IMPACT EVALUATION OF WATER USERS SOCIETY IN THE COMMAND OF SAMRAT ASHOK SAGAR PROJECT

A DISSERTATION

Submitted in partial fulfilment of the requirements for the award of the degree of

MASTER OF ENGINEERING

in

IRRIGATION WATER MANAGEMENT

By

A. K. GUPTA

WATER RESOURCES DEVELOPMENT TRAINING CENTRE
UNIVERSITY OF ROORKEE
ROORKEE–247 667 (INDIA)

DECEMBER, 2000

CANDIDATE'S DECLARATION

I hereby declare that the dissertation titled **"IMPACT EVALUATION OF WATER USERS SOCIETY IN THE COMMAND OF SAMRAT ASHOK SAGAR PROJECT"** which is being submitted in partial fulfilment of the requirements for the award of Master's degree of Engineering in **Irrigation Water Management** at Water Resources Development Training Centre (WRDTC), University of Roorkee, Roorkee, is an authentic record of my own work carried out during the period of 16th July to 30th December, 2000, under the supervision and guidance of **Dr. S. K. Tripathi**, Professor, WRDTC, University of Roorkee.

The matter embodied in this dissertation has not been submitted by me for the award of any other degree.

Place : Roorkee
Dated : 30.12.2000

(A. K. GUPTA)
Trainee Officer
WRDTC, Roorkee

This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

(Dr. S. K. TRIPATHI)
Professor
WRDTC
University of Roorkee

ACKNOWLEDGEMENT

I express my gratitude and sincere thanks to **Dr. S. K. Tripathi**, Professor, Water Resources Development Training Centre (WRDTC), University of Roorkee, Roorkee, for his valuable guidance, encouragement, suggestions and continuous supervision during completion of dissertation work.

I am greatly thankful to Prof. Devadutta Das, Director WRDTC, University of Roorkee, Roorkee, for his constant encouragement and guidance during the stay at Roorkee. Also, I am thankful to Shri R. P. Singh and all other faculty members and staff of WRDTC for their guidance and help from time to time.

I express my sincere thanks to Dr. R. P. Puranik, Associate Professor, M.P. Water and Land Management Institute, Bhopal for his valuable guidance and help during dissertation work.

I wish to express my thanks to Secretary, Engineer in Chief Water Resources Deptt., Chief Engineer (BODHI), Director (Hydrology), Director (PIM) BODHI and other officers and staff members of Department for sponsoring me to M.E. course in Irrigation Water management at University of Roorkee, Roorkee.

My thanks are due to Shri P. Sampath (Ex. Director WALMI & Retd. E. in C. W.R.D. Bhopal), Shri M. M. Mahodaya (Retd. S.E.), Shri Abhay Jain, A.E., Shri R. B. Verma S.D.O. Salamatpur Sub Division and his staff for their help during the study work.

My special thanks are due to Shri A. K. Gaur Sub Engineer, Shri S. K. Patel, President Samrat Ashok Krishak Samiti and all the members of Managing Committee and farmers for their cooperation and encouragement in field work of data collection.

I express my thanks to my colleagues Mr. A. K. Shende, Mr. M. Golwalkar, Mr. U. S. Rajput for their kind cooperation and help throughout the study period.

Thanks are also due to all, whose work I had used knowingly or

unknowingly for my dissertation work and to my office colleagues and friends for their encouragement and valuable support they have rendered. Also I express my gratitude to my Parents and In-laws for their moral support and blessings.

I will ever remain thankful to my wife Mrs. Arti, son Chi. Arpit and daughter Miss Anmol for their sacrifice, full cooperation, love and prayers without them, my success is worthless.

Finally above all blessings of the God is always with me.

Place : Roorkee

Date : 30.12.2000

(A. K. GUPTA)

SYNOPSIS

India is an agriculture based country and its economy is dependent on agricultural production. The development of irrigation for agriculture production started since a long back in 2nd century A.D. by wells and small tanks in South India. Irrigation water management plays an important role in agricultural production, also it is required to meet out the present demand of food grains and fibres for increasing population.

In India many major, medium and minor irrigation systems were built before and after independence to create the irrigation facilities over the entire country. Madhya Pradesh has a large network of irrigation through major, medium and minor irrigation projects. The potential created is 32.67 lakh ha. while utilisation is just 19.74 lakh ha. (60.4%). The wide gap exists between the potential created and utilised due to infrastructural, social and organisational constraints.

Participatory Irrigation Management (PIM) is viewed by National Water Policy and State Water Policy as means to improve the performance of irrigation system and to reduce the gap between created and utilised potential and also to create better confidence among beneficiaries. The farmers involvement in Irrigation Water Management is reviewed in developed countries like USA, Mexico, Japan and in developing countries like Indonesia, Philippines, etc. and found that it is successful according to local conditions.

M.P. State Government promoted the Participatory Irrigation Management by forming Water Users Society. The Samrat Ashok Krishak Samiti, Sanchi is the first Water Users Society formed to cover an area of 504.43 ha of tail minor of distributary D-2 of Right Bank Canal in Samrat Ashok Sagar Project Vidisha. The Society is registered under M.P. Societies Act 1973 on 22.08.1995.

The impact evaluation of Water Users Society is the main objective of the study. The evaluation of Water Users Society is tried on organisational, water

management, maintenance, financial, socio-economic, training and guidance aspect. The monitoring and evaluation of Water Users Societies are essential since beginning so that any problem, discrepancies found can be rectified timely and Water Users Society function efficiently. The Participatory Irrigation Management can be successful and its benefits realisable only if the Water Users Societies set up are organisationally sustainable and physical system is operationally and financially viable over a long period of time.

A study is conducted for evaluation of Samrat Ashok Krishak Samiti, Sanchi. The command area of Water Users Society served by tail minor is divided in head, middle and tail reach. The head reach village Kamapar, middle reach village Nonakhedi and tail reach village Berkhedi Birsa selected for conducting the personal interview from the actual beneficiaries. Farmers were classified into 4 categories, viz., marginal, small, medium and large farmers on the basis of holding size.

The office bearers and members, total 37 numbers of farmers were interviewed. In the interview schedule questions were asked regarding their knowledge (understanding) about Water Users Associations, attitude to change, team work in the society, leadership support, information input, maintenance and financial process of the Society.

The data were analysed and multiple regression and correlation matrix were developed which shows that education, holding size, team work, leadership influence and socio-economic status are the main characteristics of the member farmers which influence their knowledge about Water Users Associations and level of participation. Thus for sustainable water users organisation these characteristics needs to the improved. Proper motivation, training and guidance in maintenance, management and financial aspects is still required for better functioning of the Water Users Associations.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

AE	Assistant Engineer
A.P.	Andhra Pradesh
CAD	Command Area Development
CADA	Command Area Development Authority
CCA	Culturable Command Area
FO	Farmers Organisation
FRL	Full Reservoir Level
GCA	Gross Command Area
GOI	Government of India
GOMP	Government of Madhya Pradesh
HYV	High Yielding Varieties
IAs	Irrigation Associates
ID	Irrigation Department
JE	Junior Engineer
LID	Land Improvement District
LSL	Lowest Sill Level
M. ha	Million Hectare
M.P.	Madhya Pradesh
MoU	Memorandum of Understanding
MWL	Maximum Water Level
NGO	Non Government Organisation
NWC	National Water Commission
O & M	Operation and Maintenance
OMM	Operation, Maintenance and Management
SAS	Samrat Ashok Sagar
TBL	Top Bank Level
WALMI	Water and Land Management Institute
WRD	Water Resources Department
WUAs	Water Users Associations
WUOs	Water Users Organisations

Chapter 1

INTRODUCTION

"Water is life" is universal truth, without water there is no life. Water is an essential constituent in agricultural production. Water is made available to the plants by nature from rains, dew and soil moisture, etc. The artificial means (surface or subsurface) of application of water to plants is called irrigation.

The term irrigation can be defined more scientifically as application of adequate moisture to the plant root zone at appropriate time to meet out the evapotranspiration requirement of the growing crops and increasing agricultural production.

India is basically an agriculture based country. As per 1991 census out of 84.4 crore population about 74.3 percent population lives in rural area and follow agriculture. Hence all the efforts are being made to increase the agricultural production for the development of agriculture.

