The Village Irrigation Rehabilitation Programme (VIRP)

Shyamala Abeyratne
Agrarian Research and Training Institute

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Abstract

Current State intervention in village irrigation systems focuses on physical rehabilitation coupled with institutional arrangements to enhance the efficiency of tank/anicut water distribution and use. The paper analyses the rehabilitation process under the Village Irrigation Rehabilitation Project (VIRP), especially attempting to understand the organizational approach advocated by the introduction of an Agricultural Planning Team and a Tank Committee. These latter are seen as mechanisms to promote improved water management practices rather than as attempts to foster greater farmer participation in irrigation management. The style of rehabilitation further substantiates the fact that under VIRP, the State has consolidated its bureaucratic structure down to the village level as it tries to ensure better water management and in turn increase agricultural productivity under village irrigation systems.

Cross-cultural studies demonstrate the inherent advantages in small-scale irrigation systems for eliciting farmer participation in investment, design and construction, and operation and maintenance activities. Because small-scale irrigation projects are of a manageable size and have more accessible technology, and because the communities surrounding them tend to be relatively homogeneous, it is believed that opportunities for community involvement tend to be enhanced and that in turn the success of these projects depends on eliciting community involvement.

However the strategy of rehabilitation and water management under VIRP has only marginally capitalized on these opportunities afforded by village irrigation systems. Rather the rehabilitation-cum-water management programme has served to consolidate the government's role in village irrigation systems and to convince villagers that since the state "owns" the irrigation system, that it is also responsible for ensuring the performance of O + M tasks. For several reasons - not the least many socio-economic changes in the rural areas - this strategy may be advisable, if not warranted. The problem may arise if responsibility for system O + M has to be transformed more completely to the community in the future.

Introduction

Self-sufficiency in food has been the focus of Sri Lanka's agricultural policy for the past several decades. Consistent with this goal, a major strategy has been one of trying to expand the acreage under food crops - primarily paddy - through the development of major irrigation schemes. Investment in major irrigated agricultural schemes has also allowed for the resettlement of landless and unemployed people from the more congested regions into hitherto sparsely populated areas of the country.

As avenues for expanding paddy acreages are faced with natural limits, the government has turned to a strategy based on the intensification of agricultural production on existing irrigated lands, especially those coming under minor irrigation tanks/anicuts. Within this larger effort, the Village Irrigation Rehabilitation Programme (VIRP) occupies a significant position. It seeks to rehabilitate some 1,200 village tanks and anicuts in 14 districts of the island. Rehabilitation of these small-scale tanks/anicuts it is believed would offer certain advantages : (i) short-gestation periods compared to rehabilitation of large-scale irrigation works (ii) dispersion of government funds to neglected rural areas for the upliftment of the welfare of the poorest sections (iii) creating conditions for more efficient use and control of water and as a consequence, expansion of the crop acreage as well as cropping intensity.

The potential for the development of minor irrigation has been highlighted in several reports (see e.g. Gunadasa et al : 1980). It has been estimated that minor irrigation[1] accounts for 45% of the 450,000 hectares under irrigation and carries 33% of the paddy extent and contributes 22% of the paddy production. However only 50% of minor irrigation schemes are considered to be in working condition (at varying degrees of efficiency) while 30% of the irrigable area remains unutilized or underutilized for paddy cultivation. Thus it has been estimated that the potential exists to increase the cultivable area under minor irrigation by about 50,000 to 75,000 hectares.

Although the need to rehabilitate minor irrigation works has been recognized, the question still remains whether the commitment of scarce resources to this endeavour is likely to yield the expected

returns. There are at least two major concerns. First, considering the rainfall characteristic of the dry zone (which contains most of the village tanks) it is debatable whether agricultural production can be improved after rehabilitation as monsoonal rainfall is restricted to a brief period of 3-4 months and the capacity of minor irrigation works is not so large as to retain a large volume of water. In addition, seepage and heavy evaporation loss, result in many minor irrigation works drying up completely or in any event not having sufficient water to permit a yala paddy crop. Relatedly also, it may be argued that during the rainy season, provided that maximum use is made of available rain, a paddy crop may be successfully grown without irrigation. Second, even if resources are committed to rehabilitation of minor irrigation works, the expected results may not be achieved if constraints other than scarce water, continue to provide serious obstacles to increasing production. Of these factors, fragmentation of land holdings under minor irrigation can be cited as one of the gravest problems.

Be that as it may, under the VIRP, the Government of Sri Lanka with assistance from the World Bank, has embarked on a programme to rehabilitate 1,200 minor irrigation systems. It is expected that the rehabilitation work will minimize uncertainities related to irrigation water on 77,805 acres of land, benefitting 20,000 - 25,000 farm families. The project area is spread over almost the whole of the dry and intermediate zones, and a small part of the wet zone[2]. In addition to physical rehabilitation, the Department of Agrarian Services has been requested to implement a water management programme for each of the rehabilitated systems.

This paper describes the VIRP which is a state - assisted programme for the rehabilitation of minor irrigation systems in 14 districts of the island. As such the VIRP is not a "case study" nor is it a programme aimed at promoting farmer management of village irrigation systems. Rather the VIRP seeks to improve agricultural productivity under village irrigation systems through physical refurbishment of the irrigation works and the introduction of a water management package. For the latter purpose, certain institutional arrangements are advocated. To the extent that these institutional arrangements involves some degree of farmer participation, they constitute the focus of this paper.

