems that were formerly in only one village to suddenly cover land in two, three, or more villages.

Thus, the policies regarding village boundaries mean that village organization itself is not necessarily a stable basis for WUAs.

(iv) Improving the physical structures of irrigation systems tends to expand their command areas, making it more likely that they will cross village boundaries.

(v) Many farmers, sharecroppers, and agricultural laborers who work on irrigated land live in villages different than the one in which the land is located. As the size of the village shrinks, this trend increases. WUAs based on the village may mean little to those who do not live in the village itself, and the WUA itself may have no sanctioning power over non-residents.

Basing WUAs on hydrologic units would mean a major, but necessary, reorganization of WUAs in Central and East Java, where they are usually based on village boundaries. In West Java, the WUA appears to be usually based on the village if the irrigation system is located entirely within the village, but based on the hydrologic system if it crosses village boundaries. Studies suggest that most WUAs outside of Java are based on hydrologic boundaries.

(e) Organizational autonomy and coordination with other village-level institutions

WUAs need organizational simplicity and effective coordination with other institutions at the local level. There are already too many "organizations" at village level (some sources list more than 30!), ranging from PKK to the KUD to "television viewing groups." The WUA should avoid redundancy, making some consolidation necessary.

WUAs should be based on hydrologic boundaries, and the boundaries of the Kelompok Tani that fall within the command area should be made contiguous with the boundaries of the WUA. Thus, for very small irrigation systems, the WUA and the Kelompok Tani might be isomorphic; in larger systems there would be several Kelompok Tani in one WUA. This will require a revision of the regulations regarding the formation of Kelompok Tani, which now use hamparan as the basis for the boundaries. Kelompok Tani in non-irrigated areas could continue to use their existing boundaries.

One advantage of this consolidation is that when an important WUA meeting is held, both the PPL and the Juru Pengairan can attend and give information and advice. Attendance from the members of the WUA will be better because some will seek information from the PPL, while some will want to hear the Juru Pengairan. The PPL and the Juru themselves will both feel better because more people hear their message, and the farmers will not waste their time attending separate meetings.

Because of the limited leadership pool in many villages, it is possible that there will be some overlap between the leadership of the village and that of the WUA. However, while combination with the Kelompok Tani is necessary, because of the need to manage water (which does not flow according to village boundaries!), the WUA should not be under the aegis of village administration. The WUA should be autonomous with a close working relationship with the village government, including the LMD and LKMD. The relationship between the two would then be consultative and coordinative. Similarly, the WUA should <u>not</u> be merged with the KUD. The KUD has an administrative basis, not a resource basis like the WUA and the Kelompok Tani. Thus, the KUD could stay based on village boundaries, while the WUAs should be based on hydrologic boundaries.

Implications for Programs:

Form WUAs as legal bodies.

Develop federations of WUAs to give representation to farmers in main system management. Develop intersystem federations of WUAs to help handle water distribution issues along the rivercourse. Give representation to WUA federations on the Panitia Irigasi at Kecamatan and Kabuapten levels.

Protect the water rights of all existing irrigation systems by issuing water permits.

Develop WUAs along hydrologic boundaries. For small systems the WUA should encompass the whole system; for larger systems the organization may be a federation of WUAs that consists of representation of tertiary blocks or groups of tertiary blocks.

Reconstitute the boundaries of the Kelompok Tani in irrigated areas to conform to the hydrologic boundaries of the WUAs.

Keep WUAs as autonomous bodies, which collaborate with, but are not subordinate to, village administration.

(3) WUAs need supporting legal products at national and provincial levels

To carry out these actions, appropriate national and provincial level regulations need to be passed. These involve revising certain national-level legal documents (e.g., Inpres No 2/1984), and their articulation at provincial level (petunjuk pelaksanaan and provincial regulations). The documents need to be flexible enough to allow for variation in form for the WUA, remembering that WUAs face different conditions and should not, therefore, be standardized. As mentioned above, the AD/ART of the WUA should reflect the needs of the WUA, not a standardized form.

In particular, the following legal products need to be revised:

- Inpres No. 2/ 1984
- Kepmen Dalam Negeri .....
- various Peraturan Daerah and SK Gubernur at provincial level that are not in accordance with higher level regulations

The following new regulations need to be passed:

- Juklak from the Ministry of Public Works regarding the implementation of the revised Inpres

- Juklak from the Ministry of Agriculture regarding the implementation of the revised Inpres

- Provincial legislation in areas where such does not already exist

Six years have passed since the passage of Inpres No.2/1984 with no juklak from either the Ministry of Agriculture or the Ministry of Public Works. In the future, supporting implementing legislation needs to be developed soon after higher level laws are issued.

Currently a project is underway in Bangda to evaluate the appropriateness of national regulation regarding WUAs, with an accompanying analysis of regional laws in a few selected provinces.

Implications for programs:

Need to undertake a review of all provincial level laws regarding WUA strengthening, and form teams to advise the provinces on forms of regional legislation consonant with the current policy trend toward strengthening WUAs.

(4) WUA strengthening should become a routine activity, not a "project"

Projects attempt to quickly form WUAs, but such efforts often lead only to paper organizations because there may be little assessment of what benefits the farmers will receive from a formal WUA and few mechanisms for long-term follow-up. WUA development should be stimulated by actors who know local conditions, such as the PPL and juru pengairan. They should also be the ones responsible

for long-term guidance of the organization. To accomplish this the PPL and Juru Pengairan will need training in community organizing techniques.