Agriculture development depends upon various factors like irrigation, latest agro technology, credit facilities, social and psychological factor. Irrigation is one of the important aspect for the development of agriculture.

1.1 OBJECTIVE OF IRRIGATION

Surface irrigation was started with concept of fairly distribution of water in space and time to protect the crops. It was protective irrigation. Due to advancement of time and technology the meaning of irrigation has changed. Now the irrigation means "To deliver sufficient quantity of water according to the time schedule that matches the requirement of healthy plant growth and fair distribution among many users for maximization of the yield. Nowadays, the irrigation is productive irrigation. The irrigation requirement has changed due to the use of

high yielding varieties of seeds, fertiliser and pesticide application in the fields. Apart from main objective of irrigation for maximization of crops yield other objectives are as follows :

1. Irrigation facilitates farmers to grow HyV and more crops in a year.
2. Irrigation protects large area in case of famine.
3. Irrigation gives surety of water and crop yield.
4. Fertiliser and pesticide can be used for better yield.
5. Salinity and Alkalinity problem of the soil can be solved.
6. Cash crops like sugarcane, cotton etc. can be cultivated.
7. Irrigation projects provides water supply to domestic and industrial area.
8. Plantation can be done along the canal banks side to maintain the hydrological balance.
9. Hydropower can be generated from irrigation project.
10. Irrigation helps in increasing the farm income of farmers.

The society is economically benefitted from the introduction of irrigation. Irrigation in India is considered as social welfare scheme for betterment of farmers and rural society.

1.2 IRRIGATION DEVELOPMENT IN INDIA

The development of irrigation in India started in 2nd century A.D. in Tamil Nadu. The Chola King Karikala built the Grand Anicut in the Cauvery area. The irrigation was done mainly by wells, small tanks and canals.

1.2.1 Irrigation Development in India Before Independence

During the British period, many canal system were built. The important ones are Yamuna Canal in North and Cauvery Delta system in the south, which were remodelled between 1836-66. Many large projects like Upper Ganges Canal in U.P., the Krishna Godavari Delta in A.P. and the Upper Bari Doab canal in Punjab

were constructed, to provide the facility of irrigation. The main objective of irrigation was to provide protective irrigation to crops in the event of draught. The protective irrigation means that a limited amount of water is to be spread timely over as large area as possible to protect as many farms as possible from total crop failure.

The concept of British Govt. regarding irrigation projects was

"The Government desire to get a maximum of income from irrigation by serving maximum area.

The real object of the Government was to construct works within the limit of proper financial equilibrium, which will give the greatest possible advantage to the largest possible area."

Based on the above concept, large number of new projects were undertaken and constructed during 1866-1935. Due to change in the policy of Government and on recommendations of 'Indian Irrigation Commission' (1901) on irrigation as protection against famine, the construction of large projects like Sirhind canals in Punjab, Periyar system in Tamilnadu, Tribeni canal in Bihar, Godavari canals, Pravara and Nira right bank canal in Maharashtra, Sarda canal in U.P. and Mahanadi canal in Orissa, Krishnaraj Sagar Project in Karnataka, Nizam Sagar Project in A.P. were undertaken. Some small projects were also constructed in different states to provide the irrigation facilities for protection of the crops from famines.

British Government increased the irrigated area of India from 1 M ha in 1800 to 11.66 M ha in 1900. By construction of large projects, the total irrigated area was increased to 18.2 M ha in 1935. In 1935 British Govt. passed the Govt of India Act, according to which irrigation was "transferred subject" from the control of the centre to that of the respective provincials or the State Government. The Government of India was no longer concerned with development of irrigation except where disputes arose between neighbouring provinces.

1.2.2 Irrigation Development in India After Independence

The main objective of irrigation facilities in British period was to protect the crops in draught area. The irrigation facilities were protective type. But after independence, due to rapid growth in population and increased demand of food grains high priority was given to irrigation and agriculture development. To increase the food grain production and maximize the yields of the crops, fertiliser and pesticides were introduced. Thus, the approach changed from protective to productive irrigation.

High priority had been given to irrigation and agriculture development in the five year plans. As a result large number of major irrigation projects like Bhakra Nangal in Punjab, Damodar Valley in Bihar and West Bengal, Nagarjuna Sagar in A.P., Hira Kund in Orissa, Hasdeo Bango Project, Ravi Shankar Sagar Project and Bargi Project in M.P., Rana Pratap Sagar, Indira Canal in Rajasthan, etc. were taken up and completed to increase the irrigation potential in the country. By construction of such large number of irrigation projects the irrigated area rose from 22.6 M ha in 1950-51 to about 83.39 M ha at the end of 1990-92.

The irrigation potential created were utilised fully in the beginning but after 1974 the gap between the creation and utilisation increased. The potential created is not utilised fully. The detail of potential created and utilised is given in Table 1.1. Agriculture production in irrigated areas also increased from 51 million tonnes in 1951 to 200 million tonnes in 1998-99, but annual growth rate has declined while population growth rates remain high.

Table 1.1 : Planwise Irrigation Potential Created and Utilization (India)

(Area in Million Hectares)

Plan/Period	Major/Medium		Minor Projects		Total		
	Poten	Utili	Poten	Utili	Poten	Utili	Gap
Pre Plan	9.70	9.70	12.90	12.90	22.60	22.60	0.00
I Plan 1951-56	12.19	11.00	14.06	14.06	26.75	25.06	1.19
IInd Plan 1956-61	14.33	13.30	14.75	14.75	29.08	28.05	1.03
IIIrd Plan 1961-66	16.57	15.20	17.00	17.00	33.57	32.20	1.37
Annual Plan 66-69	18.10	16.80	19.00	19.00	37.10	35.80	1.30
IVth Plan 1969-74	20.71	18.70	23.50	23.50	44.21	42.20	2.01
Vth Plan 1974-79	24.72	21.20	27.30	27.30	52.02	48.50	3.52
Annual Plan 79-80	26.61	22.70	30.00	30.00	56.61	52.70	3.91
VIth Plan 1980-85	30.01	25.33	37.33	35.25	67.53	60.58	6.95
VIIth Plan 1985-90	31.52	27.77	46.60	43.12	78.12	70.89	7.23
Annual Plan 90-92	33.10	29.21	50.29	46.49	83.39	75.70	7.69

1.2.3 Utilization of Created Irrigation Potential

Large number of irrigation projects were completed through massive investment of the government and irrigation potential is created to increase the food production for the country. But the irrigation potential created is not utilized fully and properly. Fig. 1.1 shows that the gap between potential created and utilised is constantly rising. The gap in the utilisation of irrigation potential is a burning problem at National and State level. The reasons for low utilisation of irrigation potential created are many and varied from place to place. Some of the reasons may be lack of requisite infrastructural support, incomplete works and structures, lack of water conservation practices both from supply and demand side, poor operation and maintenance of the canal systems, organizational weaknesses, lack of coordination between different departments, lack of participatory

