Farmers Groups and Their Viability in Irrigation Management Transfer - A Case Study in Sreeramsagar Project - Andhra Pradesh, India

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INTRODUCTION

IN MANY IRRIGATION systems, due to various shortfalls in the operation and maintenance, water does not reach all the outlets, particularly at the tail end, and there is also lot of uncertainity in water flows. Because of this, individual farmers make efforts to appropriate water for themselves by diverting the flows in the system which further aggravates the situation. The end result of this is that large areas at the tail end in the command remain unirrigated. To remedy the situation and to improve the performance of the irrigation systems, one of the important measures considered essential was to promote irrigation management transfer (IMT) to the farmer organisation (FO), so that various problems can be collectively resolved and sharing of waters equally among individual farmers under the system can be ensured. An environment, congenial for the formation of FOs to take over the irrigation system to be managed and operated by them needs to be developed.

A pilot project was taken up in Sreeramsagar Project, one of the large irrigation systems in Andhra Pradesh (AP), India, to promote the IMT. The aim of our work was not to develop an action plan, and prescribe solutions to the problem as we see them, but to create and develop an environment where initiative can come from farmers to work together as users and generate an awareness and confidence in the FO in tackling the problems by themselves.

Sreeramsagar Project

The main reservoir of Sreeramsagar Project (SRSP) is built across the Godavari River. While the project construction was initiated in 1963, and completed by 1975, the project plans to irrigate an area of 390,000 hectares. There are two main contour canals, one on the left side, to irrigate around 20,000 ha and the other on the right side, which is longer, running a length of 248 kilometers, to irrigate 370,000 ha. It is planned to provide irrigation for about one-third of the command area during the first crop season, from July to mid November, for raising rice crop known as Irrigated Wet (IW). This period coincides with the rainy season. The balance two-thirds area is to get irrigation from mid November to next March, for raising crops other than rice, which require irrigation once in 10 to 15 days. This pattern of irrigation is called Irrigated Dry (ID).

Earlier, attempts were made in SRSP, in the eighties, to explore the scope of farmers' involvement to promote IMT, taking the outlet as a unit to solve the difficulties in water distribution. However, experience indicated that the outlet, being the last hydraulic unit in the system, was more prone to inadequate or unpredictable water supplies and FOs found it difficult to tackle the problem and became defunct within a short period. Hence, it was felt that IMT should be at a point higher than the outlet, say a minor, a larger hydraulic unit, from where the delivery of water can be more reliable.

Three minors, located on Distributary 64 (D- 64),were taken up under the pilot project.D-64, which is 81.26 km from the reservoir on the right main canal, runs over a length of 26 km to provide irrigation for 5,766 ha in 22 villages. In the first season, D 64 is to provide irrigation for 2,086 ha in the lower one-third reach of the system for rice crop and the balance 3,680 ha, in the upper two-thirds length of the distributary is to get irrigation in the second season for growing ID crop. There are 5 minors in the lower reach serving the first crop season, and 10 minors in the second crop season serving the upper reach. This means that in the first crop season from July to early November, the 10 minors in the upper reach remain closed allowing the entire water to go into the lower reach for IW crop. This distributary was selected since it had all the problems met with in the area, like tail enders not getting water, broken and damaged structures along its course, violation of the approved or designed crop pattern, poor maintenance and operation of the system, disputes in water sharing, dissatisfied farmers, etc.

The 3 minors taken up were 5L, 7L and 10L. The minor 10L gets irrigation in the first crop season for IW and the other two minors 5L and 7L get irrigation in the second season, from November to March for ID crop. Each of these minors runs over a length of about 6 to 7 km. The villages served and the command under each vary (Table 1).

Table 1. Area details of the minors.

Minors	Command Area (ha)	Outlets	Villages served
5L (ID)	359.31	22	6
7L (ID)	377.14	19	4
10L (IW)	513.14	18	4
	1,249.59	59	14

The core problem in these minors has been that the upper reach outlets draw more water while the lower reach pipes are starved of water.

