



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

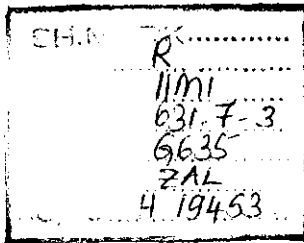
Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

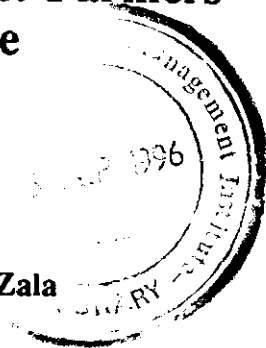
*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Status of Irrigation Management Transfer in India

**Water Users' Association in Bhima
Lift Irrigation Scheme: Farmers'
Experience**



Mahendrasinh J. Zala



**Indian Institute of Management,
Ahmedabad**

**International Irrigation Management
Institute, Colombo
December, 1995**

H 19453 < 2

List of case studies published in local languages under Irrigation Management Transfer Project

Case Studies conducted in Gujarat and published in Gujarati

1. Water Users' Association in Ankav Subminor, Mahi Kadana Project: Farmers' Experience
2. Water Users' Association in Right Bank Canal of Pingot Medium Irrigation Project: Farmers' Experience
3. Water Users' Association in Left Bank Canal of Baldeva Medium Irrigation Project: Farmers' Experience
4. Water Users' Association in Bhestan Minor (Mohini), Ukai Kakrapar Project: Farmers' Experience
5. Water Users' Association in Bhima Lift Irrigation Scheme: Farmers' Experience

Case Studies conducted in Maharashtra and published in Marathi

1. Water Users' Association in Phulewadi Lift Irrigation Scheme: Farmers' Experience
2. Water Users' Association in Kadoli Lift Irrigation Scheme: Farmers' Experience
3. Water Users' Association in Minor 7, Mula Project: Farmers' Experience
4. Water Users' Association in Parunde Minor Irrigation Project: Farmers' Experience
5. Water Users' Association in Hadshi Minor Irrigation Project: Farmers' Experience
6. Water Users' Association in Minor 17, 18, 18A, 19 and Distributary 1, Waghad Project: Farmers' Experience
7. Water Users' Association in Minor 10, Bhima Project: Farmers' Experience

Case Studies conducted in Tamil Nadu and published in Tamil

1. Water Users' Association in XIth Branch Canal, Periyar Vaigai Project: Farmers' Experience

Foreword

This booklet is one of the series of short narratives about farmers' efforts to create and manage water user associations. The purpose of the series is to provide other farmers in the state with succinct, readable, and interesting information about these efforts that might enable farmers to improve their access to the irrigation services. This study is being published in both Gujarati and English. See the back cover for information about the other narratives in this series.

This narrative was written by Mahendrasinh J. Zala under the guidance of IIMA and IIMI team members. He lived with the farmers described here from October, 1994 to April, 1995. While there, he interviewed and observed the farmers in order to document the water user association and irrigation management transfer process at this site. The information presented here reflects the ideas and opinions of the farmers themselves.

Mahendrasinh J. Zala's effort was part of the study on Status of Irrigation management Transfer in India being carried out from 1993 to 1995 by the Indian Institute of Management, Ahmedabad, and the International Irrigation Management Institute, Colombo, with funding from the Ford Foundation. The study investigated and documented the policies and activities of agencies, non-governmental organizations, and others with regard to promoting irrigation management transfer from the government to farmers. The overall goal was to contribute to formulation of effective policies and programs with regard to irrigation management transfer in India. In addition to this series of short narratives, study results are reported in more traditional research reports and other forms.

The primary members of the IIMA/IIMI study team were Shashi Kolavalli, Amarlal Kalro, Gopal Naik, and S. Ramnarayan from IIMA, and Jeffrey D. Brewer, R. Sakthivadivel, and K.V. Raju from IIMI. Editing in Gujarati was carried out by Barin Mehta. The edited first draft was translated into English and reviewed by the study team, particularly by Amarlal Kalro and Gopal Naik.

The members of the study team, including Mahendrasinh J. Zala, wish to thank the people of Village Bhima, concerned government and non-governmental agencies who gave their hospitality and time to answer questions and explain how things work without expecting compensation. We sincerely hope that their experiences will be useful to others.

