

IRRIGATION MANAGEMENT NETWORK

ISSUES IN THE TURNOVER PROGRAMME IN INDONESIA:

HOW TO TURN OVER IRRIGATION SYSTEMS TO FARMERS? QUESTIONS AND DECISIONS IN INDONESIA

Bryan Bruns and Sudar Dwi Atmanto

FROM PRACTICE TO POLICY: AGENCY AND NGO IN INDONESIA'S PROGRAMME TO TURN OVER SMALL IRRIGATION SYSTEMS TO FARMERS

Bryan Bruns and Irchamni Soelaiman

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ISSUES IN THE TURNOVER PROGRAMME IN INDONESIA

The following two papers are combined in this publication as they address essentially linked issues of turnover in Indonesia. The first documents the process of turnover, while the second analyses the pivotal role a non-governmental organisation (NGO) has played in assisting the government to develop and implement this process.

HOW TO TURN OVER IRRIGATION SYSTEMS TO FARMERS? QUESTIONS AND DECISIONS IN INDONESIA

Bryan Bruns and Sudar Dwi Atmanto

Abstract: The Indonesian government has turned over more than 400 small irrigation systems to water users. Participatory design and construction of improvements prepare farmers and irrigation systems for turnover. Trained agency field staff facilitate local participation in preparation and implementation of turnover. Water users register their associations. The associations receive management authority and ownership rights, for the entire irrigation system including headworks. Questions remain over how to appropriately determine the role for government in assisting turned over systems.

FROM PRACTICE TO POLICY: AGENCY AND NGO IN INDONESIA'S PROGRAMME TO TURN OVER SMALL IRRIGATION SYSTEMS TO FARMERS

Bryan Bruns and Irchamni Soelaiman

Abstract: The Institute for Social and Economic Research, Education and Information (LP3ES) helped the Indonesian Department of Public Works (DPW) to develop and institutionalise methods for turning small irrigation systems over to water user associations. A series of earlier pilot studies had explored ways to improve local participation in design, construction and management of irrigation systems. For turnover, LP3ES trained irrigation staff who worked directly with farmers, trained trainers, provided consultants to assist provincial irrigation service officials in institutionalising new procedures and took part in national working groups which drafted regulations and manuals. Conditions for collaboration in institutional innovation included a willingness to compromise, funding linkages between the agency and NGO, building mutual trust and educated opportunism.

HOW TO TURN OVER IRRIGATION SYSTEMS TO FARMERS? QUESTIONS AND DECISIONS IN INDONESIA

Bryan Bruns¹ and Sudar Dwi Atmanto²

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1. INTRODUCTION

The continual growth of state intervention has been prominent in irrigation development around the world. Dissatisfaction with poor performance of government management, and abundant examples of irrigation systems managed well by farmers has encouraged increasing interest in turning over management to farmers (Vermillion, 1991).

Turnover to farmers allows restructuring of government activities in irrigation. By reducing expenditure on activities which farmers can carry out themselves, governments can focus their efforts on activities requiring greater financial capability, technical expertise or political authority. Government irrigation agencies can support and work in partnership with self-reliant local irrigation management.

This paper examines some key aspects of the turnover process as developed in Indonesia. It focuses on issues which were particularly difficult to resolve, and decisions which were crucial to shaping the turnover process.

By the middle of 1991 the Indonesian Department of Public Works (DPW) had transferred over four hundred small irrigation systems, covering more than 34,000 hectares, to water user associations (WUAs) in seven provinces. This is part of a long-term policy, developed in 1987, to gradually turn over all irrigation systems smaller than 500 hectares (small irrigation systems) to WUAs. This represents a major shift in previous patterns of government intervention in irrigation. Turnover converts government investments into locally-owned and managed common property.

Small government systems irrigate over 1.5 million hectares in Indonesia. Programmes have assisted these irrigation systems, particularly during the 1970s and early 1980s when Indonesia obtained abundant income from high

oil prices. This was part of a relatively successful policy to improve welfare in rural areas and pursue national rice self-sufficiency.

Farmers originally built and managed most small irrigation systems. However, regulations decreed that irrigation systems with any government financial input, however small, become government irrigation systems. Reclassification as government systems could be made if they had received specific government assistance, because they were listed within officially defined government irrigation areas, or simply as part of policy to categorise all systems above a certain size as government irrigation systems. The area irrigated by government systems forms the basis for calculation of budgets for irrigation operation and maintenance (O&M), providing an incentive for agency officials to expand the area of 'government' irrigation systems.

Prior to the turnover programme, the DPW categorised irrigation systems not by size but by the extent of water control structures. Technical systems had, in theory, a full set of measurement and control structures, while semi-technical systems had only some measurement and control structures at the intake. Simple (*sederhana*) systems had no measurement and few control structures. Within this framework DPW treated small irrigation systems as if they were the same as tertiary areas of larger government-managed irrigation systems, ignoring the distinct hydrological and management characteristics of small systems with independent water sources.