Many reasons are attributed for such a situation.

i. Water is not flowing as per the designed discharge, along the entire length of the minor or distributary, due to lack of maintenance and upkeep of the system;

ii. Violating the crop pattern and drawing more water by the farmers in the upper reaches of the minors. They are growing wet as against ID;

iii. Diversion of irrigation waters to non-localised areas; and

iv. Indiscipline and tampering of the system by the farmers, like cross-bunding, removal or damaging of shutters, breaking of structures along the minors, breaching of banks, etc.

The areas irrigated in these 3 minors as against the commandable areas have been ranging between 43 to 75 percent (Table 2).

Table 2. Area actually irrigated in 1989-90.

Minor	Commandable Area	Area Irrigated	Percent Irrigated
5L	359.31	199.89	55.6
7L	377.14	160.65	42.6
10L	513.14	387.16	75.4

PERCEPTIONS OF IRRIGATION AUTHORITIES AND FARMERS

The reasons for the poor performance of the system and non-flow of water to the tail-end areas, according to the Executive Engineer, in charge of operation and maintenance (O&M), were mainly twofold: one, inadequacy of the present maintenance grant of US$ 8 per ha to repair the system and two, uncontrolled indiscipline among the farmers. The first one was attributed to the lack of appreciation of the financial requirements by the concerned higher ups in the government and the second, to the local vested interests. The solutions suggested were release of adequate funds for maintenance by the government and delegating adequate powers to the irrigation officers to deal with the delinquent farmers. Thus, the solutions to tackle the causes or sources of the problems in the system for improving the irrigation, were at the moment, not within his realm and beyond his reach. Under this situation, he feels that nothing can be done by him or his unit.

Farmers in the area however put the blame on the irrigation officials saying that irrigation department personnel at the field level, who are to regulate the flows into each outlet, were rarely seen or do not attend to their duties impartially.

Rajamma of village Vengalapur, the last village, both under 5L and 7L, when asked what she does to get water says "we approach the Lasker.[1] But many a time, he is not available and even if found, does not bother. We make our own efforts to get water as we rarely see the Lasker." To the question "How do you get the water to your outlet and to your field?" the reply was "3 to 4 of our menfolk who are badly in need of water for irrigating their fields join together and move up the minor late in the evening. They go along the minor closing the outlets and removing the

[1]The last field functionary of the Irrigation Department.

obstructions. After doing this in about half of the length of the minor water will start reaching our outlets in small quantities and we, womenfolk, will be waiting in the fields below the outlet to irrigate the fields. We irrigate the fields moving up and down with the help of torches. But even this, mainly fails, as the flow in the minor itself will be small."

A sample survey on the areas irrigated under the minors in D 64 indicated that 16 percent of the area was not getting irrigation in the first crop season while it was as high as 35 percent in the second crop season. The pattern of irrigation (IW or ID) was based on the availability of water (Table 3).

Table 3. Areas irrigated (percent).

Irrigation pattern	First season	Second season
I.W	66	24
I.D	18	41
No Water	16	35
	100	100

PROJECT WORK

Approach

The approach of the action research has been to work with farmers on the methodology for promoting farmer organisations to manage the system and generate sustained interest among them, under a manageable hydraulic unit of the irrigation system, like a minor. Farmers are to be helped and encouraged to come together to think about the problems in water distribution, appreciate the limitations in the overall supply of water, and solutions worked out and implemented for optimum utilisation of the resource and at the same time benefit the entire group of farmers under it. In the whole process of working, emphasis was laid on generating confidence among the farmers in their own capabilities to analyse the situation and develop action strategies. It is also envisaged to promote the working of the group on its own to a large extent and reduce the dependency on irrigation authorities and also assess the level or quantum of assistance the group needs both in improving their skills and support their work through financial and administrative channels.

Work Details

The work done can be grouped into 5 stages as follows:

i. Initial contacts, appraisal of the objectives of IMT with farmers;

ii. Analysis of the performance of the minor and the problems at micro-level.

iii. Help in developing a FO in each minor and identify its responsibilities of work and the rights they can demand.

iv. Helping the FO develop an action plan for maintenance, and prepare an operational plan. This included encouraging the organisation to do collective discussions and working together; and

v. Implementation, monitoring and taking corrective measures needed.