Objectives of the VIRP

The VIRP has two main objectives : physical rehabilitation of deteriorated minor irrigation schemes[3] to increase agricultural production and farm incomes and the introduction of a systematic water management programme to ensure efficient utilization of stored water once rehabilitation work is completed. The project also aims to strengthen the major government departments involved with minor irrigation, particular the Department of Agrarian Services, by providing them with the necessary training, staff, equipment and transport to ensure proper maintenance of these schemes.

Costs and Benefits

The VIRP is a five year (1981-85) project[4] and has budget of U.S.$ 25.9 million or U.S.$ 43.6 million including price contigencies (World Bank, 1981 : 64) There are five main budget heads; civil works; equipment; incremental staff costs, other incremental costs; and training, evaluation and assistance.

About 11 percent of civil works are for downstream works. The training evaluation and technical assistance allocation and the incremental staff cost allocation (except regional office allocations) are mainly for water management, while the other incremental costs and equipment budget is mainly for headowrks. Accordingly, the share for water management in the budget (net of price contigencies) is U.S.$ 3.4 million or about 13 percent. The project life has been estimated to be 25 years, with the project reaching its full production levels in 1991. It is estimated that with full maturity of the project, cropping intensity would increase from 32.5% to 116.25% and lead to an increase in rice production of 37,800 tons per annum and a 43% increase in per capita income.

Implementing Agencies

The Irrigation Department (ID) is responsible for the civil works component of the project[5]. Physical rehabilitation includes improvement of tank bunds and spillways; replacement of all sluices; improvement of main channels; alignment of main channels and field channels; and

vi) the incremental area brought under direct maha irrigation should be at least ten times privately irrigated lands submerged or three times other cultivated lands submerged;

vii) the soils of the catchment area, reservoir and the command area should be suitable for their respective purposes;

viii) the cost for a project including all civil works and physical contingencies valued at mid-1980 prices, but excluding price contingencies, engineering and administration, should not exceed Rs. 5,000 per acre for the existing area plus Rs.10,000 per acre for the incremental area.

III. Strategy for Promoting Participation/Organization of Farmers.

As mentioned earlier, subsequent to rehabilitation, operation and maintenance activities become the responsibility of the farmers with the support and "sponsorship" of the Department of Agrarian Services (DAS).

The DAS does this through the Agricultural Planning Team (APT) which is constituted for each district. The APT is in effect an appendage of the DAS and consists of three government officers; the Technical Assistant (TA), the Agricultural Instructor (AI) and the Divisional Officer (DO)[7]. While the AI is a divisional officer of the Department of Agriculture, the TA and the DO represent the DAS.

The principle function of the APT is to formulate and thereafter implement a water management programme for each rehabilitated tank/anicut, in consultation with the farmers. Each APT is responsible for all the tanks/anicuts under VIRP for a district, and the APT is supposed to visit each refurbished system at regular intervals. A tank supervisor - a salaried official - is appointed to supervise 10-15 tanks and is meant to assist the TA of the APT.

As such, the APT is supposed to spend approximately two weeks in each locality, and become acquainted with the specific requirements of each tank/anicut. Local feedback is to be provided by the Cultivation Officer, the Tank Supervisor, the KVS and the Vel Vidane, while farmer concurrence is to be obtained for the different components of

the water management package. The APT members are taught in their training[8] that these programmes should be developed on the basis of rainfall, soil type and hydrological data and a proper understanding of existing agricultural practices for each area; and that due consideration should be given to production constraints and risks under which the cultivators operate.

After the APT has finalized the water management plan and it has been approved by the Deputy Commissioner (Water Management) in Colombo, the Tank Supervisor sees that the command area is divided into areas of about 4 ha each around a field canal and consisting of 6-10 farmers. These groups in turn each select a farmer representative, all of whom are represented in the Tank Committee.

The Tank Committee is regarded as the primary vehicle to enlist farmer participation in operation and maintenance activiites. The Tank Committee is without legal status and is meant to be a relatively informal organization[9] that is formed with the impetus provided by the APT. The Tank Committee consists of the Vel Vidane[10] (as Chairman), the farmer representatives and the relevant government officers including the Cultivation Officer and KVS[11]. It is thus composed of government officials and farmer representatives. The responsibility for organizing agricultural inputs and for providing extension advice falls on the officers in the committee while the distribution of water and the resolution of conflicts are the responsibility of the Vel Vidane and the farmer representatives. Hence there is a division of responsibilities; those irrigation-cum-agricultural tasks that require extra-community activity and by definition warrant a certain amount of governmental intervention are performed by the government's representatives in the Tank Committee, while matters that strictly concern the community are left to the latter's representatives for mediation through the Vel Vidane. However the Tank Supervisor remains nominally at least in overall charge of the water management programme.

IV. Farmer Organizations

The Tank Committee, the concept of which is introduced from without, but whose evolution is considered to be from within the "hydraulic community", with the impetus being given by the APT is the local organization that is promoted under the VIRP. The scope of activities

of this organization is confined to irrigation-cum-agricultural matters and it derives its authority mainly from the state, and to a lesser degree, from an interest group constituency (viz. those dependent on the irrigation water). Its membership likewise consists of the lowest level of the government administrative structure as it relates to irrigation and crop production matters, and farmer representatives[12] who are responsible to the members in the paddy tract. Hence the government officials are accountable "upwards" so to speak to the state whilst the farmer representatives are responsible "downwards" to those who own irrigable paddy land under the particular water source. Likewise the state officers are responsible for activities that are dependent on interaction with the wider society - e.g. ensuring timely delivery of inputs - while the farmer representatives are responsible for matters that concern the community, and can be mediated within it. However in reality, many of these latter decisions are also made by the officers, since only they have the necessary legal backing for remedial action.