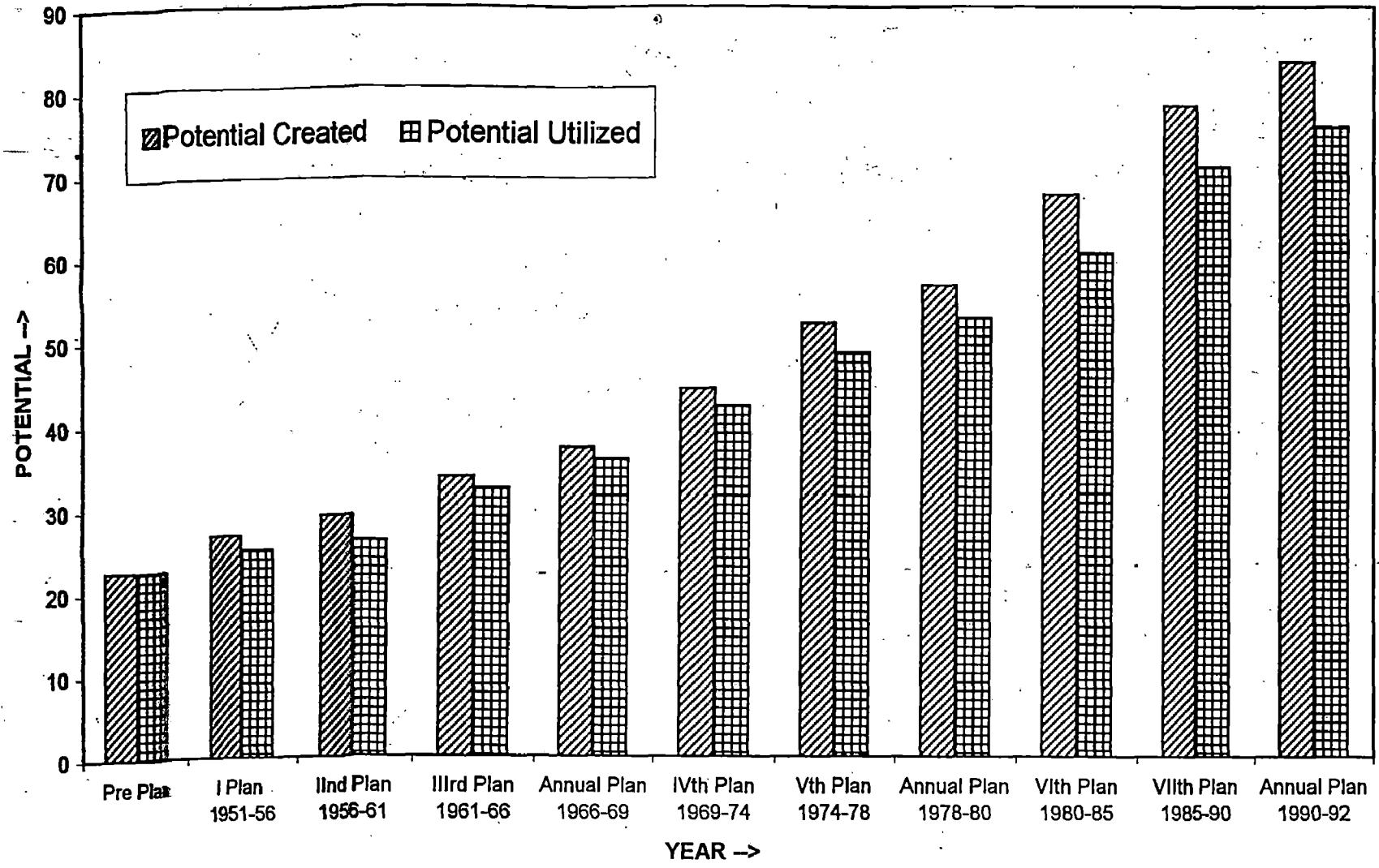


Fig 1.1 : Planwise Irrigation Potential Created and Utilization (India)
(Area in Million Hectares)

management, etc. In order to overcome the weakness various programmes covering on-farm development, rotational water supply, farmers participation in operation and maintenance of irrigation system etc. were planned and implemented through various Government agencies. The impact of these activities could not produce the desired effect to bridge the gap between irrigation potential created and its utilisation.

1.3 OBJECTIVE OF IRRIGATION WATER MANAGEMENT

After independence India has made considerable progress in irrigation and agriculture development. Most of the efforts have been made to increase the irrigation facilities for sustainable increase in the yield of the crops, and to make country self sufficient in agriculture production. As a result considerable growth in creation of irrigation potential has been achieved but not much attention was paid to the efficient use of water. Resources has been tapped and now this is a time to utilize the available constrained resources in a systematic manner for getting optimum return, i.e., the need of Irrigation Water Management has been felt. If water management is not well, there can be little chance of success of the irrigation project.

According to Abernethy (1987), the main objective of Irrigation Water Management in developing countries is "to deliver water in sufficient quantities, according to a time schedule that matches the requirement for healthy plant growth, and with fair distribution among many users". Abernethy (1987) has classified four phases or levels of water management as :

1. Water capture or harnessing of natural water resources by means of Civil Engineering works by "public works" authority.
2. Main system distribution (engineer managed, within a state irrigation or agriculture authority).
3. Sub-system distribution (farmer group-managed or influenced, but with ill-defined legal/administrative framework).
4. Water application (by individual farmers).

There is dependence of each level upon the competence of the one above it. There must be effective linkage between the phases for proper irrigation water management. The last phase of water management is application of water at the field directly connected with individual farmers. Poor performance of any phase affect the whole system and the irrigation project will not serve its purpose.

1.4 NATIONAL WATER POLICY

In 1987, Govt. of India, Ministry of Water Resources, New Delhi, framed the National Water Policy for planning and development of water resources projects need to be governed by national perspectives. The main paragraphs of National Water Policy are as follows :

Need for a national water policy 1.8 Water is one of the most crucial elements in developmental planning. As the country prepares itself to enter the 21st century, efforts to develop, conserve, utilise and manage this important resources have to be guided by national perspectives. The need for a national water policy is thus abundantly clear: water is a scarce and precious national resource to be planned, developed and conserved as such, and on an integrated and environmentally sound basis, keeping in view the needs of the states concerned.

Maximising availability 3.1 The water resources available to the country should be brought within the category of utilizable resources to the maximum possible extent. The resources should be conserved and the availability augmented by measures for maximising retention and minimising losses.

Irrigation 10.3 Water allocation in an irrigation system should be done with due regard to equity and social justice. Disparities in the availability of water between head reach and tail end farms and between large and small farms should be obviated by adoption of a rotational water distribution system and supply of water on a volumetric basis subject to certain ceilings.

10.4 Concerted efforts should be made to ensure that the irrigation potential created is fully utilised and the gap between the potential created and its utilization is removed. For this purpose, the command area development approach should be adopted in all irrigation projects.

Participation of farmers and voluntary agencies

12.0 Efforts should be made to involve farmers progressively in various aspects of management of irrigation system, particularly in water distribution and collection of water rates. Assistance of voluntary agencies should be enlisted in educating the farmers in efficient water use and water management.

Training

20.0 A perspective plan for standardised training should be an integral part of water resource development. It should cover training in information system, sectoral planning, project planning and formulation, project management, operation of projects and their physical structures and system and the management of the water distribution systems. The training should extend to all the categories of personnel involved in these activities as also the farmers.

In National Water Policy great emphasis has been given on optimum utilisation of scarce water resources, reducing the gap between irrigation potential created and utilised and active participation of farmers supported by suitable training in the field.

1.5 M.P. STATE WATER POLICY

The principles of National Water Policy 1987 followed in the State Water Policy of M.P. Low status of water resources development in the beginning and a major part of population being poverty striken, it has become necessary to include the issues relevant to the state within the frame work of National and Global Water Policy through State Water Policy.

The state water policy states that :

1. Development of water resources available within the category of utilisable resource to the maximum possible extent for economic development especially by efficient use of water for agriculture.
11. Planning process and mechanism should aim at resolution of conflicts between users within and between inter state river basins.
12. Promotion of citizen specially cultivator's participation in all aspects of water planning and management.
13. Handing over of operation and maintenance of irrigation system to the users in due course.
14. Economic, financial and physical sustainability through effective operation, maintenance and management and also based in the principle that beneficiaries pay for the services provided.

In State Water Policy of M.P. participation of farmers in irrigation water planning and management has been promoted and the State Government planned to hand over the operation and maintenance of the irrigation system to the users in due course of time for better water management.

1.6 Necessity of Farmers Participation in Irrigation Water Management

After independence most of the irrigation projects were constructed, operated and maintained by the Government. The potential created was not utilised fully due to infrastructural, social and organisational constraint. In Government managed irrigation system the desired benefit of water management of reliable, equitable and timely supply of irrigation water from head to tail in a canal system could not be achieved.

The designed cropping pattern for the project, differ with actual cropping pattern of the area, unawareness of the farmers about irrigation practices, poor maintenance of canal system, over use of water in head reaches, financial constraint of the Government, etc., were the reason which widen the gap between

potential created and utilised. By making the farmer who is actual user of the irrigation water as partner in the irrigation water management these problems can be solved in a better way.

Taking part in the activities of water management farmers feel a sense of attachment and ownership with the system which solves many social problem of the Irrigation Water Management.

Participatory Irrigation Management (PIM) deals with farmers participation in irrigation works for economically optimum utilisation of available water. This will also provide maximum benefit in production of agriculture produce from farmers field. This management would economise the cost of maintenance of irrigation system and use of water, and will promote the feeling of ownership by farmers in the irrigation project.

Pathak (1991) gives the objectives of farmers participation in the guidelines for the farmers participation by Ministry of Water Resources, GOI as

A. To initiate participation of farmers in water management, irrigation scheduling, distribution and maintenance of system at micro level.