Outside these three categories lay village or rural (*irigasi desa* or *irigasi pedesaan*) irrigation systems. These locally-managed systems still received government assistance, particularly from the village subsidy programme and its successors (Hafid and Hayami, 1979). Government intervention converted these systems into government systems, listed in the Inventory of Public Works Irrigation Areas.

During the 1980s, pilot projects demonstrated that community organisers could facilitate farmer participation in the design, construction and management of small and large irrigation systems. Researchers documented the widespread existence and continuing competence of traditional irrigation management institutions. Workshops brought researchers and government officials together to discuss the improved policies to support WUAs and use farmers' competence in irrigation management.

Some government officials and donors worried that the expanding government involvement in irrigation was creating dependency, with the state taking over tasks which farmers could manage. This caused tremendous burden on the budget and perhaps a decline in irrigation system performance. The drop in oil prices in the mid-1980s created a fiscal crisis and the Indonesian government became more receptive to revision of policies and discussion of alternatives.

In 1987 the Indonesian government declared a policy to gradually turn over all small systems to WUAs. This was supported by the World Bank funded Irrigation Sub-Sector Project (ISSP). Turnover of small systems and institution of an irrigation service fee in systems larger than 500 hectares were both intended to improve O&M through greater farmer participation in management and increased accountability to water users.

The turnover programme is managed by the Directorate of Irrigation I (DOI-I) of the Directorate General of Water Resources Development (DGWRD) of the DPW. The Provincial Irrigation Services (PRIS) implement turnover, testing and refining methods. Researchers from the International Irrigation Management Institute (IIMI), Andalas University and Padjadjaran University studied and helped formulate the turnover process. An Indonesian non-governmental organisation, the Institute for Social and Economic Research, Education and Information (abbreviated in Indonesian as LP3ES), helped train government officials and develop and institutionalise the participatory methods used to carry out turnover.

One way to carry out turnover would have been to simply turn irrigation systems over by decree, declaring that they were now the responsibility of farmers, not the agency. A working group, composed of representatives from DPW, IIMI, the Ford Foundation and LP3ES, believed that systematic preparation would make farmers more willing and better prepared to take over responsibility for the irrigation systems. This would strengthen WUAs and give farmers a greater sense of ownership. In most systems government assistance was also given in physical improvements such as building new division structures, flumes and canal lining.

DPW prepares for turnover through a linked sequence of activities: field inventory, preparation of a profile with social and technical information, design and construction of improvements. These activities also teach irrigation field staff about both technical and social conditions in the field, and a greater ability for participatory work with farmers.

2. INVENTORYING IRRIGATION SYSTEMS

Which irrigation systems are suitable candidates for turnover? What preparations are necessary before turnover? An inventory gathers basic information on irrigation system conditions and management, which government records usually do not contain. It was initially planned that farmer-managed systems, with little or no government involvement, but listed as government systems, would simply be reclassified as non-DPW irrigation systems. No improvements would be made or WUAs formalised.

However, as the project evolved, there were strong pressures from DPW to make all systems eligible for physical assistance and to register WUAs for all sites before turnover. Officials argued that it was unfair not to help all farmers, and that systems without previous government help were usually in worse condition. These arguments fit both good intentions towards farmers and DPW's self-interest in increasing construction budgets. DOI-I officials felt it would be confusing to have some systems turned over without any formal WUA in place. Once the DGWRD officially established policies on construction and WUA development, then almost all systems became eligible for improvements.

In many cases the Public Works Inventory of Irrigation Areas records several distinct systems with separate diversion structures as a single irrigation area (*daerah irigasi*). PRIS officials may have lumped systems together for administrative convenience and to increase the area used as a basis for O&M budgets, and so obtain more budget. The consequence is that the area covered by small irrigation systems is much larger than it initially appeared. According to 1985 records, such systems covered about 900,000 hectares. However, the provinces of Central and East Java have disaggregated irrigation areas and, based on their results, it seems likely that small government systems in Indonesia cover a total of more than 1.5 million hectares. The PRIS can desegregate systems as part of the inventory process.

Inventory enables categorisation of irrigation systems for eligibility for construction improvements (Figure 1). If systems are in good condition, have no government involvement in O&M, and contain no government built structures (Group A) PRIS can directly reclassify them as village irrigation systems after a WUA has been registered. However, the PRIS have included very few systems in this category and none have been turned over yet.