Hence the Tank Committee is strictly - speaking not a farmer organization; rather it provides a convenient meeting place or nexus between the State as it reaches down to provide benefits such as extension advice or production inputs, and the community, through its representatives, as it reaches up to receive them.

The Tank Committee moreover is a standardized 'blueprint' that is introduced as a vehicle for resource management and mobilization purposes under the VIRP. It is the recommended arrangement for all refurbished tanks/anicuts, irrespective of existing arrangements for irrigation water management. The only proviso is the number of farmers. If a particular irrigation system has more than 15 farmers, farmer grouping is recommended[13].

The Tank Committees together are not federated upto a higher level. In a sense this, plus the pronounced government presence in the composition of the Tank Committee, show that the basis for organization is not to empower the farmers so that by participation they may be the key figures in irrigation management decisions or are enabled to collectively bargain for their rights as a hydraulic community. Rather farmers are encouraged to come together primarly for purposes of undertaking agricultural and irrigation - related tasks as set out by

the water management programme, which in turn is mainly an artifact of the APT, though of course having farmer consensus. And to do this, the Tank Committees are constituted so as to have the "correct" mix of local-level participation and state intervention. In the final analysis the latter superceded the former as a state official - the tank supervisor - was ultimately responsible for the implementation of the water management programme[14]. Hence the APT's and the Tank Committees can be seen as state - sponsored vehicles for implementing a prescribed water management programme rather than as mechanisms to encourage farmer involvement in system rehabilitation, management and operation.

2. Some solutions attempted and results

During the course of implementation, certain defects in approach were recognized and remedial action taken to improve them. At least four of these factors bear mentioning.

One of the most important changes was to bring in the APT's from the time an irrigation system is identified for rehabilitation so that it could have some input from the early stages of the rehabilitation process. In addition, the constitution of the APT was changed to include a DO who would pay attention to the social and community aspects of village irrigation.

Another significant innovation was the introduction of ratification meetings which are held after the plans and estimates for rehabilitation are ready, and are intended primarily as a mechanism to explain the proposals for rehabilitation to the farmers and to obtain their approval. The ratification meetings are generally presided over by the Government Agent (G.A) and include in addition, timing of the construction schedule, soliciting farmer inputs for earthwork for bunds, and channels and cleaning of light jungle, and discussion of the operation of the Water Management Programme and formation of the Tank Committee with the farmers.

The problems inherent in the handing over exercise have been somewhat ameliorated by the introduction of a method of joint inspection by the ID and the DAS, which allows the two departments to come to an agreement on whether rehabilitation is completed or in the event that some feature is not satisfactory, for provision to be made to the DAS for completing the particular item. In the event that the latter costs in the region

of Rs.5,000 - 30,000, the DAS is allocated the money to do it. In the event the remedying of the defect costs over Rs. 30,000, then the ID undertakes to complete it. An important feature is that a time limit of one month has been set before which the DAS must inform the ID of any defects in design or construction. This holds both departments accountable to have the job completed speedily.

The APT's coming to the picture early in the rehabiliation exercise has helpted the construction agency in designing and planning the rehabilitation programme, and in tying up the proposed water management programme to the physical improvements/modifications to the system[15]. This was important as until then there was little discourse between the ID and the APT/DAS, such that after physical rehabilitation, the APT/DAS had to scramble to devise a water management programme appropriate to the physical improvements/modifications. The introduction of the DO into the APT has also meant some weightage been given to social and community considerations in village irrigation systems. The DO has proved to be an important "access point" into the village community from both the ID and DAS points of view, as he is the designated DAS officer to see to aspects of social and community life and therefore his affliation to the APT provides feedback on aspects of social and community organization that were otherwise lacking.

The other important innovation - in the latter part of 1984 - has been the Sub-Committee on Village Irrigation, which under the chairmanship of the G.A. provides coordination of the rehabilitation process at the district level. This appears to have had some major salutary effects especially for the process of "handing over". While the DAC[16] has several officers (approx. 15-20) who must meet to make policy decisions, the Sub-Steering Committee has only 4-5 key members[17] who meet quarterly and who under the chairmanship of the G.A. can take quick decisions. From both the points of view of the DAS and the ID, the appointment of this Sub-Committee, has tended to expedite decision - making and has led to better coordination of rehabilitation activities.

V. Key Problems Faced by Activity.

Major Problems :

There are several problems in the strategy of rehabilitation and the strategy of organizing farmers for irrigation water management activities. Whilst these are interrelated, they will be presented here separately for ease of discussion. The discussion is based in large part on the study conducted by the ARTI in 1984 in six village irrigation systems in Moneragala district, four of which came under VIRP[18]. Hence the information presented here mainly reflects these data and should not be considered as conclusive of the whole programme.

The Rehabilitation Process:

The rehabilitation process under VIRP can be divided into 4 major stages, namely the preliminary investigation stage, the design stage and the construction stage. The fourth stage is that of "handing over" after physical rehabilitation is over. The major problems that surface at each of these stages will be discussed briefly.