B. To develop sense of economy in water use and management amongst the users.

C. To facilitate the users to have a choice in the selection of crops, cropping sequence, timing of water supply and period so as to maximize the income and profits.

D. To delineate responsibility in water distribution and maintenance of system between the users and the departments for attaining high serviceable standards of the system.

E. To promote incentive to the farmers by ways of less water charges to those who use water efficiently.

F. To entrust collective and community responsibility on the farmers to collect water charges and payment to the government of the same.

G. To create healthy atmosphere between the managers and users in the entire operation.

Participation is more effective if it is self oriented from the grass root level of farmers. Farmers do not feel it, just as extension of Government hand at village level and Government is throwing the burden on the shoulders of them to manage, but they have feeling of partner in the development of the nation.

1.7 OBJECTIVE OF THE STUDY

Madhya Pradesh is the largest state in India having geographical area of 44.30 M ha with abundance of natural resources. The potential created by surface irrigation projects upto June 97 is 32.67 lakh ha which can irrigate about 16% of the net culturable land in the state. There is a wide gap between potential created and utilised (shown in Table 1.2) due to physical, social and organisational constraints.

To improve the performance of irrigation system through farmers participation in the form of management partnership between Water User's Association and Govt. Agencies Participatory Irrigation Management has been promoted in the state.

National Water Policy 1987 concept of 'involvement of farmers in management of irrigation system' adopted by the State Government and turn over process was started at minor level irrigation system management.

Singh and Jadia (1996) states that Government Agencies like Water Resources Department, Ayacut, Agriculture and WALMI since then are trying to introduce PIM in the state however not much could be done in absence of any specific state policy, except that an executive order by WRD has been issued in April 1995 to provide some base for formation of Water Users' Association at minor level. As a result of executive order about 18 WUA are formed in the state covering about 4000 ha. area.

The first WUA namely Samrat Ashok Krishak Samiti, Sanchi is registered

under M.P. Societies Act 1973 covering an area of 504.43 ha. The irrigation management of tail minor of distributary D-2, right bank canal of Samrat Ashok Sagar Project, Vidisha, M.P. transferred to the society.

The performance evaluation of this Society is the main objective of the study. This is the first society of PIM in M.P. and starts functioning since 3-4 years, therefore all the datas required are not available in a documented manner for evaluation. So this may be a baseline evaluation. The objectives set for the study are as follows :

1. To study the organisational setup of the Society with leadership support.
2. To study the effectiveness of the organisation from its productivity, moral and satisfaction of the members.
3. To study the role of leadership in the society.
4. To study the water management, maintenance and financial working of the society.
5. To study the socio-economic characteristic of the members of the society.
6. To study the working and support of various departments, viz., Water Resources, Agriculture, Command Area Development Authority in the development of the Society.
7. To identify the constraints affecting the effective functioning of the Society.
8. To study the financial and economical viability of the Society.

Table 1.2 : Planwise Irrigation Potential Created and Utilization (M.P.)

(Area in Lakh Hectares)

Plan/Period	Irrigation Potential		
	Created	Utilised	Gap
Pre Plan	4.69	3.54	1.15
Ist Plan 1951-56	4.84	3.63	1.21
IInd Plan 1956-61	5.52	4.13	1.39
IIIrd Plan 1961-66	8.65	5.07	3.58
Three Annual Plan 66-69	11.50	7.44	4.06
IVth Plan 1969-74	12.35	8.63	3.72
Vth Plan 1974-79	17.70	12.22	5.48
Annual Plan 1979-80	19.14	12.07	7.07
VIth Plan 1980-85	24.52	15.27	9.25
VIIth Plan 1985-90	28.11	18.22	9.89
VIIIth Plan 1990-95	31.85	19.98	11.87
Two Annual Plan 1995-97	32.67	19.74	12.93

Source : Statistics, E. in C. Water Resources Deptt., Bhopal (M.P.)

Chapter 2

REVIEW OF LITERATURE

2.1 ABROAD EXPERIENCES

Participation of farmers in the irrigation system started long back in many countries directly or indirectly. Farmers' organisations have been developed in many countries with the inception of irrigation. In the beginning small projects of 300 to 500 ha area have been operated and maintained by the farmers with a little help from Government particularly in China, Indonesia, Japan, Sri Lanka and Thailand. In Europe and developed countries like USA and Mexico, farmers organisation operated and maintained large irrigation system by their own rules and regulations.

2.1.1 Valencia (Spain)

Irrigation water management by the irrigator has been very popular and well established in Velencia since 7th century. The plain of Valencia is one of the rich irrigated areas in South Eastern Spain, formed by stream deltas that are defined on three sides by mountains and on the fourth by Mediterranean Sea. The inner and ancient huerta of Valencia (irrigable orchard land in Valencia) along the channel of Turia River of 11 km and about 16000 ha of irrigated land. The farms are small, eighty three percent occupy less than 1 ha and all of them occupy les than 5 ha of land.

According to Arthur & Anderson (1978), the irrigators of seven canals have formed irrigation communities whose governing institutions determine and carry out the canal's operating procedure. The irrigation subscribers communities have its origin through the centuries, and its regulations and ordinances were made by the members (Subscribers) themselves through the times, approx. 600 to 700 years ago.

The Water Laws of Spain were enacted in 1879 and in fact it was the first of all the Water Laws in Europe and America.

The Irrigators of Valencia have formed a Committee and a Court (Tribunal de las Aguas) that enable them to act cooperatively on certain matters and to coordinate their joint actions. The principle characteristic of these institutions is local autonomy in formulating, operating procedures and in choosing administrative officers. The governing institution of Valencian Irrigation Water Management consist of the following :

1. **Irrigation Community :** It is a local autonomous body which formulate operating procedure and choose the administrative officers. The irrigation community includes all holders of land with rights to water in canal's service area. Each holder is entitled for one vote in community's legislature or general assembly (junta general). This assembly meets every 2 year, votes on proposed change in canal policies, rules and regulations related with water distribution, canal maintenance and other matters.

   The assembly elects an Executive Committee (junta de gobierno) to conduct the canal's business until assembly meets again. This Committee consist of 4 to 8 delegates (electors).

2. **Executive Committee :** The executive committee is chaired by canal's Chief Administrative Officer (syndic). The syndic is elected by general assembly for 2 years. Syndic is the chief regulator of distribution of water. He works within the norms fixed by general assembly. The other member of the committee are from different zones give advice on the application of operating procedures to the areas they represent.

   Executive Committee got supervisory responsibilities of maintenance of canal, silt clearance and attained the complaints against the canal operators.

   Syndic is also a member of Water Court (Popular Court) called "The Tribunal de las Aguas".

3. **Popular Court (Water Court) :** The Popular Court (The Tribunal de las Aguas) is distinguished from the ordinary courts that compose the judicial power of the state. As such, the court's jurisdiction is limited and its forms and procedures are unconventional.

The jurisdiction of Popular Court is defined by several canal ordinances, which specify precisely the categories of action to be taken against violations such as taking water out of turn, flooding a neighbour's field or installing an unauthorised canal check, and the penalties to be imposed.

There is a choice for trial in civil court or Popular Court, but once farmers choose Popular Court, as generally they do, they cannot appeal its decisions in Civil Court. All the farmers prefer the Popular Court as it is less costly and more informal procedure.

4. **Employees of Canal Community :** The officers and employees of a canal community have important duties in connection with operating procedure for distribution of water.

Guards (Guardas) : They regulate, patrol on the canal and ensure that channel carry maximum water available as needed. They operate all regulator structure. They are permanent employees and not a farmer of that land. The job is passed down from father to son.

Ditch Riders (atandadores) : They assist the Syndic in water distribution when it is in short supply, instructing one farmer when to close his headgate and the next when to open his. They are farmers along the laterals or in the zone that they serve.

Equity and Equality in Water Distribution : The irrigation community's main object of water regulation is to ensure all the members to get benefits of irrigation water with equality and equity.

Equity means fairness in distribution avoiding unreasonable, unequality in treatment of individuals who are in the same situation or category. It is more concerned with quality of distribution of a given output. Equity is fair share of water to users at different points in the system.