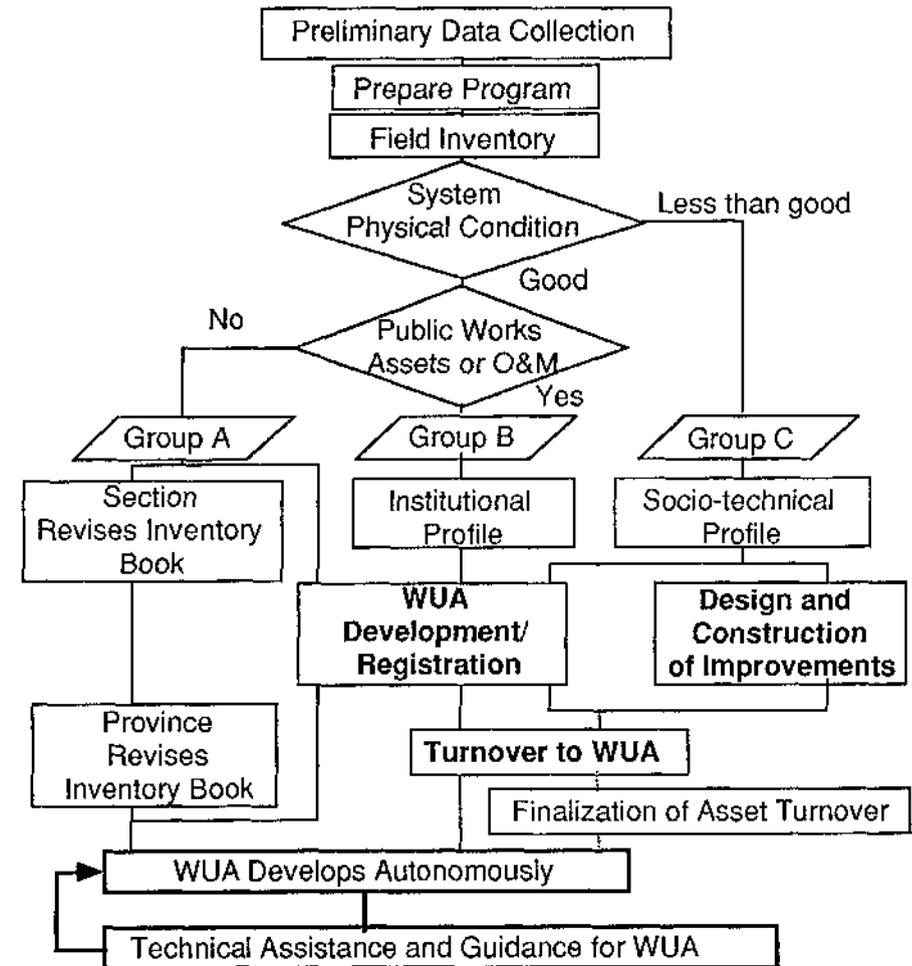


Figure 1: Sequence of Turnover Activities

Systems in good condition but with government-built structures or government involvement in O&M (Group B) require WUA development. Most systems in this category are sites improved by the Provincial Irrigation Projects in Java. However, more thorough consultation with farmers showed that farmers want further improvements before accepting turnover. Often designers did not consult farmers in planning earlier improvements, and improvements did not assist all parts of the systems equitably. Because of these issues, some provinces have obtained funds for additional improvements.

In fact the PRIS categorise most systems as eligible for construction of improvements (Group C). They then enter the process of participatory design and construction discussed below.

The inventory still identifies sites unsuitable for turnover, e.g. due to highly expensive improvements, or where complex hydrological interconnections between irrigation systems or multiple usage of water makes turnover to a WUA inappropriate.

3. AGENCY FIELD STAFF AS COMMUNITY ORGANISERS

The PRIS recruits irrigation inspectors to work with farmers as Farmer Water Manager Guides (abbreviated as TP4 in Indonesian). They learn to carry out the role of community organisers, functioning as mediators, catalysts and organisers. Public Works officials chose to use agency staff, rather than recruiting new community organisers. In earlier projects it had not been possible to provide funds to retain community organisers once special donor funding ended. The scale and rapid expansion of turnover would have made the recruitment of new staff difficult. If existing staff learn to work with farmers in a participatory way this should prepare them to better guide and assist WUA after turnover. These skills should also help in working with WUAs in government systems.

TP4s need special training in skills of communicating with farmers and developing WUAs because their previous work was primarily technical. Experience is that most TP4s work satisfactorily, given sufficient training and support (Helmi and Vermillion, 1990). Other factors, including travel distances, transport facilities and personal motivation, are more important in ability to perform well than educational background.

Some TP4s still take a top-down approach in working with farmers, so that supervisory visits are very important for strengthening their capacity for participatory work. Some TP4s also need support for specific activities such as organising meetings. Both section level turnover coordinators and subsection heads, the immediate supervisors of TP4s, can provide this support. Many TP4s state that the participatory approach is more enjoyable than their previous working style, which mostly involved keeping records.