(a) Preliminary Investigation stage:
As mentioned earlier, certain criteria have been laid out for the selection of tanks/anicuts for rehabilitation. These criteria, whilst being important, still overlook certain other important considerations, Amongst these are:

i. The importance of sources of income outside of irrigated agriculture in the project area. Merely looking at a minimum number of beneficiaries (ten families as specified under VIRP) obliterates the importance of ensuring that a large proportion of the beneficiaries are in fact dependent on the tank/anicut for their subsistence and addedly, that the more impoverished farmers are being reached;

ii. the likelihood that input and product prices will justify increased attention to irrigated agriculture on the part of the water users;

iii. that there exists local capacity for system management given existing household production strategies;

iv. that the local social structure is conducive to a rehabilitation exercise which involves looking into;

(a) tenurial patterns and the potential impact of redistribution of rights in land and water and in the irrigation works, as a result of project activity;

(b) extent of land fragmentation;

(c) community homogeneity or diversity, and the extent to which irrigation development may aggravate existing cleavages/conflicts;

v. community articulation of the desire for rehabilitation of irrigation works by the government. This step of the local group coming forward with a request for assistance to achieve an outcome that it has identified as important is a factor that should not be played down. As noted by Coward (1984), there are many positive features that derive from this, not the least the fact that communities that are able to come together and agree to request assistance will display the social capacity required for successful future irrigation development. Conversely adequate measures must be taken against undue lobbying on the part of certain political interests who press for rehabilitation of irrigation works which do not meet the established criteria.

vi. more stringent criteria for selecting the most needy plus those with an agricultural background in the event that an abandoned tank (e.g. olagama)is selected for rehabilitation. Otherwise the inherent social welfare aspects of the programme will not be met.

(b) Design Stage:

Typically - and the VIRP case is no exception - the technical irrigation agency is given the responsibility for establishing design criteria and thereafter in applying these to construction. When responsibility is bestowed almost entirely on the Irrigation Department and the latter is consequently held accountable for any future defects in design and construction, it is almost inevitable that the local community is not consulted nor involved in the design process.

This ommission of local knowledge and experience from the design process was serious drawback especially for the first few years of the VIRP. Since engineers and others from the "outside" were hardly as familiar with the micro-variations in terrain, stream flows etc. as the local

population, and as the latter was not tapped, these sources of information, were not available to the formal sector for a specific location, with consequences for design and construction. This is not to say that the technical irrigation agency should have incorporated all suggestions made by farmers. This would be unrealistic given that the Irrigation Department is eventually responsible if designs are faulty. Rather a case is made for a more responsive approach that is able and willing to utilize local knowledge and experience where it is useful.

Unfortunately as pointed out in the ARTI study locations that had or were undergoing rehabilitation, less than 1% of the farmers said that they were consulted or even kept informed of the design plans. When asked if they would have been able to provide useful information if actually consulted, most farmers said that they could have given some useful information. Sixty six percent of the farmers who said that there were problems in the physical works after the rehabilitation programme, attributed these problems to the fact that the Irrigation Department did not consult the local residents. In one of the study anicuts for example, the farmers complained that the ID undertook rehabilitation of the anicut - viz. raising and strengthening the dam - without realising that what was needed was a feeder canal from the adjacent stream to augment the water supply, a fact that they could have pointed out. Medagama[19] also cites an illustrative example of a tank that was rehabilitated at the cost of Rs.25,000/- only to be abandoned, as it only irrigated 2 ha on completion. At the same time farmers in the area said that what was really required was a way to divert a stream in the catchment area rather than to improve the headworks.

Subsequent to the ARTI research study, the idea of farmer meetings[20] at the initial investigation stage and of ratification meetings was introduced and this was a great improvement as pointed out by ID personnel who said that it in fact eased their work and consideraly improved relations between the farmers and Irrigation Department, especially as the former were now kept informed of the rehabilitation plans of the latter. However the process is still one of informing farmers rather than eliciting their participation in decision - making or employing them in the construction process (other than the mandatory

requirement to have farmers do earth-work on the field canals).

(c) The Construction Stage

From the large number of tanks/anicuts earmarked for investigation in each district, selected works are chosen for rehabilitation in a particular year. After an estimation of costs undertaken by the ID, the latter calls for tenders. Usually the contractors selected - supposedly the lowest bidders - are not from the local area and consequently they prefer to import their labour from outside. Supervision of construction is done by the Technical staff of the Irrigation Department. Hence there is little if no local involvement in the construction stage.

One serious problem is that though a scheme is identified for rehabilitation, official confirmation of the District Agricultural Committee (DAC) is needed and this often delays the construction programme. Because of this and often the fact that a particular contractor bids for construction work in more than one scheme, results in the construction programme being delayed[21a]. This has serious consequences for the farmers as once the ID has identified a particular tank/anicut for rehabilitation, no cultivation is allowed until physical refurbishment is completed, and this has sometimes meant that farmers cannot cultivate for four or more consecutive seasons. Since they are also not employed in construction, they have no other sources of income or means of subsistence. These delays in construction which may sometimes have been for very real and unavoidable reasons are interpreted by farmers to be deliberately done or at best delayed by the contractors as they are disinterested. The ID personnel in turn complained that they had little hold on the contractors keeping to time targets, other than blacklisting them so that they may not get future contracts. The point is that farmers do not feel kindly towards those undertaking the construction work and often alleged that since they had little knowledge of the amount awarded to the contractors, that someone, somewhere, was raking off the profits. They also felt that actual construction involved poor quality work since there was little ID supervision, and because they themselves had no authority to check on the type nor quantity of materials used.