Thus, WUA formation and strengthening should not be a project; it should be part of the routine task of the PPL and the juru pengairan, in conjunction with the staff of the Pemda Tingkat II. These three elements would constitute the core of an Irrigation Extension Service (perhaps named something like Badan Penyuluh Perkumpulan Petani Pemakai Air, or BP4A). The field staff of the Provincial Department of Public Works and the Agricultural Extension Service should be trained in WUA development first and should be the main actors in the BP4A. Staff from the Pemda Tk II would be called in primarily to help with the formal establishment of the WUA after the PPL and the juru pengairan consider the association ready for formalization. Thus, there would be no special outside "teams" coming in to "train" WUAs. External teams would only work with Pemda Tingkat I and Tingkat II to help train the PPL and juru pengairan, to help prepare the proper legal documents to support strong WUAs, and perhaps to help the Bupati speed up the process of formally registering the WUAs in his district.

Implications for Programs:

Develop and carry out a training program for PPL and Juru Pengairan in developing and strengthening WUAs so that they form an integrated irrigation extension team following "bottom-up" principles.

Train the Bupati and other selected staff of the Pemda Tk II in the minimum requirements for formally establishing WUAs as legal bodies, but which still have flexibility in form and function. This would be the only "top-down" component of a WUA training program.

(5) WUA training must be farmer-oriented, not bureacracy-oriented

WUA training should meet the needs of the farmers on their own terms. This may require a rethinking of the way in which much WUA training is carried out.

Training should be field-oriented

Farmers learn best and can best communicate their own technical knowledge in the field, not in the classroom. Farmers articulate better their problems in the field. Most training should take place in the system while actually looking at the canals and structures the farmers must operate and maintain, not in the village headman's office or other formal classroom settings. More formal training should take place at night in the village. The PPL and juru pengairan are better placed to do night training than outside teams.

Training should be practitioner-oriented

Many trainers now trying to develop WUAs are not farmers themselves, and they often know more about theory than practice. Farmer-to-farmer training can sometimes be more effective than official-to-farmer training. More work should be done with taking farmers from weak WUAs to visit farmers in strong WUAs. Successful pilot activities such as this have been carried out in

Nepal, and Yayasan Bina Swadaya will soon try it in their pump irrigation projects in West Java.

Training should be task-oriented

Training should not be limited to just basic principles of maintaining structures and dividing water. At the tertiary level and in small systems, farmers, because of their intimate knowledge of the micro environment and landholding boundaries, usually understand these concepts in the context of their own system better than the instructors. Instructors can help with design and construction advice and in the preparation of specific plans for O&M in the system, and also in catalyzing WUA federations and inter-village WUAs. Who will do what, when, where, and how must be agreed upon by the farmers with the help of Pemda, PU, and Pertanian staff. This requires a long-term presence and is not possible in short-term training projects. Again, this argues for an increased role in irrigation extension for the PPL and the juru pengairan.

Training should be group-oriented

WUA training should not just be for WUA leaders, but should reach as many irrigators as possible. Field training at night and at other times, such as after Friday prayers, can make this possible. Again, this requires a long-term presence on the part of WUA trainers.

Keep the bureaucratic requirements for WUAs simple

Farmers do not want excessive bureaucracy in their WUA. Bureaucratic requirements for WUAs should be kept to a minimum and bookkeeping made simple. One WUA training project advocates that WUAs should keep administrative records in 19 different types of books. Farmers do not yet need record keeping this detailed. Very small systems (e.g., under 20 ha) may not need a formal WUA at all, except perhaps to make sure that they maintain their rights to take water from the water source.

Implications for programs:

Develop a training curriculum for WUAs that is simple, action-oriented, task-oriented, group-oriented, and tailored to the convenience of the farmers, not the trainers.

Program Priorities

(1) WUA Strengthening Projects and Physical Construction

WUA strengthening should be an integral part of all on-going projects, rehabilitations, and special maintenance/EOM activities. The construction activity is a useful catalyst for WUA development--if farmers are allowed to be involved in the planning, design, and construction process. Physical assistance from the government should be contingent on some contribution from the WUA. The FAO Starter Project is a good example of this approach. WUA strengthening activities

done in isolation are likely to be less successful than those combined with a physical activity. However, if the WUA strengthening program concentrates primarily on assisting the farmers get stronger rights (e.g., representation in federations and on water management boards, water permits, legal status, etc.), then the program need not necessarily be combined with construction in the system.

Involving farmers through the WUA in construction activities means that farmer opinions are valued, and farmers' commitment to the decisions can be trusted. Farmers will not maintain structures they do not like, so it is important to involve them in the planning of all structures. Involving farmers in these design and construction decisions reduces the likelihood of unsatisfactory structures and makes their sense of ownership higher. Experience in the turnover project has shown that involving farmers in the process generally did not delay completion of the civil works. In fact, delays were often due to government procedures in administrative preparations and tendering. However, except for the turnover program, farmers are still not systematically involved in Public Works construction activities that affect their irrigation systems.

(2) Inventory of All Irrigation Systems

A field inventory of "irigasi desa" has never been carried out. Yet this is necessary for both licensing of abstraction from water sources and inter-system planning and coordination. As Public Works staff turn back authority for intra-system management in small systems to WUAs, they will have more time to devote to inter-system management.

Effective rivercourse management will entail having a full understanding of all the systems, including all the small irigasi desa systems that have never been formally recorded up to now. Andalas University has developed a methodology for conducting a field inventory in West Sumatra. The results indicate that existing data far underestimate both the number and total command area of farmer-managed irrigation systems.

The inventory is also a necessary precursor to developing a prioritized ranking of areas for WUA strengthening.

(3) Development of Bottom-up, Needs-Based WUA Strengthening Programs.

Starting from the principles outlined above a mass program for developing WUAs from the bottom-up needs to complement current top-down approaches. However, a sustainable program would start from training the PPL and juru pengairan who will be the main implementors of a long-term implementors of sustainable strengthening programs. They would be the core of an irrigation extension service that could follow the principles suggested earlier in this paper.