This was followed with an overall self evaluation to assess the progress and the steps needed to make the process of IMT more meaningful and sustainable.

Farmer Organisations

Development of FO was considered to be the main tool. Working with farmers for developing FO was done through the participatory approach, both for gathering the information and for developing action strategies. Group discussions, mapping and transect analysis through field visits along with farmers' group were done. Farmers of all categories and statuses were encouraged to talk, participate in discussions and contribute in the decision-making process. In these discussions the irrigation officials were also involved.

General consensus was to have an organisation at minor level. The activities of the organisation at minor level were also identified as follows:

1. Make efforts to ensure the supply of the designed /required flow into the minor from the distributary. Shortfall of say, more than 10 per cent has to be brought immediately to the notice of the concerned irrigation official, the section officer or Assistant Engineer, and try to get the flows restored. This needs some monitoring of the water flows into the minor. How to do it, and who will do it, were the questions to be solved.

2. Take steps required for the water to flow along the entire length of the minor. The excavation of the minor had been done with progressively reduced carrying capacity. Water has been flowing through damaged structures and a flow regime has got established. However considerable silt was deposited in the minor, and vegetation had come up which was to be removed to help in the free flow of water to the end of the minor. This obviously needed mobilising farmers to do the job, in groups, to work during or before the season.

3. Regulate the flows in the minor by rotation, for ensuring the discharge into each outlet along its length, if necessary by closing a few outlets for a specified period. This needed a broad plan of action indicating the opening or closure of the outlets and deploying the required manpower to do the job of regulating the flows into different outlets. The problem in this was the lack of shutters or gates at the out- lets, which have all been damaged or removed and local innovations or measures had to be adopted for this.

4. Tackling specific problems between the villages, outlets and individuals in sharing water.

The number of farmers in the three minors 5L, 7L and 10L were 1,022, 732 and 866, respectively.

Discussions were held to evolve the pattern for the formation of an FO at the minor level. As the first step, from each of the outlets under 5L, 4 to 5 representatives were first elected by the farmers under it. These representative tail end farmers of all the outlets met in the village Vengalapur. It was agreed, that the FO for the minor should have one representative from each of the six villages served by the 5L minor. In addition a President, Vice-President, and a Secretary were selected. Thus, for 5L minor a total of 9 members were selected. The selection was done by the farmers after internal consultation. The President and Secretary were generally the key persons in the area. The same pattern was followed under 7L and 10L. In these meetings the local irrigation officials also participated.

To facilitate the FO to function effectively, the members made a suggestion that the FO should meet as frequently as possible, to hear the problems, discuss the issues and work out solutions. A central village, was selected for establishing an informal office.

Activities of the Minor Committee

Maintenance of the Minor

This had two aspects: one was repairing the damaged structures, mostly drops, and the other related to removal of silt and vegetation. The first one was costly and needed larger investment. The irrigation authorities informally agreed during the discussions in the first meeting that they would repair the drops, provided the FO agreed to maintain them. The FOs in their meetings, adopted resolutions agreeing to this condition. Estimates for repairing the drops and other structures were made but for want of grants from the government this could not be done. The minor committee did not take this very seriously, as the flow regime had got established in the system, over the years.

The second important aspect was to assess what needs to be done, to clear the vegetation and silt in the minor, so that within the established regime, water can flow up to the end. For taking up this work, the question was, who should do it? Should all the farmers, along the minors do it together, or each group of farmers, of a village do it,

within the length of the minor passing through their village. In the meetings of the FO, it was agreed that all farmers within the command have to join hands. But there was difficulty in mobilising the required man power along the length of the minor. As a practical measure,it was suggested, "let us do it for each village, within its limits by its farmers." However, a few members, particularly from the upper village, asked "why should we do it when the Irrigation Department has the maintenance grant?." Members from other villages said "Yes this is a valid question. But what can be done, when they do not do, we only suffer and not they. So let us do it," and it was agreed to.

Quantity of Water Flow into the Minor

Ensuring the required flow into the minor was expected to play a significant role in IMT as it provided the inherent strength for collective action of the group. After discussions in the meeting, it was agreed that regular monitoring of the minor was to be done for gathering the information regarding the quantity of water flowing at the head of the minor. An educated boy from the village volunteered to measure the flows daily by adopting the area and velocity method. These boys were trained to gather the data daily and the information was made available to the FO.