4. FARMER DESIGN REQUESTS

To tailor improvements to farmers' wishes TP4s ask farmers about required irrigation improvements and their priorities. They sketch the location and form of proposed structures, and prepare design requests together.

Farmer representatives and design engineers then hold design integration meetings to discuss improvements, preferably at a site close to the irrigation system. PRIS officials held some meetings at subdistrict or irrigation section offices, but this did not facilitate communication because farmers felt inhibited in discussion at a government office.

Sometimes designers did not follow through on agreed improvements and changes made without explanation confused and upset farmers. Notifying farmers of changes and the reasons for them is a very effective way to prevent subsequent problems. The design requests and design integration meetings provide explicit mechanisms for giving farmers input into the design process, and should enable designers to base improvements on farmers' aspirations and experience.

5. DESIGN AND EXPENDITURE GUIDELINES

Small irrigation systems have specific characteristics which differ from larger systems. Structures are usually simpler; flows are highly variable, and they are often located in mountainous areas. DPW had no existing manual for design of small irrigation systems. It became clear that some consultants did not have the skills for designing relevant improvements. Many structures were larger or more expensive than necessary, sometimes inappropriate scaled down versions of large systems. As a result DOI-I, PRIS, LP3ES and consulting engineers formulated a manual for design of improvements to small irrigation systems. The manual also clarifies the sequence of activities

through which farmers participate in preparing the design. It also supplements rather than replaces existing government design and construction guidelines for irrigation systems.

5.1 How Much to Spend?

Expenditure needs range from small amounts to complete rehabilitation or upgrading of the entire system. The World Bank Loan provided about US\$ 100 per hectare for design and construction, as it wanted a clear and easily implemented limit to spending. This rate matched initial levels of funding for special maintenance of large irrigation systems, although the actual works in small schemes were significantly different.

Once implementation began the design requests usually exceeded the available budget, and agency officials argued that the per hectare level of funding was inadequate. Initially, some provinces allocated money evenly on a per hectare basis. It was suggested that PRIS should allocate according to need, giving more to sites in poorer condition.

The most expensive improvements are for headworks, especially building or improving concrete or gabion weirs, a frequent request. Farmers want to reduce time spent rebuilding after their temporary weirs are damaged by floods. Construction of permanent weirs is a familiar activity for agency officials, and one where their expertise is clearly relevant. However, their greater experience in relatively flat areas accustoms them to irrigation systems where diversion and division of irrigation water are the principal irrigation tasks. Many small systems lie in the upper watersheds, with relatively abundant supplies of water. Simple, cheap structures are often sufficient to divert water. The economic value of the time spent rebuilding the weir each year is low, compared to the cost of building a permanent structure. Unstable hilly environments with fluctuating river flows mean that seemingly permanent structures prove to be quite impermanent. Long-term sustainability comes not from permanent structures but from local capability to perform routine maintenance and periodic repair (Murray-Rust and Vermillion, 1989).

In such areas, the main problem is not diverting water into canals or dividing scarce flows but *conveying* water along steep and unstable slopes to reach paddy fields. Rather than new headworks, construction of canal lining, flumes, siphons and overflow structures to divert excess run-off away from canals may be more appropriate. The need for lining is itself difficult to

assess accurately. At some sites lining is obviously essential to prevent erosion and reduce water losses. At others lining yields few real benefits, only simplifying maintenance and making the canal look prettier or more orderly.

Cost-benefit analyses of the small improvements built by the turnover project are difficult, especially in advance, and DPW engineers prefer to use technical criteria in deciding improvements. However, examples soon emerged of over-expensive improvements, and works which could not be justified by resulting benefits. This created a strong argument against increasing funding norms.

Many farmers stated that even with a lower level of funding per hectare they would still have accepted turnover. However, longer lists of requests could have been given with higher norms.

The earlier level of US\$ 100 per hectare for design and construction costs has continued. Construction of new permanent headworks is outside the scope of the project, and sites needing expensive construction should be funded from other sources before entering the turnover project.

5.2 Contributions to Construction

Farmers' participation in construction strengthened their sense of ownership of the irrigation system. Options included the hiring of local labour for construction work, purchase of locally supplied materials and unpaid local labour contributions. As the project evolved, IIMI and the World Bank strongly recommended unpaid local labour contributions as a requirement, to complement government-funded improvements. These efforts to increase participation in construction, however, encountered several obstacles.

Construction by contractors or agency 'force account' (*swakelola*) began at turnover sites during the 1989/1990 fiscal year. In August 1989 the DGWRD declared a policy which forbade mixing government-funded improvements with those built through local self help. This policy did not forbid voluntary contributions, but required making them separately, to avoid problems concerning accountability and inspection. The policy also required paying labour and purchasing materials at full prices in government funded work.