Jeffrey D. Brewer
IIMI

Gopal Naik
IIMA

Water Users' Association in Bhima Lift Irrigation Scheme : Farmers' Experience

Bhima village is situated in a notified backward area in Godhra taluka of Panchmahal district, 5 km from the famous cold and hot water springs of Tuwa village. Bhima is a small village with a population of 400. Patels, Barias and tribals are the main communities living in this village. Previously the area was inhabited by only some tribals. About 30 years ago, under the Land Development Programme, a major part of the jungle was cleared and converted into cultivable land. Many farmers came from Broach and Baroda districts to settle in this village.

The area receives rain during the south-west monsoon but the rainfall is low and irregular. The soil is sandy and black. A small pond gets filled with rain water that lasts for a few months. This water is generally used as drinking water for cattle and for washing clothes. There are only four wells which are rarely used for irrigation because the water would be exhausted quickly. Many times the people even faced shortage of drinking water, as there was only one fresh sweet water well.

Prior to 1977, the farmers practised only rainfed agriculture. The land remained fallow after the kharif season. The main crops were pulses and cotton. The yields were poor, and the farmers used their own farm produced seeds. If there was little or no rain, a scarcity - like situation prevailed. The landless labourers migrated to other places in search of work. Owing to shortage of water, cattle rearing was also very limited. There was no grass in winter and summer. The farmers, therefore, reared only buffaloes. There were two or three rich farmers who owned tractors. There was no cooperative institution in the village and there was no cooperation among the farmers either.

Bhima village is well connected with Godhra, the district headquarters, about 20 km away by a good road. However, the frequency of the bus service very poor. The village had electricity but no telephone. There was

only a primary school, the children had to go to a nearby village or Godhra for further studies.

Most farmers stayed in huts and temporary houses. The condition of the tribals was poor. Only one or two had land. Others did labour work in Bhima and adjoining villages. Most were illiterate and engaged even their children in labour work instead of sending them to school.

Formation of the Water User Society

In 1972, for the development of Panchmahal district, the government of Gujarat began constructing the Panam dam in Santrampur taluka approximately 40 km from Godhra town. The work was completed in 1977. The main canal was designed to be a contour canal and only the right side of the canal was to get irrigation facilities. Bhima village, located in the left side of the canal, fell outside the command area. A leading farmer of Bhima village, Manibhai L. Patel, who was familiar with lift irrigation, thought of lifting water from the main canal and supplying it to the farmers through pipelines. He, along with Thakurbhai P. Patel and Jashbhai T. Patel, and other leaders from the village proposed a cooperative irrigation society in 1982. Initially they could mobilize support from only 16 members. In 1983, the former MLA of the area, Manibhai Patel approached the Minor Irrigation Department to lift water from the main canal. He could also persuade the district panchayat to support the project. Finally the Minor Irrigation Department of the district panchayat agreed to finance this project under the Drought Prone Area Programme.

The district panchayat hired the services of the Sadguru Seva Trust, an NGO located at Dahod having considerable experience with lift irrigation schemes, to survey the area and design the project. According to the plan prepared by the Trust, the estimated cost was Rs.7,57,155. Construction began under the supervision of the Minor Irrigation Department in 1986 and was completed by the end of the same year. The actual expenditure came to Rs.7,90,696. The electric connection charges of Rs.9220 were paid for by the Minor Irrigation Department. In October 1987, the Minor

Irrigation Department handed over the project to the then Chairman of the society, Manibhai Patel. The net command area was expected to be 157 ha spread over Bhima, Dhanol, and Chanchpur villages.

The Bhima Irrigation Cooperative Society was registered in July 1986. The sixteen members who formed the society at that time had to complete all the formalities on their own for they did not receive any help from either the government or other institutions.

Objectives of the Society

The principal aim of the society is to provide irrigation facilities to unirrigated land. The society would undertake the following tasks to encourage cooperative sentiments amongst members and also to promote self-sufficiency:

1. To provide water to cultivable land and to encourage land owners, and permanent and protected tenants to consolidate their land holdings.
2. To complete necessary works for water distribution.
3. To construct and repair wells, ponds, tanks, canals, and service roads and keep them in good condition in order to provide irrigation.
4. To purchase or rent pumps, machinery, and other equipments for providing irrigation.
5. To raise funds by contributions from members and/or by mortgaging properties of the society for purposes of purchasing equipments and for supplying irrigation water.
6. To seek advice from agricultural subject matter specialists for helping members improve their farming practices and to propagate better practices.

7. To undertake activities which will promote self-sufficiency, frugality, and cooperation among members.
8. To undertake additional activities to make the best possible use of people and equipment.
9. To undertake tasks which will help fulfil the above aims and with the permission of the general body and the Registrar of Cooperatives to undertake activities to provide drinking water to members.