One significant contribution from this act was, that, more alertness was seen among the field staff of the Irrigation Department, since they were questioned or confronted whenever the flow fell short. Any reduction of more than 10 percent raised alarm signals and activated the process of contacting the concerned irrigation authorities to get the situation remedied. More than the quantity, this aroused an interest among the farmers, and the members of the FO. They were all generally familiar with the depth, and measurement of depth itself gave a feeling that they know "what is coming and what is not coming" and as one member remarked "I can ask the AE or Lasker more authoritatively now, about short supplies or irregularities in supply."

Water distribution

5L and 7L Minors. Another major activity under IMT was to ensure supplies into each of the outlets. It was generally observed that the last 3 to 4 outlets did not have any flows. The first step that the FO of 5L and 7L decided was to close a few upper outlets, for one day in a week by rotation, but the question was who should do it and how. After discussions it was agreed that a helper may be engaged during the season, who would be paid. Here, the problem was how the money needed would be collected. To begin with, it was agreed that the farmers in the last 3 outlets would pay for the helper, as they would be benefitted by this. It was also felt that gradually a common fund should be developed by contribution from all the farmers and this was planned to be pursued after some time.

The pattern of rotation of outlets followed was to close the first 10 outlets during night, and to close the other pipes, excepting the last 4, alternatively for 24 hours. By this, irrigation was available once in 8 to 12 days for each field.

10L Minor. In 10L minor irrigation was available in the first season for growing rice crop, from middle of July to middle of November.

To prepare the fields for transplanting they all know that about 250 mm water depth would be needed. The FO helped in grouping the area under an outlet within the chak into blocks of 6 to 7 ha to which the entire water from the outlet was made available for land preparation, for a period of 5 to 6 days. The field channels at this level were divided, so as to provide water to separate holdings in this block. Since actual puddling was done only in day time, the flows in the nights were allowed through the field channels, in small quantities, into each field and by morning, about 30 to 35 mm depth of water was available. The land was developed into flat beds of about 6 metres by 8 metres, with bunds of 100 mm high all round and they were all made in series to form into small steps. The water, after filling the plot, flowed into the next lower-down plot through a small opening and then to the next plot. In this way, water flowed from plot to plot and very little water was wasted during night time.

The transplanting started in the 1st week of July and went up to the end of August. Up to the middle of August, it concentrated on the upper half, and then moved on to the lower half.

After transplanting, for the next 70 days or so it will be the vegetative phase for the rice crop. The idea of providing irrigation to a rice field once in six or seven days emerged during the course of discussions within the FO. This was supported by their own observations, since once irrigated, water stands in the fields for 5 to 6 days. While an overall agreement was reached on adopting the practice of irrigating standing paddy crop, the issue was how to ensure that this was practiced and how to irrigate fields in rotational pattern, providing waters [at 6 days interval] remained to be solved.

The experience under the old tanks was recalled in the group meetings and the idea of having a separate person exclusively for irrigating each individual field was broadly agreed upon. This person was called the "Neeruganti" (waterman). Reviving the old custom of paying the Neeruganti a remuneration of 25 kg of paddy per ha, after harvest was also thought of. This was in addition to sundry benefits like occasionally giving him food, etc. T h e

Neeruganti was planned to be appointed exclusively by the farmers themselves with the assistance of the members of the outlet. However, in a few [pipes,] farmers felt they could manage the irrigation by themselves. Since nothing was to be forced on the farmers, it was felt that this should be allowed to be followed and collective action was encouraged.

Monitoring of this cycling of irrigation was done in three outlets, one in the head reach, one in the middle, and the other at the tail reach which showed the pattern of sharing (Table 4).

Table 4. Sharing of irrigation - 10L.

Location of the pipe	Pipe No.	No.of groups or blocks in the chak	Average area in one block (ha)	Average interval for irr-gation (days)
Head	P1-1L	5	9	5
Middle	P9	3	6	5
Tail	P11 & P12	5	8	6

This on the whole, provided a sense of confidence among the farmers and their groups.