Equity in Valencia is a standard for administrative conduct. The canal officer have discretionary authority guided by general sense of fairness, apart from specific provision of the ordinances. All farmers and all laterals have obligations to help each other, giving water always to those who have the greater need. The canal officer must consult with the users of both the giving and receiving laterals and motivated by fairness.

In Valencia, equality is used in two sense :

1. It refers to participation of land owners in determining the canal's operating procedures, i.e., one man – one vote.
2. This term is also used in reference to quality of water provided to farmers, i.e., proportionate equality.

The operating procedures guarantee that all users are favoured equally in case of abundance and that all suffer equally in draught. The technique used to enable all farmers to share available water in the equal proportion. The interval between two irrigation turns, as the water supply gets shorter is increased.

The old Valencia irrigation management practice gives lots of idea and concrete concept of farmers participation in the present irrigation water management. The local community based organisation with own rules and regulations, motivation and leadership, discipline and justice (penalties), cooperation and coordination are the basic elements of successful PIM.

2.1.2 Mexico

Palacios (1995) states in his paper that the irrigated agriculture is of crucial importance for the Mexican economy. Total irrigated land covers 5.5 million ha is classified according to the size of works and operating organisation into two types : (1) Users operated and maintained small irrigation system. The unit is called "Irrigation Units" which is of 25000 nos. and covers about 2.5 million ha irrigated land, (2) Large scale irrigation projects organised into 80 Irrigation Districts and were earlier managed by the Government covers about 3.0 million ha of irrigated land. The operation and maintenance of Irrigation Districts were subsidised upto 75% by the Government. In spite of large subsidy, less revenue collection, many systems had gone into extensive deterioration.

In 1988, Government took a policy decision to transfer the Irrigation Districts to the Farmers Organisation by creating National Water Commission (NWC). This transfer is included in National programme and proper legal and financial support was given to the WUAs. The additional support to the transfer process was given by significant changes in the Water and Income Tax Laws.

The new National Water Law permits, within certain limits, a free market for water rights in order to improve the efficiency of water use; and changes in the Federal Income Tax Law reduces the level of taxation for WUAs which deals with water distribution.

The transfer programme was formulated in two steps. The first one, the WUA would be organised as a Civil Association with juridicial personality and its patrimony for the O & M of the "module". Concession for use of water and permission for the use of infrastructure and machinery for the maintenance works was provided. The second step, a Society of Limited Responsibility and Public Interest (S of LR & PI) would be created, integrated with the different WUAs in the same district, which would be authorized to use the main infrastructure and the rest of the machinery.

Results of the Transfer Programme

The results of the transfer programme shows the positive sign from the users. Initially 20 irrigation districts were transferred but due to the good performance of the transfer other users were motivated and shown their interest for taking the responsibilities.

Achievements of transfer program stated by Gupta & Shrivastava (1999) is that by 1996 out of 82 Irrigation Districts 59 had been totally transferred to WUAs and 386 no. of modules or WUAs organised and received the irrigation infrastructure for O & M which covers about 75% of the total irrigated area. Partial transfer in 13 Irrigation districts, including three which were still under construction has taken place.

After transfer users participation increased in the improvement of water management and maintenance of the hydraulic works as well as in the organisation of the WUAs. In the WUAs, the Board of Directors are elected in a democratic way in which the users send representatives of each community in the module to the assembly for the election, selecting the best leaders for the position of President, Secretary and Treasurer. More than 90% of the users support the decisions of the Board.

Conclusions

In 1990, the Graduate College of Chapingo, carried out a study for the NWC, to evaluate the investment requirements for the rehabilitation of the 80 irrigation districts. A huge investment was estimated. The NWC rehabilitate and modernize 10 Irrigation Districts and reduce the deferred maintenance in another 11 Irrigation Districts taking loan from World Bank. Therefore, the WUAs have had to invest from its own funds, an important amount, to reduce the deferred maintenance. Some other conclusions obtained are listed below :

1. The user's general opinion is that the transfer of the O & M of irrigation infrastructure to the WUAs, has had a very positive impact.
2. The technical personnel of the NWC have been continually supporting the WUAs to achieve a successful transfer of the responsibility for the O & M of the irrigation districts, as well as the Mexican Institute of Water Technology, which has been training the WUA's Board of Directors and technicians. Perhaps this support could be improved if more governmental money were available.
3. The WUAs have been learning from the errors of a feedback process, so that actually their performance has improved impressively.
4. Water conduction, distribution-conveyance efficiency as well as crop intensity are increasing due to better water management by the WUAs.
5. The infrastructure maintenance is cheaper and opportune. In general, according to the opinion of most of the users, hydraulic works are in a much better condition than before transfer.
6. In order to reduce the administration costs, the size of the modules should be greater than 5000 ha, and in the greater districts more than 10,000 ha is an adequate size.
7. The WUAs, in addition to its responsibilities of O & M of the modules, have carried out other important activities related to obtaining inputs at lower costs, product marketing and industrialising some of the agricultural products, to increase the users' income.

Lessons Learnt :

Gupta and Shrivastava (1999) states the lessons to be learnt from Mexican transfer are as follows :

1. Promotional programme explaining the advantages of Participatory Irrigation Management are essential initial activities for successful

transfer programs. This can be done through meetings, workshops and distribution of pamphlets.

2. It is important to raise irrigation tariffs to the level of financial self-sufficiency before the transfer so that WUAs can support adequate operation and maintenance programme.
3. Government agencies should provide for ongoing programmes of rehabilitations and modernization of infrastructure and support for WUA directors.
4. The larger the size of modules the cheaper are their operation costs per unit area.
5. The election of WUAs first set of directors is a critical action for the future of the association. When the directors are representative of the membership and have leadership capacity and managerial spirit, the WUA will be likely to be successful.
6. Successful transfer requires an appropriate legal framework. The framework must define clearly the rights to water, forms of organisation, responsibilities of each party and the manner in which activities should be regulated. Fiscal benefits must also be considered for companies that manage the irrigation and drainage infrastructure.
7. A transfer programme should be accompanied by training for WUA directors and their operating staff. The system of training should be ongoing.

2.1.3 United States of America (USA)

United States is a developed country with large network of major irrigation system. The country is self sufficient in food grain production. The farmers having large land holding and well equipped with agricultural equipments and latest

technology. The farmers participation in Irrigation Management started since 18th century and serving more than 70% of the irrigated area. In 1906 USA form the farmers legal entity to operate and maintain the irrigation works.

In western arid states of USA, California, Colorado and Utah, before Govt. authorises funding of an irrigation project, a Water Users Association (WUA) in the form of Irrigation District has to be organised under the Law of the States. These Irrigation Districts impose taxes, raise funds, undertake operation and maintenance of the system after the completion of the construction. These irrigation districts are governed by Board of Directors elected by the water users. Board decides operating rules, elect president and hire services of staff for operation and maintenance of the system. Irrigation fees are based on water delivered to each farm on volumetric basis. Water fees are paid in advance. Apart from Irrigation Districts there is another form of WUA, i.e., Incorporated Mutual Company a non profit making, Joint Stock Company. These Mutuals have a Board of Directors which employ managers and engineers for operation and maintenance of the system. The water users of the system are share holders. US Department of Agriculture, US Department of Soil Conservation, US Bureau of Reclamation (USBR), US Army Corps of Engineers are different organisations who help the Irrigation Districts in planning, designing, construction and operation of the Irrigation System and Water Management tasks (Puranik 1997).

In USA Irrigation Systems transferred to the WUA for operation and maintenance but USBR retains the ownership of the system for indefinite time period. The USBR review the Maintenance Program as an essential Bureau-wide function necessary to protect Federal Investment and to assist Water Users Organisations.

Transfer from Bureau to Water User Organisation :

Reclamation law and established Bureau policy provide for the transfer of the responsibility for operation and maintenance of works of irrigation system to

irrigation districts or other legally authorized WUAs. The transfer is usually made as soon as the works are reasonably completed and stabilized, and the Water Users Organisation has a competent staff and is financially able to operate and maintain the works. Arrangements for transfer of works from the Bureau to Water Users Organisation are initiated by the Regional Director. He notifies the Commissioner with a copy to the Chief, Division of Water O & M Denver, Engineering & Research Center (E & R Center) of his intention to make the transfer. His letter of notification for transfer includes a general description of the work to be transferred, mentions any important or unusual problems that may be involved such as contract considerations, and establishes a schedule of the steps to be taken in effecting the transfer, including the following major ones :

(a) Making a joint inspection

(b) Submission of examination report to the Commissioner with request for his concurrence and copy to Chief, Division of Water O & M.