The first general body meeting was held on September 16, 1986, in which Manibhai Patel was elected chairman of the society and Thakurbhai Patel was appointed as secretary. Irrigation started during the kharif season of 1987-88 after the lift irrigation scheme was handed over to the society.

Bhima Lift Irrigation Scheme

The Bhima Lift Irrigation Scheme is situated on the left bank of the Panam main canal at a distance of 78,515 km from the dam site. Two 30 HP motors have been installed, with each pump having a capacity of 2.5 cusec (70 litres per second). A big chamber has been constructed near the pump house. Water is lifted directly from the main canal to this chamber through a pipeline. A 2.5 km. long cement concrete pipeline has been laid underground from the pumping station to the main chamber. There are 14 chambers. At different places, pressure valves have been installed. With such an arrangement, flow of water can be controlled. Water is pumped from the canal to the main chamber while it flows from the main chamber owing to air pressure and slope of the land. There is a 10 ft. slope between the pumping station and the main chamber.

Water Distribution System

Earlier any member of the society could ask the pump house operator to operate the pumps so that he could get water to irrigate his land. In the general body meeting held in 1994-95, it was decided that this power would vest only with the chairman and the secretary of the society. The

society decided that when both pumps are operating, six chambers (previously five) would be opened for irrigation. Two chambers on the main pipeline must be kept open so that there is no overflow from the main chamber. When there is less demand for water, only one pump would be operated and any three chambers opened. Each chamber has a different flow rate (discharge).

Farmers requiring water approach the secretary and indicates the three chambers closest to their fields. To be eligible to receive water, farmers must be members of the society and must have paid their water charges for the previous year.

By and large farmers take water from a chamber in rotation according to an informal understanding among them. Usually, the secretary instructs the pump operator to open a chamber based on the demands for water registered with him. The pump operator records in a register the name of the farmer, date, chamber number, and time when the farmer's turn begins and completes his irrigation. Whenever a farmer completes his irrigation, he informs the operator. The pump operator also keeps a daily record of the number of hours the pump was operated, farmers provided irrigation and the chamber through which irrigation was provided, and the duration for which the chamber was open. Members are allowed to take as much water as they want from a chamber. However, if one farmer is drawing irrigation water from a chamber and another farmer wants water from the same chamber, he has to wait till the first farmer completes his irrigation.

Water Charges

The society has fixed water charges on hourly basis. The rates vary for the 14 chambers because of different discharges from these chambers. The charges are decided by the general body. There have been two changes in the water charges. The first change was made in 1992 on the basis of the accumulated experience and the observed flow rates from the chambers. The second change was made in 1993 when the government increased the electricity charges for the agricultural sector from Rs.192 per hp to Rs.600 per hp. (The water charges are given in Appendix 1.) In

1994-95, the society increased the maximum number of chambers that could be opened from 5 to 6 when both pumps are operating to generate additional income.

At the beginning of each season every farmer has to apply to the Panam Irrigation Department, indicating the survey number of the field, irrigated area, and the crops grown. The farmer has to pay in advance to the irrigation department 50 per cent of the water charges according to the crop, season, and area. This must be paid within the time period stipulated by the irrigation department. If he defaults, the farmer has to pay an additional 50 per cent as penalty. The rates charged by the irrigation department are given in Appendix 2.

Cropping Pattern

There are no restrictions on the cropping pattern and farmers decide the crops they wish to grow based on soil conditions and other risk factors. Owing to the availability of irrigation farmers are able to do multiple cropping compared to only kharif cultivation earlier. The main crops are tur, maize, and cotton in Kharif and wheat, castor and gram in rabi. In summer most of the land is left fallow because of stray cattle from nearby villages. Just about 15 per cent of the area is cultivated in summer and the main crop is groundnut. Farmers have also reported significant increases in yields, particularly in tur. Irrigation has also resulted in increased usage of fertilizers, hybrid seeds, and pesticides, and adoption of intensive agronomic practices. As a result, members' incomes have increased and the overall condition of the village has improved.

Over the years, there has been some increase in the gross irrigated area. The Panam main canal, even though meant to be a perennial canal, had to be closed down on several occasions for repair and maintenance. The gross irrigated area is also influenced by the monsoon. For example, in 1994-95, because of very heavy rains, it was not possible for the farmers to cultivate the usual kharif crops and had to keep their land fallow. However they were able to get a good harvest of maize and gram in the rabi season.