WATER BUDGET

The water budget worked out for the two seasons indicated that efficiency in the water use has moved up (Table 5).

Table 5. Water Budget.

Particulars	5L	7L	10L
1. Total water supplied during the season in the minor (lakh cubic meters	24.5	23.02	46.09
2. Area irrigated (prior to IMT)	199	160	387
2. [a] Gross water use(cubic meters/ha)	2,186	4,387	12,065
3. Area irrigated with IMT	327	315	452
3. [a] Gross water use(cubic meter/ha)	7,416	7,307	10,329
4. Percentage increase in area irrigated	40	49	15
5. Percentage increase in irrigation water use	64	96	16

This increase in area irrigated under each of the 3 minors with the same quantity of water has been significant.

This almost corresponds to the area which the available water can support and brings out the point that the FO through IMT in the use of irrigation water can benefit large number of farmers, particularly at the lower reach.

CROP PATTERN

The important crops in the area under ID, have been maize and turmeric before IMT. These crops re- quire about 10 to 12 irrigations and to get so many turns of irrigation during the crop season was a problem. The question was can this crop be not changed to another crop, which needs a lesser number of irrigations and is equally remunerative. The groundnut (peanut) crop fitted into this category well and the idea of change of crop pattern was pursued. This crop needed about 4 to 5 irrigations. The efforts of water management by the farmers themselves and the operational plan to ensure water flow into all outlets, gave the added confidence and groundnut crop was taken up. For example, under 5L minor, groundnut was grown on 60 ha in 1989-90 and this increased to 124 ha in 1991-92. There was a corresponding reduction in maize and turmeric crop. The situation was the same in 7L also.

SELF EVALUATION

A workshop was organised with the members of the FO and farmers of the 3 minors, at the end of second year to assess overall performance, problems faced, and support facilities needed to the FO. Based on the working in the two seasons, the following issues came out prominently, to make the IMT more effective and a reality:

a. For IMT to be viable it needs an assurance on quantity of water to be supplied at the particular point in the system. The effectiveness of the FO will be better where such an assurance of water supply can be effectively done.

b. The lowest functionary of the Irrigation Department at the field level has to work with the FO, so that he can be the major link in ensuring the supplies.

c. Even though farmers are willing to contribute for the regular maintenance, about 30 percent of the maintenance grant may be given to the FO for attending to various requirements like providing additional manpower during the season and a few essential repairs.

SOCIAL PROCESSES

In the process of working, we could see many aspects and issues, conflicting and sometimes complementary, come into play, like the personal and group interests of farmers, deficiencies within the irrigation system, functioning of the irrigation officials at different levels, procedures and practices followed in water regulation, socio-economic pressures and finally the political and administrative directions, interferences and preferences.

With the initiation of the concept of development and implementation of IMT, the first threat was the "ego" of the established groups who earlier had their own way of getting irrigation water and the second threat was, hurting the feelings of the irrigation personnel, particularly at the field level who, for various reasons, had an easy go.

The social processes experienced through our working has made it evident that certain knowledge, skills and changes in the attitudes of both the farmers and irrigation officials working in the field are necessary for achieving the IMT.

Communication

Communication among the concerned parties is essential to discuss the problems and possible solutions. Exchange of ideas and information through effective communication patterns like meetings, discussions, pamphlets, etc., make the whole approach of IMT easier and lay the ground for its sustainability.

Decision Making

Decision making is an important tool in the irrigation management. Who makes decisions, how they are made and how all the concerned, particularly farmers are involved are the important issues to be taken care of.