(c) Clearing of transfer by the Commissioner and Denver E & R Center.

(d) Notifying Commissioner and Denver E & R Center of scheduled date of transfer.

Transfer Inspections and Reports

The inspections in connection with transfer of works from the Bureau to Water Users Organisation cover the general condition of the structures and facilities, their sufficiency, and the availability of necessary operation and maintenance facilities, equipment, and instructions including Designer's Operating Criteria and Standard Operating Procedures with supporting documents, where applicable. Preparatory to the transfer of project works to Water Users Organisations, the structures and facilities are inspected jointly by representatives of the Bureau and the water users.

Every report should have information on whether or not each structure and

facility is fully equipped with necessary instructions for care and operation. Each report after first one also contains a list of the items of work recommended by previous reports which have not been accomplished and a short statement as to the reasons for not complying with the previous recommendations. Reports of regional reviews of maintenance are addressed to the Regional Director and one copy each forwarded to the appropriate operating office heads and Water Users Organisations for compliance with copies to the Denver E & R Center (USBR, STATE-OF-ART).

Thus the USBR has a close watch on the O & M staff and Water Users Organisations for operation and maintenance of the irrigation system so that high level of O & M can be achieved and system is maintained on sustained basis.

2.1.4 Philippines

Farmers participation in small irrigation works is an old tradition in Philippines. The old co-operative societies called Zanjeras supply and operated reliable source of water to its members. The members, land owner or tenant shared the cost of construction and maintenance of the systems. These Zanjeras survived till recent time.

There are three types of irrigation system in Philippines

1. Nationals : National Irrigation System (NIS). These are large system more than 1000 ha command.
2. Communals : Communal Irrigation System (CIS) : These are small system with less than 1000 ha of command area.
3. Private : Built and managed by single individuals.

In 1970 National Irrigation Administrators (NIA) which was designed for constructing the irrigation projects starts turning over management responsibilities to Irrigation Associations (IAs) due to inadequate funds problem.

The NIA starts the turnover program with development of communal

irrigation system. The aim of the program was to organising water users into association which could responsibly operate, maintain and own their irrigation system. The approach was to use the community organiser to form the Water Users Association. The "Irrigation Community Organisation Program" showed encouraging results. As a result, other associations also took over the maintenance tasks at their levels. The other benefits achieved as reduction in O & M cost equitable distribution of water and effective resolution of internal conflicts. Professional community organisers were specially hired for this purpose. This process was too costly and impractical for national implication, so the Farmers' Irrigation Organizers Program (FIOP) was adopted. FIOP uses trained farmers as organisers and the cost is lower under this program. The NIA provided long term support to strengthen and sustain the capacity of the association to manage irrigation systems.

Training program considered to be a major component for the formation of Irrigation Associations. Training for basic leadership, management of system and financial management has been organised for every IA.

After turnover the improvement in system performance, increase in the irrigated area is observed. Improvement has also been seen in the financial viability of irrigation and water use efficiency. Collection efficiency has increased from 43 percent to 60 per cent and cost of O & M and personnel declined by about 30 percent and 20 percent respectively (Gupta & Shrivastava (1999)).

The Philippines 'learning process' or 'bottom up' approach will be quite effective for sustainable irrigation management transfer.

2.1.5 Japan

Satoh M. (1998) describes in his paper on "Water Management by Organized Farmers in Japanese Irrigation Systems" that Japanese farmers have been totally responsible for the operation and maintenance of their irrigation facilities from diversion dams in the source rivers to field ditches, and doing well as

a whole. They established their irrigation associations, managed the systems and collected fee from the member farmers which covers all the OMM cost. They are also deeply involved in construction and rehabilitation of projects which are conducted by public works sections of central and local governments.

In Japan the agriculture land is 5.2 M ha out of which 2.8 M ha area is occupied by paddy. Due to variability of rainfall during irrigation season the farmers suffer with shortage of water and farmers conflicts are inevitable. Therefore, Japanese farmers have a long history of struggle and compromise for water use.

Before the World War II, 44% of agriculture area was cultivated by tenant and 56% by the land owners. In 1945-46, the Japanese government carried out land reform and 91% of land was in the hands of owner farmers in 1950. In 1949 the Land Improvement Law was enforced, according to which both Land Consolidation Associations and Irrigation Associations were reformed and named as Land Improvement Districts (LIDs).

The Land Improvement District (LID) is an autonomous Farmer's Irrigation Association with the responsibility to manage all the irrigation facilities, it operates only reservoirs or diversion dam and main canals. The remaining part from main canal to field ditches are operated and maintained by local traditional communities called, Muras. In case that a lateral canal irrigates paddy fields in the territories of several Muras, a committee is formed by delegates from the relevant Muras (united Muras) for operation and maintenance of the common canal. Muras are not under full control of LID, but rather work for their regions.

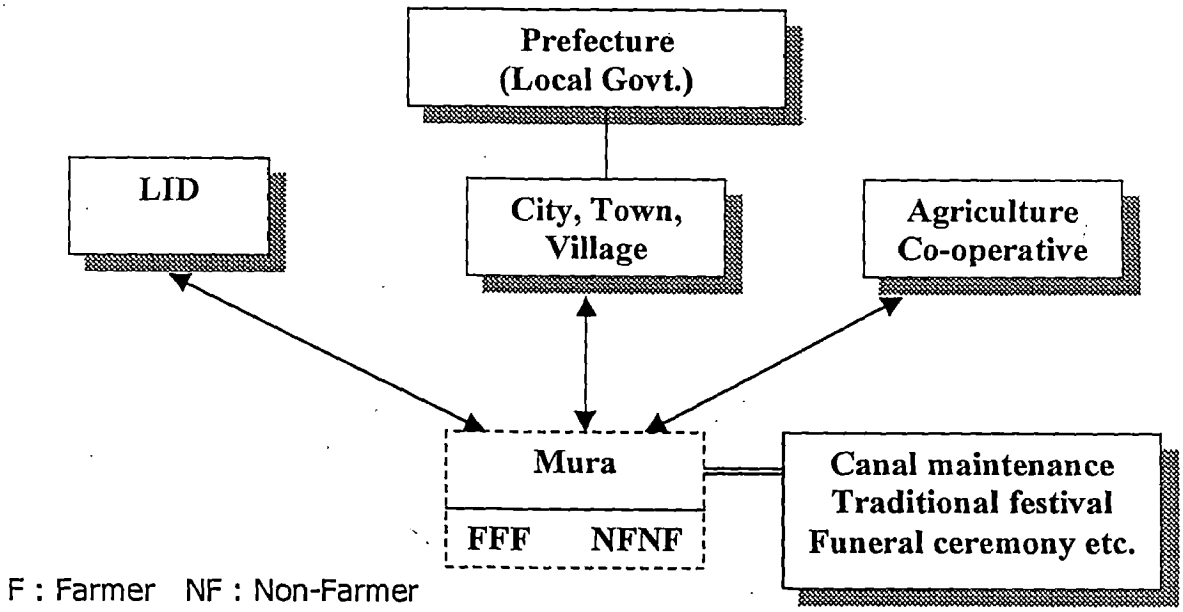
Most of the LID had command area less than 300 ha and its boundary coincides with the system's hydraulic boundary, not with the administrative boundary. The members of LID are all farmers who cultivate paddy fields within the boundary of LID. In 1997 there were 7573 LIDs all over the Japan out of which 186 LIDs (2%) had command area larger than 1000 ha while 5487 LIDs (72%) had command area less than 300 ha.

Mura :

Mura is a smallest unit of Japanese society in rural areas consist of 30 to 50 farmers and non farmers families. The Mura functions as a strong and firm unit of every social activity. It deals with every kind of cooperative works that are needed for the life in the region, such as maintenance of canals, roads and a shrine in their territory, traditional festivals and funeral ceremony of residents. Mura collects member fees from each household for its common activity and request one person from a family to participate in the work.

Every important matter in a Mura is decided in a meeting that delegates from every family are to attend. In this procedure the biggest importance is placed on the consensus. Every member in a Mura is required to act as its members and is not allowed to break the rules or oppose the decision on which consensus or agreement has been once reached.