This contrasted with a common practice where the WUA would provide labour and receive a percentage of the construction payments to fund its activities. Similarly WUAs sometimes supplied local materials or labour at a lower price to enable a greater volume to be purchased. These mechanisms could encourage local participation and increase productivity. However, DOI-I officials worried about the danger of misunderstanding and subsequent problems.

WUA leaders and TP4s tried to obtain a consensus on arrangements for WUA to receive a percentage of labour payments. However, it could not be ensured that everyone understood and agreed with the arrangements. This created the danger that later individuals could raise questions about not receiving full payment. There was also concern that incorporating local contributions could delay completion of construction. These concerns of administrative complications and problems were a major factor behind the decision forbidding WUA to mix voluntary contributions with government-funded improvements.

One suggestion was that government could provide materials only if farmers provided all the labour, thus reducing problems in accountability and inspection. However, DGWRD officials claimed that this approach was not feasible under existing regulations.

World Bank officials repeatedly suggested introducing a requirement for a specific percentage contribution from farmers, to help control costs by making farmers more aware of and responsible for costs. DPW officials strongly opposed this idea arguing that it could delay completion of the activities within a specific budget year. It would also have required much greater transparency of agency budgets and expenditure. A related issue was the degree to which contributions would be voluntary. Inclusion in the turnover programme was not voluntary, but rather the result of a government decision. Agency officials did not want to have to force farmers to follow through on commitments to contribute.

One alternative would have been to require farmer contributions towards any improvements, but allow farmers to choose to receive the system without improvements if they did not want to pay. DPW officials rejected this alternative as unfeasible. Farmers did contribute to construction, but to a value of usually less than 5% of government funding. Farmers in the Philippines, Thailand and Nepal contributed much higher levels in similar irrigation projects. Farmer labour contributions in turnover in Indonesia

were mainly in earthworks, such as cleaning and straightening canals (normalisation), lining canals and building additional division structures.

The result of extensive discussions was that the Second Irrigation Sub-Sector Project (SISP-II) would in principle encourage contributions, but not require a specific percentage. During the first ISSP contractors or agency officials did make extensive use of local labour and locally purchased materials. However, the requirement to keep such self-help contributions physically separate from government-funded improvements greatly constrained the scope for additional voluntary contributions from farmers.

5.3 Redesign During Construction

One unanticipated development has been the extent to which farmers could make design adjustments during construction. In hindsight this is a clear consequence of farmer participation during earlier phases of design.

When construction began, farmers often felt the designs were not appropriate. Sometimes this reflected physical changes such as landslides and erosion since the design phase. At other times the final designs differed greatly from farmers requests and they insisted on the improvements they had asked for. Sometimes farmers' participation in design had been somewhat speculative. Once construction was certain, they requested additional changes, in part because more people became involved.

It was possible to incorporate many of the changes requested, as at most sites the construction budget was specified on a unit price basis. The contractor (or agency for force account) was responsible for providing the specified level of inputs, and the specified volume of works, leaving significant flexibility in the form these took. Mostly farmers asked for minor changes in location or shape of structures, although sometimes materials originally planned for structures were used for increased lining.

5.4 Contractors or Agency Swakelola

The PRIS can tender construction to contractors or build directly by *swakelola*. Officials responsible for the turnover project initially tended to use contractors. LP3ES staff and many farmers doubted whether contractors could work in a participatory way, and favoured the use *swakelola*.

Agency officials objected that *swakelola* was more complex to administer. This was particularly a problem for provinces outside Java with fewer and less qualified agency staff. Workers hired under 'force account' had to sign for every day worked. Many copies of forms had to be filled out and then checked and approved by several levels of officials. In addition, provincial officials usually handled contracting, but section level officials implemented *swakelola* construction. Thus, the potential benefits and burdens of the two methods differed for officials at different levels.

As implementation continued, it became clear that high levels of farmer participation were possible even with contractors. The level of supervision by agency officials was important, and the most crucial element was holding preparatory meetings between the contractor, WUA leaders and agency staff to discuss arrangements for hiring local labour and purchasing local materials. The final conclusion seems to be that local participation in construction can occur either through *swakelola* or contracting, but it is essential in either method to consult with farmers at the beginning of the construction process over use of local resources.

5.5 Improvement for O&M

The decision to make almost all systems eligible for improvement has increased the potential cost of turnover. This, combined with the dramatic increase in the area recognised as covered by systems under 500 hectares, means that at the rates planned for ISSP-II it would take over thirty years to complete turnover.

Also, there are many sites where farmers are not aware that their system had been classified as a government irrigation system. In these cases, technical and organisational changes before turnover have the potentially counterproductive effect of increasing government intervention and causing changes in existing farmer management.

The policy requiring separation of voluntary contributions from government-funded improvements discourages local contributions. Government-funded improvements have resulted in lined canals, and replacement of simple wood or bamboo division structures with permanent concrete structures. It is less clear how much impact these improvements have on reducing the burden of O&M or increasing agricultural production and farmer welfare.