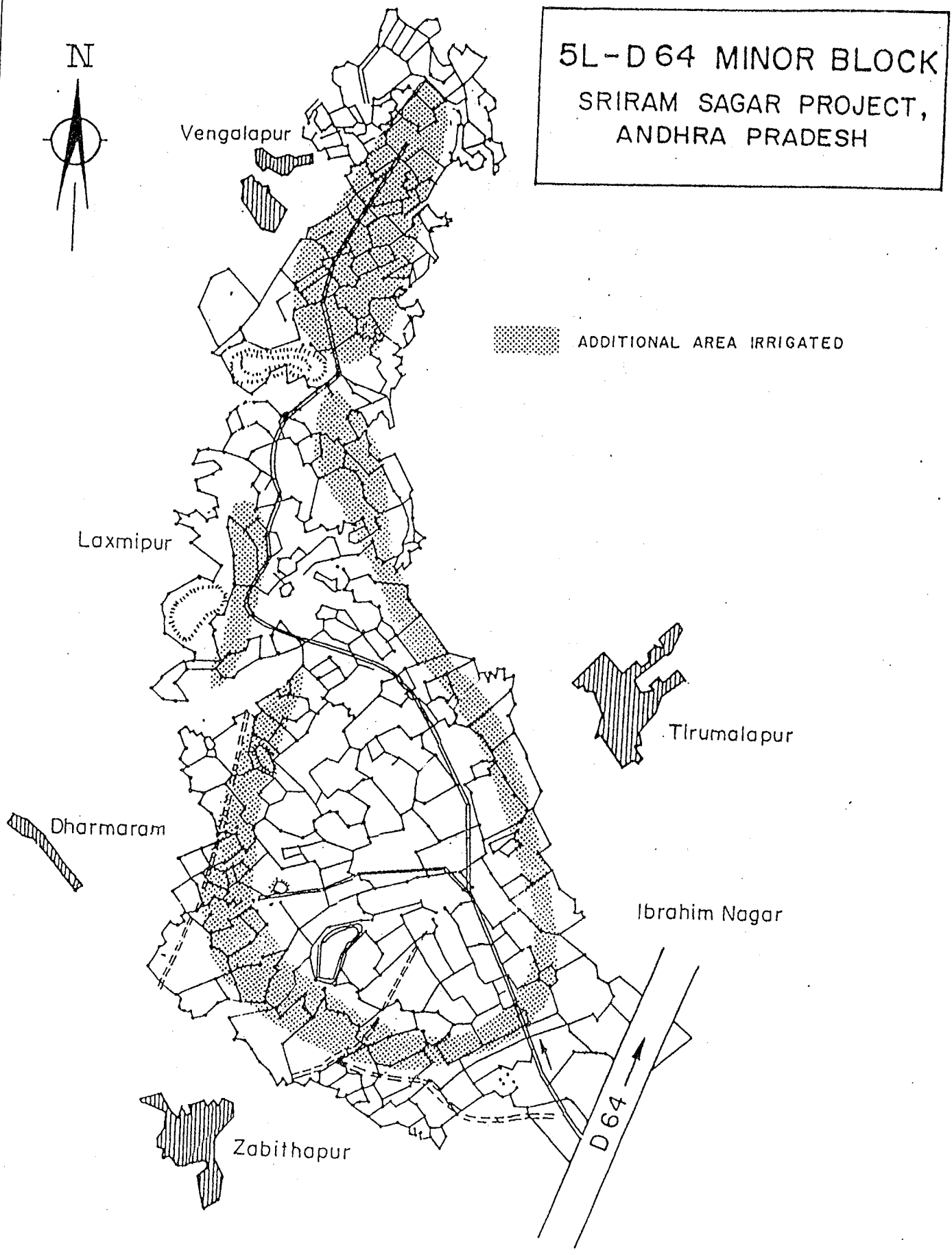
The involvement of the FOs in the decision of the release of the water in the system is essential while they make other important decisions like maintenance work which would enable them to decide on the priorities.

Also, the FOs should have easy access to all the information required to make decisions in their meetings. A active role in decision making encourages the FOs to develop confidence and an urge to co-operate and make the IMT sustainable.

Conflict Resolution

The major source of conflicts is essentially in relation to water supplies - its availability in time and in adequate quantities.