Financial Position

The main income of the society is through water charges collected from farmers. The society has to pay electricity charges of Rs.36,000 per year. The other major cost is salaries and wages. The society pays its secretary Rs.2000 per year and Rs.900 per month to each of the two pump operators. The society also has to incur expenditure on repairs of the pipelines and machinery.

The society does not provide for depreciation. In 1994-95, its income from water charges was Rs.1,29,988 and its profit before depreciation was Rs.55,273.

Recovery of water charges is quite high because the society does not provide water to defaulters. In recent years there has been a decline in recovery. Till April 1995 the society could collect only Rs.25,000. Rich farmers invariably pay on time. The defaulters are the small and marginal farmers.

Management of Society

Management of the society is by and large perceived to be good by the members. However, some members are not satisfied with the water distribution system. The society has been making strenuous efforts to recover water charges. The membership of the society increased from 16 at the time of formation to 63 by 1989. The society is not interested in increasing its membership even though it has received applications for membership.

As the society does not have a building of its own, all activities are carried out from the residence of the secretary. Presently the president, secretary, and seven committee members are responsible for managing the society.

A general body meeting of the society is held each year and the president, secretary, and committee members are elected during this meeting.

Important decisions relating to pricing of water are taken here. There are very few meetings besides the general body meeting. Meetings of committee members are not very frequent.

There is some misunderstanding at present among the farmers of the three villages. Some farmers have alleged that the location of the main chamber was changed from that stipulated in the plan. Most of the members as well as the minor irrigation department staff were unaware of this change. Because of this change, farmers of Dhanol village feel that the irrigation area has been reduced. Another issue contentions is enrolment of new members. The present committee is not interested in enrolling new members since it believes that increased membership will pose more problems. The issue was referred to the district registrar of cooperative societies in 1991 who ordered the society to enrol those farmers who had earlier applied for membership. The order has not been implemented so far.

In the general body meeting held just before the commencement of the rabi season of 1994-95, the society empowered the president and secretary to distribute water. Distribution is generally done under the guidance of the secretary. Members cooperate with each other in matters of water distribution. The society also gives water to non-members at the same rate as members. Non-members are, however, given water only when it is possible to operate both pumps.

The society is not engaged in any other activity except water distribution. Sometimes there have been problems arising from canal closure and non-availability of power. Farmers having fields very close to the canal use their own or hired diesel pump sets to lift water directly from the canal whenever it is in operation. There is comparatively less misuse of water because farmers have to pay on volumetric basis.

The secretary spends approximately 5-6 hours a day and maintains accounts of the society as well. He receives help from other influential community leaders who are members of the society.

Benefits to Members

Formation of the society has resulted in the following benefits to the members:

1. Unirrigated land has been converted into irrigated area.
2. The cropping intensity has increased considerably. Earlier the farmers were cultivating only during kharif whereas they now grow crops in rabi. Some cultivation takes place in summer also.
3. Whenever the monsoon failed, scarcity conditions would prevail. Even if there is no rain during the kharif season cultivation is possible.
4. Farmers having lands far away from the canal, particularly small farmers, have benefited by the formation of the society. It would never have been possible for them to make investments to lift water.
5. Changes in the cropping pattern towards higher value crops and increased yields have led to increased incomes. The general condition of the village has improved. The farmers' financial position has improved. Before the formation of the society, their net income was approximately Rs.3000 per ha which has now increased to approximately Rs.12000 per ha.
6. There has been some increase in goodwill arising out of the cooperative action of the members.

Future Scenario

By and large the members are satisfied with the performance of the society. They are interested in making the field channels permanent; at present, there is considerable wastage of water. They also plan to lay more pipelines as this will result in the water reaching their fields faster and reducing wastage.

The functioning of the society depends upon the extent of cooperation among members. There seem to be some difficulties and grievances which can hamper future performance. The society will also have to consider at some time better methods of determining water charges so that it can build enough reserves to provide for depreciation. In fact, if depreciation were to be provided, the society would not have made a profit in any of the eight years of its operation.