"Handing Over"

After physical rehabilitation, the refurbished irrigation system is supposed to be "handed over" to the Department of Agrarian Services, which in turn is responsible for implementing the water management programme and for maintenance activities for a period of two years. The fact that the irrigation system has to be "handed over" implies several things. First the fact that one department is responsible for rehabilitation and the other for operation and maintenance creates problems, chief of them an ambiguity in responsibility for the refurbished systems. This became clear to us when we tried to obtain data on tanks rehabilitated in the Monaragala District and found several examples of schemes being in a "no man's land" so to speak, with the DAS and the ID shunting responsibility for them from one to the other. The main reason for this it seemed is that the DAS has been reluctant to "take over" schemes that it felt had not been properly or completely rehabilitated, since it would then have future responsibility for their maintenance. However as mentioned earlier, this has since been somewhat improved by introducing the method of joint inspection.[21]

The second factor implied in the term "handing over" is of course that the process involves a "giving" and a "taking" exercise that is confined to two government departments. This reflects what appears to be the generalized perception that these rehabilitated schemes belong to the state and not to the community and that then by definition those living and cultivating under these systems are merely recipients of government services.

The third factor implied in this "handing over" exercise is that the technical agency, the ID, can undertake the rehabilitation exercise without supporting a participatory approach and simply leave it to the DAS to be committed to the latter after "taking over". In reality of course when the ID is not motivated to pursue a participatory approach during the rehabilitation exercise, attempts to mobilise farmers after "handing over" become undermined. As documented by others (e.g.Mayson : 1984), the advantages of farmers participation in the different stages of rehabilitation is the increased likelihood that the physical improvements in the system are less likely to result in management problem in the future. And addedly, that farmers will gain

useful practical knowledge and appreciate the components of the irrigation system that require most care and maintenance (Korten:1982) Unfortunately, these advantages may not materialize under the VIRP given the current approach to the rehabilitation process.

The Water Management Programme

All irrigation schemes that are rehabilitated are in principle considered for the water management programme. The water management programmes are to be adapted to the requirements of each system but they share in common the twin goals of making efficient use of rainfall and tank stored water by (i) improvements in the dependability of the water supply (ii) a more equitable sharing of water among farmers in the command area.

The responsibility for implementing the water management programme lies with the Water Management Division of the Department of Agrarian Services which delegates to its district - level appendage, the APT, the responsibility to visit each tank/anicut proposed for rehabilitation and prepare an appropriate water management programme. The APT must also oversee that it is being carried out though of course to do this it is meant to closely liase with other government officers such as the KVS, the CO and the Vel Vidane. The water management programme thus becomes the main focus of APT activity and the basis around which the tank committee is formed.

For all intents and purposes most components of the water management programme were deemed quite successful by the farmers. In the ARTI study for example, 73% of the farmers commented positively on the distribution of water under the rotational schedule drawn up under the programme. In fact nearly 60% of farmers said their own water supply had improved subsequent to rehabilitation and introduction of the recommended water management practices.

Hence the extension component - viz. imparting and ensuring adherence to certain agronomic and water distribution practices seems to be working well though sometimes cultivation risks under minor irrigation systems - given the precarious water supply - prevent farmers from adopting certain recommended practices[22]. The problem appears however to be with the fact that the unit which is responsible for the above extension-type activity is also responsible for organizational activity as envisaged under the VIRP. As Coward (1984:25) notes, the problem with this is that

In the course of the ARTI study we discovered atleast four sets of problems confronting the concept of a Tank Committee. The first is the "community" that the Tank Committee represents. The focus around the water supply - the tank - is one which harks back to the past where the water source was the epicenter of community life, economically and socially. In the past, "the one-tank : one-village" concept was infact all pervasive (at least in the dry zone) and elaborate rules and regulations were established to keep this hydraulic community intact[26]. However a process of state penetration of the rural areas, which has accelerated since the 1950's, coupled with natural demographic changes within village communities, have contributed today to making the notion of community around the irrigation water source extremely fuzzy. A market in land has brought outsiders into what were relatively socially homogeneous communities and these outsiders have managed to buy land even in the traditional purana wela sections thus making it harder for the "original" cultivators to maintain exclusive rights to land and water on the basis of prior appropriation. Population pressure and resultant land fragmentation have resulted in irrigated paddy land decreasing in importance for the community and village boundaries have been extended to cover further acreages beyond what are watered by the tank such that these paddy lands become rainfed and are not dependent on the irrigation water source.

Hence today the village tank does not enjoy the primacy it had in the past and land holdings under the village tank are extremely fragmented and do not meet subsistence requirements[27]. As a result many villagers depend on other crops (such as chena) and other activities to bring in a larger proportion of the income.

In some of the irrigation systems selected for the ARTI sutdy this was clear; the village tank was not the main contributor of income nor of social identity for the community and often it was of little consequence to all but those cultivating a limited acreage immediately adjacent to it. In such a situation it becomes difficult to elicit even the limited farmer participation envisaged for the Tank Committees. In this respect in fact the modicum of farmer participation expected for the Tank Committee might be realistic. The problem arises when more community - wide participation is expected, especially for system maintenance in the future.