Working out an operation plan for equitable water distribution alone may not reduce the conflicts. A change in the attitude of the farmers, particularly the upper reach farmers, becomes essential. Team spirit, co-operation and the willingness to share, should all be inculcated in the farmers. This would generally reduce the conflicts enabling the FOs to concentrate on more constructive work.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SRIRAM SAGAR PROJECT,
ANDHRA PRADESH
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Laxmipur
Tirumalapur
Dharmaram
Ibrahim Nagar
Zabithapur
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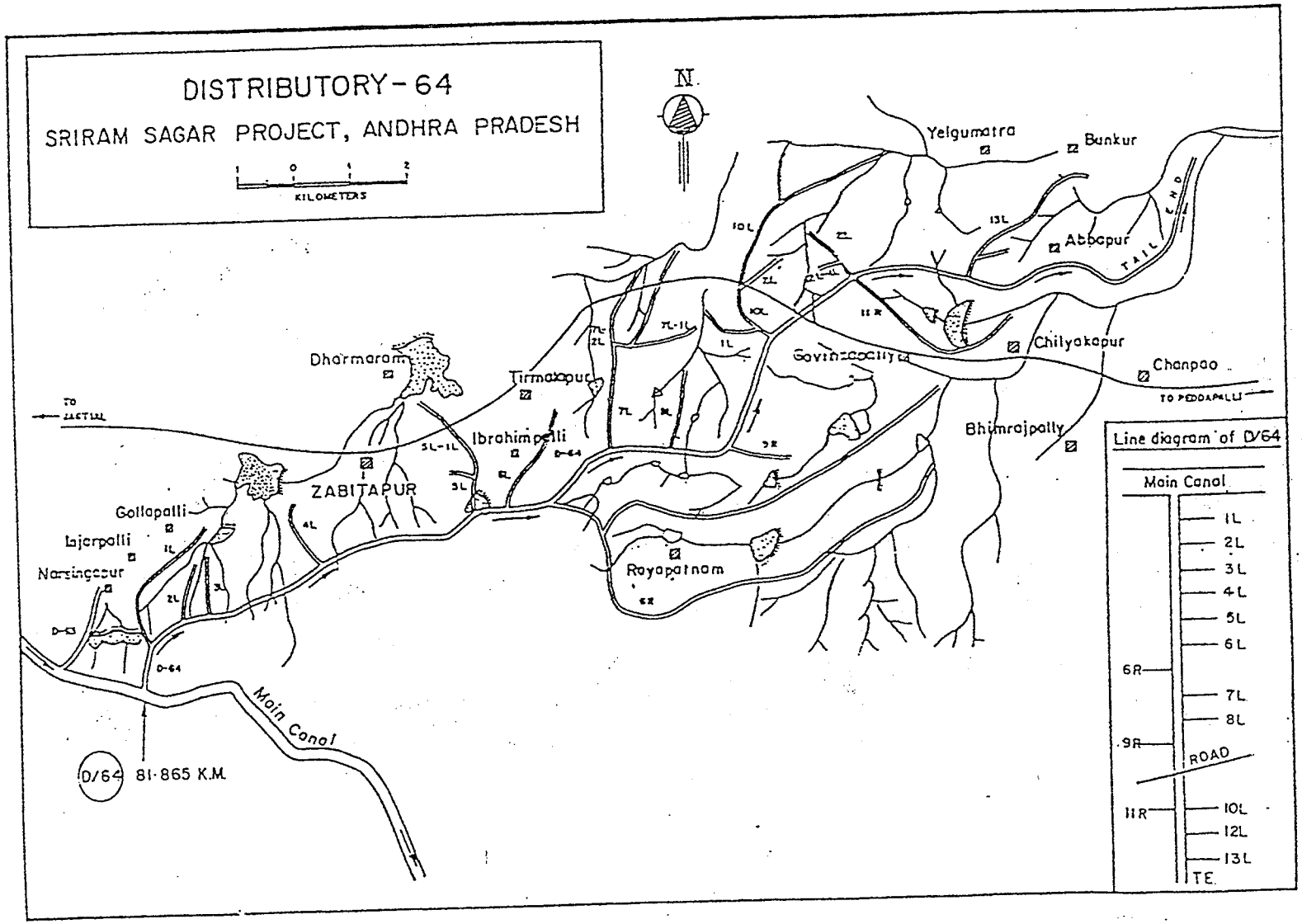
DISTRIBUTORY-64
SRIRAM SAGAR PROJECT, ANDHRA PRADESH
KILOMETERS
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Line diagram of D/64
Main Canal
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