Some sites clearly show increased production. At others, little seems changed, except that the system functions more smoothly and looks more orderly. The potential for increasing the impact of improvements seems to lie in focusing more clearly on improvement of not just overall irrigation system *condition*, but specifically on overcoming constraints to increased agricultural production (Murray-Rust and Vermillion, 1989). On the other hand it can be argued that the current process does improve conditions and, except in extreme cases of over-design or poor construction, does reduce the O&M burden transferred to farmers.

6. WATER USER ASSOCIATION DEVELOPMENT

Government policies concerning formal WUAs take place in the context of Indonesia's long heritage of diverse local irrigation institutions. There are still large gaps between existing local practices, often informal and episodic, and the framework for WUAs prescribed by national policy (Korten, 1987b; Bruns, 1990).

A 1984 Presidential Instruction gave guidelines concerning formation and responsibilities of WUAs, its officers and their duties. It allocates responsibility for WUA guidance among the Ministries of Home Affairs, Public Works and Agriculture, while a 1987 government regulation assigns responsibility for registration of WUA to district heads. Most provincial governors have issued decrees concerning WUA development and some provincial legislatures have passed laws concerning irrigation.

This gives the WUA some formal legal status so that it can receive management responsibility and government assets. However, the most important activity is strengthening WUAs through substantive involvement in the process of design, construction and preparation for turnover. The inventory and profile activities help the TP4 learn about existing irrigation management: who the leaders are, what irrigation tasks are done and how often, how activities are organised, and the history of efforts to develop formal WUAs in the area. The level of support and supervision TP4s receive strongly influences their frequency of visits, and whether they only concentrate on talking with existing local leaders and holding few meetings.

After the design meetings have established improvements, WUA leaders, village officials, the contractor (or agency official), and DPW staff meet to decide the roles for farmers in construction. WUA leaders coordinate the

participation of members in construction and supply of materials. The TP4 then works with WUA leaders to help them plan the management of the irrigation system after turnover. Planning encompasses current management practices, the government tasks to be taken over by farmers and written guidelines on O&M. Farmers in water scarce areas tend to be more interested in improving irrigation management. In water abundant systems, farmers tend to continue current, less formal, management patterns.

The WUA must have a constitution and by-laws. The WUA must inform village and district heads when it has drafted these. Then the WUA submits them to the district head for formal registration. These should be based on existing customs and rules employed by farmers, to facilitate implementation by the WUA. However, there is a tendency to copy standard sample examples, with little or no adjustment for local conditions. In response to this problem DOI-I and LP3ES are preparing a flexible format for constitutions and by-laws which can be fitted to the existing conditions.

It is uncertain how long WUAs registered under the turnover project will persist. A study (Aziz et al, 1991) of WUAs formed ten years ago by the Sederhana Irrigation Systems Project showed that almost none had survived as formal organisations. Farmers continued to use traditional institutions to operate and maintain the irrigation systems. If the government provides little continuing field support and offers few advantages for registered WUAs, then prospects for their survival are poor.

The turnover programme can be analysed as attempting to synthesise two conflicting approaches to farmer organisation. One approach stresses that farmers already effectively organise themselves for irrigation management through informal or 'traditional' organisations. Thus turnover largely amounts to a process of recognising and legitimising existing farmer management. In Indonesia, high cropping intensities are perhaps the clearest physical indicator of the effective performance of many farmer-managed systems. As the turnover programme progressed it became clearer that dependence on government in irrigation O&M, if it existed at all, was only a problem in a very small number of systems. Even in systems with government gatekeepers, farmers still played the primary role in distributing water and maintaining canals.

The other approach is to assume that farmers need government assistance in improving irrigation management. This may be due to the need for an outside authority to enforce sanctions. Effective local institutions may have

been weakened by commercialisation, disrupted by government intervention or undermined by other social changes. Growing competition for water may require more intensive management. Farmers may be able to benefit from exposure to new ideas concerning irrigation management. Government efforts might encourage more equitable distribution of the benefits of irrigation and counteract the attempts by local elites to gain an unfair share of benefits. Government may be able to facilitate local collective action which would otherwise be unlikely to occur. This approach stresses the need to train farmers and strengthen WUAs as part of the turnover process.

Indonesian government policy is framed in terms of the importance of state control and guidance. Written official policies and guidelines for turnover mostly reflect this paradigm, assuming that farmers need to be guided to behave in ways determined by the government, suggesting a highly interventionist approach to developing WUAs.

However, the rapid expansion of the project and the limited resources available for organisational efforts have meant that in practice the programme assumes farmers are already quite competent in managing irrigation. The principal thrust of the programme has been one of providing a modest amount of assistance for physical improvements to accompany the formal turnover of management authority and assets to farmers. If particular WUAs have problems, then they are supposed to receive extra attention. However, all systems go through the turnover process at roughly the same rate and are turned over according to the same schedule.