Orderly peace under consensus is one of the most important principles in a Mura. So the farmers participate in the maintenance of canal and water distribution especially during time of water shortage, following to the decision of the Mura. Serious violation of the rules or decisions will be punished by all other members. The activity and support to the Mura is shown in Fig. 2.1.



F : Farmer NF : Non-Farmer

Fig. 2.1 : Mura, A Basic Unit for Social Activity in Japan

Project Formation

In Japan, the new irrigation projects can not be taken up without the approval of LID. For new project LID has to get written approval of more than 2/3 (actually 95%) of all beneficiary farmer to agree on project plan. Therefore, the farmer's leader and government engineers have to work on the project plan so that they can get approval from most of the beneficiaries. Once these conditions are satisfied and the project starts, member farmers are obliged to participate in the project and pay for a part of the project cost. A typical share of the cost for national project is; the central government 67%, the local government 20-23% and farmers 10-13%. The procedure of irrigation project formation in Japan is shown in Fig. 2.2.

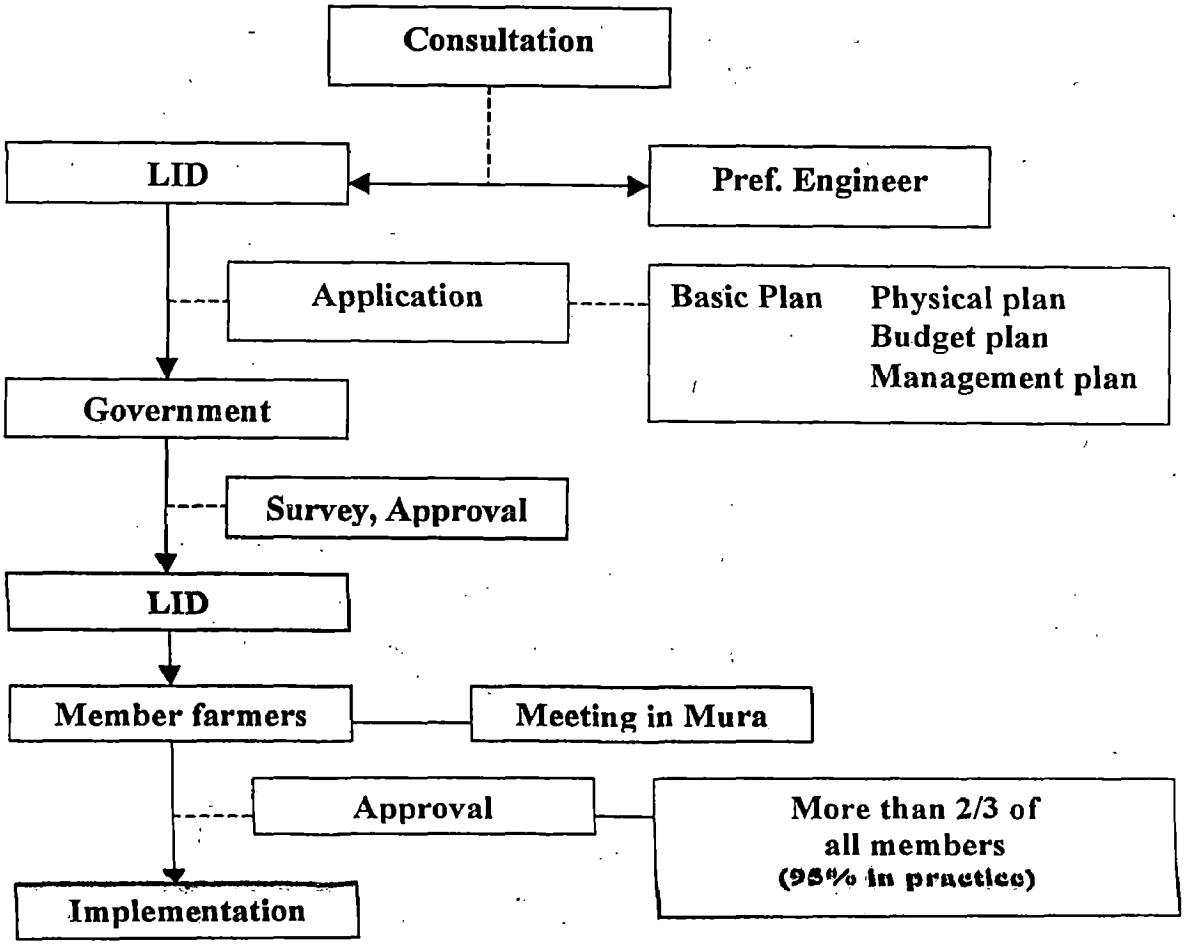


Fig. 2.2 : Procedure of Irrigation and Drainage Projects Formation in Japan

Financial Resources :

The operation and maintenance of the irrigation facilities are carried out by the LIDs. No government subsidy is received by LIDs. Therefore LIDs levees association fee on the members on an acreage basis.

LID can gather organization fee with ease from the member farmers. Normally, more than 99% of the members are willing to pay. Non payment of membership fee means loosing the right to get water.

LID can get money from outside because of their activities for cities and citizens.

Management of LID :

The Legislative Organization of a LID is a meeting of representatives, who are to be elected by all member farmers with equal voting rights, one vote to one member. The representatives will elect the directors and the Board of Directors choose a President among them. The elected representatives are delegates from Mura and will work for the benefit of the region.

Every important matter to be discussed is decided in the representative meeting with written material presented. The result of the discussion and important information are distributed to all members in leaflet through the representatives and Mura system. Thus the accountability and the transparency are realized in the LID management.

Water Distribution :

Most irrigation facilities are operated by the farmers themselves. Uneven water distribution takes place, as the upstream farmers take excessive water than those in downstream. To reduce this problem LIDs taken two major action : one is the strict regulation on water distribution during draughts and other is the development of water reuse systems.

During draught LID pays as much effort as possible to get more water

allocation from the source. This create conflicts between LIDs, while within the LID the water delivery system is usually to be changed temporarily to realize even water distribution. A typical change from continuous and simultaneous distribution in all irrigation canals to intermittent and rational irrigation (Satoh et al., 1990). This change in water distribution is performed according to the LID discussion and decision following the request from the delegates from downstream areas. This change can avoid draught damages on yields over the command area including the downstream area.

The excess water of paddy field flows into the drain is reused by the downstream farmers. The cost of water reuse development is borne by LID mostly. A smaller burden for water reuse encourages downstream farmer to take action in order to improve their condition of water resources.

Maintenance of Irrigation Facilities :

The LID maintains only the diversion dam, reservoirs, main canals and related gates. LID allocates some part of lateral and tertiary canal to each Mura and united Mura to maintain the facilities. The LID pay some allowance to these organizations for their activity, but this is not sufficient to cover the labor expended in Muras. Therefore each Mura gather people from every family and cleans every irrigation and drainage canals within the area. So the Mura or farmers pay labor to the LID in addition to their monetary member fees.

Lessons to be Learnt :

1. The irrigation facilities at lateral and tertiary level are operated and maintained by the strong and firm unit of every social activity called Mura. The Mura is a smallest single organization at village level which performs all the activities for the welfare of its members whether they are farmer or non-farmer. Thus all activity under one umbrella creates the feeling of unity in all of its members. They participate in all activity with their own interest

which is a good sign for a successful organisation. Every member can participate in the discussion for taking decision but once decision is taken with consensus no one is allowed to oppose it. This creates the discipline in the members and members are active in every decision making process.

2. In Japan, new projects can not be started without 95% of beneficiary farmers agree to the project plan. By taking the consent of the beneficiary farmers on project formulation they are deeply involved in irrigation project. The beneficiary have feeling of ownership and affection with the projects, also farmers have an opportunity to make the projects reflect their opinion through the procedure.

3. The operation and maintenance of the irrigation facilities are performed by LID by collecting the member fee and organization fee from the member farmers. Non payment of member fee will lead to losing the right to get water through the irrigation system. The Land Improvement Law also states the duty of its payment. Thus LID have legal support for financial sustainability.

2.1.6 Indonesia

Subak System

In Indonesia the water distribution system in Bali, known as 'Subak' has been practised since 11th century. The word 'Subak' is derived from 'Seuwak' meaning good water distribution.

Sinha, C. P. (1993) states that farmers being, social beings have to obey social rules and follow social customs and traditions. If water management is considered a pious work like any other social or religious function and is integrated with the social custom, then it may become part of the social life and behaviour. This is what has happened in case of Subak system of water management prevalent and practised in Bali.