The second problem that plagued some localities was that the community of water users was not coterminous with those represented on the Tank Committee. The latter is defined only with reference to irrigation water users but there were cases where other populations were drawing water from the same source. For example in Kehellanda - one of the ARTI study localities and a "show piece" for the water management programme in Monaragala - there was a sizeable community immediately next to the tank whose subsistence depended on fishing in the tank. However this community was not represented in the Tank Committee. As a result there was a series of conflicts over water levels and the rights each group had over the tank and its water. From this it is evident that if farmer participation is to be encouraged, it is important to delineate irrigation and water-user community boundaries more realistically, and not expect committment to a Tank Committee simply because one owns land under its command or exclude others because they do not use the tank water for irrigation purposes.

The third aspect that emerged in the ARTI study with respect to participation in the Tank Committee was the critical question of who "owned" the irrigation water source. In earlier times, the water source (the tank or anicut) contributed to the definition of "community" and consequently spelt out a clear set of priviledges and obligations for those who lived and cultivated relying on it. Today on the contrary there seemed to be some ambiguity as to who "owns" the irrigation works. In those irrigation systems that had undergone rehabilitation, the majority of farmers (67% in the ARTI study) said that the state had ownership and clearly therefore that the state had responsibility for operation and maintenance. However in those systems that had not undergone rehabilitation the village community felt that they themselves owned the irrigation system. If the pervasive belief subsequent to state intervention in the form of rehabilitation is in fact that the community no longer "owns" the irrigation water source, there are several implications for farmer participation. At the very least it cannot be assumed that the community will have the incentives to participate in system management or maintenance.

In the ARTI study, the question of who should do maintenance and who actually does maintenance work was addressed. While farmers in the pre-rehabilitation tanks and anicuts felt that it was the community's responsibility, those who had state involvement in the form of

rehabilitation, stated that it was clearly the government's responsibility. However since under the water management programme they were compelled to do maintenance work, they did in fact undertake it. The farmers were emphatic in pointing out that though this was called shramadana by the project authorities, it was actually done only because it was under compulsary fiat. Thus the pertinent question that remains is what will be the incentive/compulsion for farmers to undertake maintenance work in the future?

The fourth aspect that concerns the introduction of the Tank Committee is the issue of what if anything happens to existing institutional arrangements for irrigation water management. While in principle it is accepted that existing arrangements are allowed to continue, it is hard for the APT's in the short-time it is allocated in each village to do all their required tasks and also determine the extent and strength of existing local capacity for irrigation water management and thereafter devise strategies that serve to utilize the latter. While more field data is needed to support or refute this, from the limited data available for Moneragala, it appears that the tendency is to advocate the setting up of a Tank Committee irrespective often of existing arrangements.

VIII Major Lessons Learned

Implications for future policies

Cross-cultural studies demonstrate the advantages inherent in small-scale irrigation systems for eliciting farmer participation in investment, design and construction, and operation and maintenance activiites[28]. Because small-scale irrigation projects are of a manageable size and have more accessible technology, and because the communities surrounding them tend to be relatively homogeneous, it is typically believed that opportunities for community involvement tend to be enhanced and that in turn the success of these projects depends on eliciting community involvement.

From the point of view of the government there are several advantages in promoting community involvement from the inception of a rehabilitation exercise. Typically, small-scale irrigation projects tend to be widely scattered and so it is costly for government to invest in feasibility

studies prior to investment. It can instead rely on the community to provide information on factors such as micro-variations in soil, climate and crop water needs, quite apart from valuable socio-economic information such as legal and customary property rights in the water source, and ownership rights in land or labour availability on a seasonal and permanent basis. The community can also provide human resources for construction or system repair, thus reducing the costs to government. And of course if management and administration of the systems after construction remain with the community, the expense to the government will surely be reduced.

However the ability and willingness of the community to take on project responsibility, especially the kinds of tasks that follow rehabilitation, depend on at least four factors: a high level of community participation from the inception right through the different phases of project development; the existence of (or potential for) local organizational capacity capable of decision-making in relation to system management and resource mobilization for irrigation-related tasks; economic and soical incentives for participation which would include agricultural prices that would encourage farmers to contribute towards the system; and clear-cut property rights in land, water and the irrigation works that bind the community together and provide a reason to come togehter for group decision-making and other irrigation-related tasks.

It can be argued that in Sri Lanka where state penetration since the 1930's has been extensive, and strong links have been forged with the state apparatus and the market, village communities can no longer be expected to have local organizations that are autonomous and totally community - based. In that sense, it is only realistic to expect some degree of state involvement in small-scale irrigation systems. State recognition may be a pre-requisite to formalizing local organizations so that they may for example, be able to obtain credit or be involved in construction, and state financing may be the expedient route to physical rehabilitation of the system. The question then is, to what extent is farmer participation warranted and expected and is the structure under VIRP an effective mechanizm for eliciting the anticipated degree of farmer participation.

The VIRP does expect farmer participation in irrigation-related tasks subsequent to rehabilitation. It expects this participation to be one of taking over responsibility for system O + M and for enforcement of rules with regard to it. It expects to enlist this participation through a semi-farmer organization - the Tank Committee - which consists of farmer representation and state representation.