Appendix I
Water Charges of the Bhima Irrigation Cooperative Society

| Chamber | Water Charges per hour (Rs.) | | |
|---------|------------------------------|---------|--------------|
| | Up to 1991-92 | 1992-93 | From 1993-94 |
| 1 | 25.00 | 28.00 | 44.80 |
| 2 | 25.00 | 28.00 | 44.80 |
| 3 | 25.00 | 16.00 | 25.60 |
| 4 | 25.00 | 16.00 | 25.60 |
| 5 | 25.00 | 18.00 | 28.80 |
| 6 | 21.00 | 15.00 | 25.60 |
| 7 | 16.00 | 10.00 | 24.00 |
| 8 | 16.00 | 16.00 | 25.60 |
| 9 | 16.00 | 10.00 | 16.00 |
| 10 | 16.00 | 7.00 | 11.00 |
| 11 | 16.00 | 10.00 | 16.00 |
| 12 | 16.00 | 10.00 | 16.00 |
| 13 | 16.00 | 10.00 | 16.00 |
| 14 | 16.00 | 9.00 | 14.40 |

Appendix 2
**Seasonwise Irrigation Rates of the Irrigation Department
(1994-95)**

| Season | Type of Crops | Rate per Hectare (Rs.) |
|--|---|---------------------------------------|
| Kharif (monsoon) Date: 16.6.1994 to 15.11.1994 | 1 Paddy | 110.00 |
| | 2 Seedlings of paddy - 1 month before sowing | 125.00 |
| | 3 New saline land for paddy a) For 1st & 2nd year b) 3rd & 4th year c) 5th & following year | 25.00 40.00 110.00 or 125.00 |
| | 4 Bajri, Bavto, Jowar, Kodari, Maize and last sown jowar a) After kharif season, at the maturity stage | 40.00 5.00 |
| | 5 For Ukai-Kakrapara command area (Kharif) local jowar (season from 1st August to 31st December) and hybrid jowar | 60.00 |
| | 6 Vegetables, grass and except above mentioned crops including pulses and other cereal crops | 60.00 |
| | 7 Groundnut, cotton and except above mentioned crops, other kharif crops | 100.00 |

| | | |
|--|---|--------|
| Rabi (Winter) Date: 16.10.1994 to 15.3.1995 | 8 Wheat, Rapeseed | 110.00 |
| | 9 Gram, Bean and some other crops | 50.00 |
| | 10 Channa | 125.00 |
| Date: 15.11.1994 to 14.4.1995 | 11 Cumin, Fennel, Isabgul | 200.00 |
| | 12 Vegetables, Grass and other cereal crops | 100.00 |
| | 13 Except above mentioned crops, other rabi crops | 150.00 |
| Date: 16.2.1995 to 15.5.1995 | 14 Summer paddy (Date: 10.12.94 to 31.5.95) | 250.00 |
| | 15 Vegetables, Grass and other cereal crops | 140.00 |
| | 16 Summer Groundnut and except above mentioned other summer crops | 200.00 |
| (If necessary summer groundnut season can be considered from 15 January to 14 May) | | |

**Water Users' Association in Bhima Lift Irrigation Scheme:
Farmers' Experience**

© Indian Institute of Management, Ahmedabad, 1995
International Irrigation Management Institute, Colombo,
1995

All rights reserved

Please direct inquiries and comments to:

Information Office
International Irrigation Management Institute
P.O. Box 2075
Colombo
Sri Lanka

2. **Water Users' Association in Kodar Tank: Farmers' Experience**
3. **Water Users' Association in Dusi Mamandur Tank: Farmers' Experience**
4. **Water Users' Association in 28L and 29R Outlets of Mettupalayam distributary in Lower Bhavani Project: Farmers' Experience**
5. **Water Users' Association in Malayadipalayam Distributary of Parambikulam Aliyar Project: Farmers' Experience**
6. **Water Users' Association in A9 Mahilanchery Channel (Saliperi), Cauvery-Valappar Project: Farmers' Experience**
7. **Water Users' Association in Panchanhangipatti Tank: Farmers' Experience**
8. **Water Users' Association in Pillayarkulam Tank: Farmers' Experience**
9. **Water Users' Association in Vagaikulam Tank, North Kodaimelalagian Channel, Tambraparani Project: Farmers' Experience**

For copies please write to:

For Gujarati Case Studies:

**Chief Executive, Aga Khan Rural Support Programme (India),
Choice Premises, Swastik Cross Roads, Navrangpura, Ahmedabad-
380 009. Phone: 079-6427729; 464730; 464157. Fax: 079-464862.**

For Tamil Case Studies:

**Executive Director, PRADAN 18, Pillayarkovil Street, S.S. Colony,
Madurai- 624 016. Phone/Fax: 0452-602247.**

For Marathi Case Studies:

**Director, Society For Promoting Participative Ecosystem
Management, 133/134 Baner Road, Flat No. 2, Vasumati Apartment,
Aundh, Pune- 411 007. Phone: 0212-330786.**