7. TURNOVER

WUA development, and participatory design and construction prepare for turnover. Decisions had to be made as to what and how to carry out turnover.

7.1 Headworks

Under Indonesian government policy farmers were already officially responsible for managing tertiary level activities. The government took responsibility for primary and secondary canals and the first fifty metres beyond the outlet.

Headworks are more complicated to operate than canal structures. However, in practice, farmers already operate many weirs as many sites do not have government caretakers. At other sites the DPW employees have informally given farmers the keys needed to operate gates. This is not just a matter of laziness or very low wages, it is also a practical issue of who can best operate the system, especially if heavy rains, perhaps during the night, require a rapid response and the irrigation staff do not live nearby.

If farmers did not receive responsibility for headworks, then turnover would mean relatively little change. Keeping headworks under government control could lead to assignment of staff to manage headworks at sites without caretakers. It would maintain substantial ambiguity in division of responsibility between government and farmers. It could leave the government responsible for headworks even in very small systems irrigating ten hectares or less.

The final decision was to turn the entire system, including headworks, over to farmers. DOI-I officials hoped that this would make WUA more fully responsible and avoid confusion and overlap. However, in systems over 150 hectares with more complicated headworks, staff responsible for headworks are being transferred in a phased manner. This is intended to give farmers time to develop their capacity to maintain and operate such larger weirs. Senior DGWRD officials in Jakarta have also been extremely hesitant about turning over systems between 150 and 500 hectares in size. For ISSP-II the emphasis will continue to be on turnover of systems under 150 hectares. However, during ISSP-I DPW turned over two larger pilot systems and will turn over more during ISSP-II.

7.2 Assets or Only Management Authority

Another question was whether to transfer ownership of the assets to farmers or only transfer authority to manage the system. If the assets continued to belong to the government then the irrigation officials would continue to be ultimately responsible for them and liable if problems occurred. Authority and responsibility would not match, and turnover would not represent a significant change from existing policies where farmers were already in theory responsible for operation and maintenance of tertiary areas.

DGWRD decided that existing laws provide WUAs with suitable status as legal bodies to receive ownership of irrigation system assets, if the WUA had first been registered with the district level government.

The Minister of Public Works has the authority to make such an ownership transfer with temporary status. Permanent change of status and deletion of the irrigation system from the inventory of government property requires approval by the Finance Minister. The intention is to eventually complete this process. However, DGWRD regards the current turnover process as adequate to give WUA full control of the systems and considers subsequent changes to be an internal matter within the government.

7.3 Ceremonies

For each province the DGWRD symbolically turned over irrigation systems in ceremonies attended by Provincial Governors, senior officials, WUA representatives and administrative representatives from each district. Some separate turnover ceremonies were also held at the district level. The ceremonies confirmed that turnover actually was occurring and publicised the project, but also required a substantial amount of time and money for preparation.

The choice of a site where an earlier project had already made a high level of investment showed willingness to turn relatively elaborate systems over to farmers, but may have also raised expectations about the level of government investment available, and what condition irrigation systems should be in before turnover. This may have been one factor which encouraged some provinces to request amounts of funding beyond that budgeted for turnover improvements.

8. GUIDANCE AND ASSISTANCE AFTER TURNOVER

The Ministerial Ordinance on Turnover outlines the government's role after turnover. The government retains authority over water resources, meaning it can determine how much water an irrigation system can divert. The government should provide guidance to WUAs and can provide physical and technical assistance for work beyond the capacity of farmers. Working these issues out in practice is much more complicated and is still under discussion.

In theory any diversion requires approval from the government. In practice provincial governments do not apply this process for agricultural water use. Where conflicts over water occur, officials deal with them on an *ad hoc* basis, often having little information about the number and history of irrigation systems in a watershed.

After turnover, systems have the same status as village irrigation systems. The government has a mandate to provide guidance to all irrigation systems, but in practice DPW has worked primarily with government systems. DPW officials are currently discussing the need for an irrigation extension position, whose duties might concern village irrigation systems as well as government-managed systems.

Monitoring the performance of turned-over schemes is important to identify what lessons can be learned and what government assistance is necessary. Under the ISSP-II, LP3ES will act as a consultant to the Department of Public Works to help develop methods for participatory monitoring of turnover. This will include methods for WUA self-assessment, monitoring of turned-over systems and participatory monitoring of training.

In principle the government should provide assistance for problems beyond the capacity of WUAs, for example, natural disaster damage. Government officials often lack clear guidelines about responding to local requests for help. There is a danger of encouraging unrealistic expectations from WUAs about government help, and discouraging initiative and self-reliance within the WUA.