It appears that the problem for VIRP arises because it expects the kind of farmer involvement or participation (after the state-sponsored rehabilitation exercise), that can emerge only if certain prior conditions conducive to farmer/community participation are met. But in a situation where local organizational capacity is hardly involved in the different phases of system rehabilitation and development, and thereafter is called upon only for undertaking irrigation-related tasks with little concommittant decision - making responsibility, it is difficult to expect effective farmer participation that is at the same time self-reliant and self-sustaining and is willing to take on future responsibility for system operation and maintenance.

Additionally the APT which is no more than a bureaucratic appendage of the DAS (perhaps only more mobile) has been called upon to perform what is in a sense a catalytic role, and promote farmers to organize themselves in "hydrological" groups and thereafter into a Tank Committee. A team that is composed of three government officers selected for their technical skills and whose task is primarily to formulate an appropriate water management programme is unlikely to have the resources or the skills required for organizational activity.

Where the VIRP could have profited was to have paid more attention to the local community structure, including existing institutional arrangements and appropriate types of leadership that could be mobilized for irrigation water management, to have considered alternative investment approaches for rehabilitation and to have involved farmers more in the rehabilitation process. But as it chose fit to use the APT - which is only an appendage of the existing bureaucratic structure - as the basic mechanism for ensuring post-rehabilitation system operation and maintenance and the Tank Committee which is weighted by government presence, and functions only as a kanna meeting, it is clear that the main thrust of the VIRP is not to promote participatory farmer management of the irrigation system, in any sustained way. Rather the whole rehabilitation-cum-water management programme under

VIRP has served to consolidate the government's role in irrigation water management under village irrigation systems. In doing so the state has once and for all established its lead role in providing "services" to the rural areas. Given the continuing thread of welfarism that pervades government policy, this is perhaps not inconsistent. What is problematic is if the state thereafter anticipates that future irrigation responsibilities will be assumed by the local community.

To summarize, village irrigation systems in Sri Lanka have become increasingly integrated into the national economy and society. The VIRP is an example of deliberate and focused State intervention into village irrigation systems through a process of physical rehabilitation, coupled with a water management/institutional component. The VIRP, by physically rehabilitating village irrigation systems, by providing advice on appropriate operation and maintenance activities and on new agricultural practices, and thereafter by introducing an institutional arrangement to implement the latter, is concentrating and consolidating the State's role in village irrigation systems. In doing so it gets the job done; physical rehabilitation of the system is accomplished, maintenance work is done, water is relatively well distributed and there is adherence to a prescribed water management programme. Indeed, all this matches the people's perception that since the state "owns" the irrigation system it is also responsible for ensuring the performance of system O + M tasks. The problem however arises when the State deems it fit - not the least because it cannot shoulder all the administrative, financial and logistic burdens of irrigation management - to hand over some of these activities to the community. Chances of motivating the participation of farmers for sustained local group action at this stage become problematic.

Possible Research Areas:

There are several research issues relating to small-scale irrigation which surfaced when doing field work for the ARTI study on VIRP and when reviewing the available literature, which bear mentioning.

These are briefly the need to explore in depth:

(1) the patterns of local resource mobilization under small-scale irrigation systems, including incentives and sanctions for participation.

(2) the impact of different forms of state intervention for property rights in land, water and the irrigation works and consequently for local capacity to manage them.

(3) the extent and the implications of fragmentation under small-scale irrigation systems, for productivity and net returns from rehabilitation.

(4) the differences in water source-anicuts versus tanks-for social organization and institutional arrangements for irrigation water management.

(5) a more realistic definition of minor irrigation than one determined by command area alone.

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FOOTNOTES

1. Minor irrigation works are defined as those under which the extent irrigated is less than 200 acres. In this paper, the terms minor irrigation, village irrigation and small-scale irrigation are used interchangeably.

2. The tanks predominate in the dry zone and anicuts fall into the intermediate and wet zone areas.

3. This includes schemes currently in use but at low levels of efficiency and those abandoned some years previously and where no cultivation is done.

4. Planned now to be extended till 1987.

5. For a district-wise breakdown of expenditure and physical progress in rehabilitation from 1981 to 1985 - See Annexe 1.

6a. See Annexe IV for a list, by district, of the irrigation systems where there is a DAS water management programme.

6b. The World Bank Staff Appraisal Report Sri Lanka: Village Irrigation Rehabilitation Project. No. 3363 - LE 1981.

7. The DO was a recent addition to the APT, upon recognition of the importance of paying attention to the social and community aspects of village irrigation.

8. The APT members are given a 3-week intensive training, followed annually by a two-week refresher course.

9. This is in conformity with the proposed amendments to the Agrarian Services Act of 1979.

10. Elected under the Agrarian Services Act No. 58 of 1979.

11. Lowest level Extension Officer.

12. Though it is considered preferable that those elected own land in the command area, there is no means to ensure this.

13. Manual on Village Irrigation. Department of Agrarian Services April, 1984.

14. The tank supervisor position has however been abolished recently.

15. Verbal discussion with VIRP Project Director/ID.

16. District Agricultural Committee.

17, The range ID/DD's, ASC/DAS and in the event that land has to be alienated, an officer from the Land Commissioner's Department.

18. See. S.Abeyratne and J.Perera, "Change and Continuity in Village Irrigation Systems : A case study in the Moneragala District, Sri Lanka". ARTI, 1986 forthcoming.

19. J.Medagama "Some Observations on Farmers' Involvement in the VIRP, Sri Lanka" (unpublished paper), 1982.

20. According to the former VIRP Project Director/ID these farmer meetings are held in approx. 80% of the cases.

21a. In fact the ID is now considering introducing a clause when calling for tenders that requires contractors to take on only one scheme at a time.

21b. See Annexe V for a list of tanks/anicuts that have been "handed over" But not "taken over" by the DAS, with a breakdown of reasons.

22. Growing subsidiary food crops in yala has often proved to be difficult to encourage given the risks.

23. J.Medagama. op. cit. p. 16.

24. The Vel Vidane is appointed under the Agrarian Services Act and his real designation in the Act is that of Farmer Representative (FR). But as there are so-called Farmer Representatives elected on the basis of a field channel under VIRP, the old designation of Vel Vidane is attached to the person who is elected under the Agrarian Services Act. The latter is elected for a period of 3 years and cannot be removed by the farmers. If the latter wish, they can pay him a ruwandiram but evidently this rarely happens, perhaps reflecting the fact that the Vel Vidane is perceived by the farmer as being really accountable to the state, through the Cultivation Officer.

25. E.R.Leach, Pul Eliya, A Village in Ceylon : A Study of Land Tenure and Kinship. Cambridge University Press, 1971.

26. In the ARTI study (op. cit) it was found that 70% of all holdings are less than one acre.

27. See for example, Barbara D.Lynch "Community Participation and Local Organization for Small-Scale Irrigation". WMS Report 34 March, 1985.

/jl.

Annexe : 1

VILLAGE IRRIGATION REHABILITATION PROJECT

IRRIGATION DEPARTMENT-CONSTRUCTION PROGRAMME

DISTRICTWISE EXPENDITURE AND PHYSICAL PROGRESS FROM 1981 TO 1985

District	1981 to 1984				1985				Total up to 31.12.1985			
	No. of New Items in Pro-gramme	Nos. Comp-leted	Acre-age deli-vered	Expenditure	No. of New Item in Pro-gramme	Nos. Comp-leted	Acre-age deli-vered	Expenditure	Items in Pro-gramme	Nos. Comp-leted	Acre-age deli-vered	Expenditu:
Ampara	24	18	1,329	9,960,000/-	10	04	357	8,335,900/-	34	22	1,686	18.30
Badulla	58	55	2,845	17,030,000/-	23	18	1,217	11,274,700/-	81	73	4,062	28.30
Batticaloa	31	27	2,574	22,640,000/-	10	04	365	7,014,900/-	41	31	2,939	29.66
Jaffna/ Kilinochchi	09	07	804	6,520,000/-	04	02	109	1,716,800/-	13	09	913	8.24
Mullaitivu	31	30	2,782	19,730,000/-	12	04	328	8,355,100/-	43	34	3,110	28.09
Moneragala	52	44	3,883	33,230,000/-	12	05	595	12,183,600/-	64	49	4,478	45.41
Ratnapura	30	25	1,368	10,700,000/-	13	13	929	6,084,200/-	43	38	2,297	16.78
Trincomalee	58	56	5,823	34,010,000/-	19	07	628	5,647,100/-	77	63	6,451	39.66
Mannar	21	20	1,509	13,750,000/-	07	01	50	3,484,800/-	28	21	1,559	17.24
Vavuniya	41	40	3,811	20,490,000/-	14	02	250	10,337,700/-	55	42	4,061	30.83
Galle	09	07	273	890,000/-	06	02	120	1,323,700/-	15	09	393	2.21
Matara	07	07	300	1,960,000/-	08	01	30	1,609,000/-	15	08	330	3.57
Anuradhapura	-	-	-		40	07	287	12,958,400/-	40	07	287	12.96
Kandy	-	-	-		02	-	-	-	02	-	-	-
	371	336	27,301	190,910,000/-	180	70	5,265	90,325,900/-	551	406	32,566	281.25

Source : Department of Irrigation

Annexe I V :

Progress Report on Taking Over of Rehabilitated Schemes From Dept. of Irrigation - Up to 15.10.1985.

District	No. of handing over notes rec. from I.D.	No. taken over by DAS up to 15/10/85	No. not taken over	Reasons for not taking over and remarks
Ampara	17	09	08	(a) Situation in the District is not safe for joint inspections - 2 items. (b) Land has not been alienated in 6 schemes.
Badulla	51	35	16	ACAS has requested DD - I.D. to rectify some defects found at taking over inspections.
Batticaloa	25	13	12	Inspections have been completed, & defects have been reported to DD to rectify.
* Jaffna	06	05	01	Taking over fixed for 5.11.85.
Mannar	16	05	11	Joint inspections have been arranged to take over 9 items, & defects have been reported in respect of 2 items.
Moneragala	34	09	25	Out of 25 schemes to be taken over, 7 items would be taken over by DAS and attend to defects. ID is attending to defects in 18 items before handing over.
Mullaitivu	14	09	05	Dates have been fixed for taking over of these 5 tanks.
Ratnapura	24	22	02	
* Trincomalee	40	21	19	
Vavuniya	33	26	07	Balance 7 works would be taken over after joint inspections.
Galle	07	07	-	
Matara	05	01	04	Shortcomings have been reported to DD - ID after joint inspections with IE.
TotaI	272	162	110	

Source : Department of Agrarian Services