Evaluation of farmer management after turnover may be complicated by the absence of economic evaluation in planning for improvements and lack of requirements for local cost-sharing. Once farmers are responsible for management they will probably allow unproductive and uneconomic structures to decay rather than waste time and money on repairing them (Ambler, personal communication).

In practice farmers will have to make urgent repairs themselves because the government cannot respond quickly enough. In the future it might be possible to enhance local resource mobilisation capacity by allowing WUAs to borrow money and repay it through collections from water users. The goal of turnover is not to abandon small irrigation systems but to make efficient use of scarce government resources and encourage local self-reliance.

9. STAFF READJUSTMENTS

Staff readjustments are being carried out, but the difficulties have slowed both the pace of implementation of turnover, and the spread of the project across a larger number of areas.

Staffing levels for irrigation O&M vary greatly between provinces. Irrigation inspectors and many system-level staff are responsible for several irrigation systems, and so can shift their attention to systems which have not been turned over. Some can transfer to nearby larger irrigation systems. Others may retire early. However, often they are local residents who cannot easily move, and who rely on other activities to supplement the low pay they receive. Sometimes the WUA is willing to pay them to continue working, but usually cannot afford to pay even current salaries.

Many system-level staff are daily workers without official right to permanent employment. However, there are moral commitments, and for DPW bureaucracy, reducing staff is threatening. In some areas, turnover implies that the PRIS may have to restructure subsection or even section offices. Even if irrigation inspectors continue in the same locations their duties will change dramatically.

The differences between provinces in staffing intensity and in area irrigated by small systems seem to be a major influence in levels of support or opposition to the policy of turnover. Provinces with a high proportion of small systems are more reluctant to carry out turnover. Provinces with fewer staff placed in, and lower areas of, small systems tend to favour turnover of small schemes and concentration on improved government O&M in larger systems.

It is not yet clear to what extent staff or other resources freed by turnover will shift to other activities, such as river basin management or improved O&M in larger irrigation systems. The government can focus its scarce resources where it has the strongest comparative advantage, particularly tasks requiring a high level of technical skill, funding or political authority. A tendency is for agency officials to suggest that irrigation inspectors and other staff above the system level should stay in the same area but provide more guidance and assistance to village irrigation systems.

10. CONCLUSIONS

The turnover programme shows that it is possible to shift responsibility for irrigation systems from government to farmers. In the Indonesian case factors which encouraged policy change were a fiscal crisis, encouragement from donors and a series of research and action projects showing farmer capacity in irrigation management.

For farmers the most immediate benefits from turnover are physical improvements to irrigation systems. Turnover legitimises water users' roles in managing irrigation systems, and it gives them more explicit authority over the irrigation system. Farmers may have to pay for O&M if they take over work from government staff, or if the WUA undertakes additional O&M activities. In most systems farmers already do most of the work of maintenance and distribution, so the additional expenses in time and money accompanying turnover should not create a great burden.

Nationally turnover offers the prospect of reducing government expenditures on O&M of small systems, and establishing a better division of labour between government and local communities. Turnover reverses the process of government takeover of farmer-managed irrigation systems, blocking one route for bureaucratic growth. Thus, unless there is strong backing from policy-makers and donors, it is unlikely that such a policy will be able to overcome bureaucratic interests in maintaining the status quo and seeking growth in budgets and staff.

By the middle of 1991 the government had transferred over four hundred irrigation systems covering more than 34,000 hectares to farmers. During the next four years the government plans to transfer systems covering another 150,000 hectares. If the government persists with the policy of improving almost all systems then, at current rates, turnover would take more than thirty years.

Indonesian experience suggests that turnover is most likely to succeed if begun by involving farmers in design and construction of irrigation system improvements. In countries where government involvement is relatively small it may be worth considering whether the government can simply turn systems over by administrative reclassification. However, if the irrigation bureaucracy is powerful, as in Indonesia, it may be more feasible to accept the principle of making some improvements to all systems. The priority would then be to match investment to needs and potential benefits, with

only token amounts for systems already performing well compared to nearby systems.

The Indonesian experience is more ambiguous concerning the role of formal WUAs. Formation and official registration of such associations is clearly possible. However, as long as such formal organisations offer few practical benefits for farmers it is unclear to what extent they will actually improve on existing irrigation management institutions. If the government can legally transfer ownership and management authority to existing indigenous organisations, then this might be preferable. Policy should ensure that such organisations can take on additional responsibilities, if and as needed, for example to make contracts or borrow money (Korten, 1987b).

Compilation of specific procedures has enabled local participation. However, adequate support in terms of training, guidelines and procedures, coaching, backstopping from other staff, and logistic support (e.g. travel funds) is essential.

The turnover project shows that government intervention need not result in a loss of local control. Turnover can restructure the balance between government and local roles to restore a greater role for local ownership and management of resources.