The area of Subak in Bali is generally 100 ha. The actual cultivators become the members of Subak. They elect their representative democratically. The Chief of Subak is called 'Kelihan Subak' or 'Pekaseh'. The Subak members and office bearers are required to perform three duties (i) Physical (construction), (ii) Socio-economic (meeting, enforcement of decision, water distribution), (iii) religious (performance of ceremonies related to Subak collectively and individually). The meeting of the organizing body and members are held at regular interval and on special occasions. A meeting is considered valid if it is attended by more than half of the total number. In some meetings government officials are also invited. The main topics of the meetings are monthly activities of Subak, cropping pattern, irrigation schedules, membership, contribution by members for development, ceremonies, budget, conflicts, maintenance of structure etc. The decisions are taken generally on the basis of consensus in the meeting. The Subak has its own rules and regulations which are followed strictly, violators are punished according to the decision of the Subak.

Irrigation Management Turnover In JAVA :

Java is one of the province of Indonesia with 3.4 M ha irrigated area which is about 50% of the total irrigated area of Indonesia. Development of irrigated agriculture plays the major part in rapid rural development and transition to rice self-sufficiency in Indonesia.

According to Van Nes (1998), during 1965-1984 most effort was given to expand the irrigation area by new development or by rehabilitation of existing projects. Later it was realized that operation and maintenance funds were too much burdensome for the government. In 1987 Indonesia formulated the Irrigation Operation and Maintenance Policy (IOMP), aiming to improve water use efficiency in irrigation schemes and avoid deferred maintenance in future. IOMP defines objectives and priorities as follows :

1. Introduce appropriate operation and maintenance practices, procedures and funding for future sustenance of irrigation systems (and higher irrigation efficiencies); this was defined as Efficient Operation and Maintenance (EOM).
2. Improve cost recovery efforts from beneficiaries with concurrent improvements in water management through introduction of an Irrigation Service Fee (ISF) including strengthening and mobilization of Water Users Associations.
3. Transfer ("turnover") responsibility for operation and maintenance to farmer groups (Water Users Associations) in small public irrigation schemes (Penyerahan Irigasi Kecil PIK). Generally, this is done after simple upgrading called Special Maintenance (SM).

Van nes and Syamsuddin (1998) states the turnover of responsibility of small irrigation system for operation and maintenance will make better use of local resources and will result in better performance. When farmers are engaged in irrigation management, they make better use of their intimate knowledge of local conditions and preferences of the different water users. And it raise their sense of belonging, resulting in more care for the facilities and higher investment by the farmer.

The area of WUA is 150 ha to 500 ha equivalent to tertiary units with one or more villages. The village organisation is an important factor for performance of the Water Users Association.

The turnover program is sequenced in seven successive phases as shown in Fig. 2.3.

1. System Inventory and Profiling : Farmers are informed about turnover program and their willingness for participation is obtained in written statement. The basic data for categorising the schemes and socio-economic information relevant for turnover is collected.

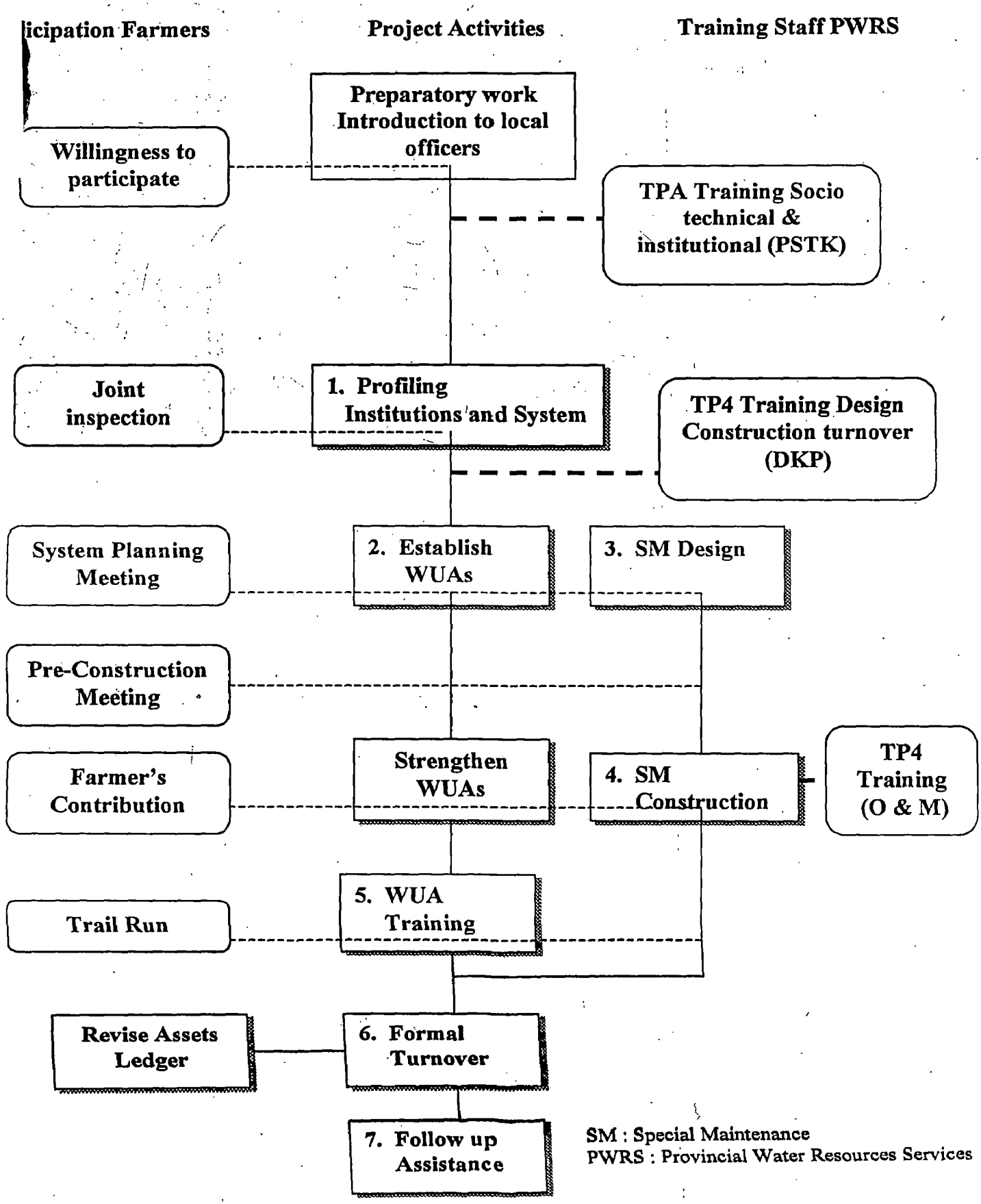


Fig. 2.3 : Procedure of Irrigation Management Transfer in Java, Indonesia

2. Water Users Association Establishment : If farmers express their willingness to participate, the Provincial Water Resources Service and representative of farmer community discuss about the system improvement plan by joint-inspection tour. This provides a sound basis for consensus between Provincial Water Resources Service and system users on the work plan for system improvement and its operation and maintenance in the future.

3. Special Maintenance Design : on the agreed system improvement plan the Provincial Water Resources Service or Consultant prepare the design for the intended works. They also discuss this in a meeting with WUAs. The possible command area is indicated and options for required works, costs and an agreement is formulated on priorities of the work to be implemented and who will implement which part of the work and when.

4. Special Maintenance Construction : The turning over officer introduce the contractor to the WUA and inform them about the contracted work. After completion of construction there is a joint-inspection of the system while the water is conveyed on trial run. If all is satisfactory the WUA accept the work and takes over the responsibility for Operation and Maintenance. Farmers also contribute during construction period.

5. Water Users Association Training : As system improvements incorporated the training for operation and maintenance and basic financial management is given to the WUAs.

6. Formal Turnover : The necessary administrative document for turnover is prepared. The registration of WUA, through a formal decree by the Bupati (Head of District) and possibly through formal legalization at the District Court is completed. The WUA will formally receive the system asset and operation and maintenance management.

7. Post-Turnover Activities : The local Irrigation Officer (Juru Pengairan) guided the WUA in technical matters and water allocation from the

headwork. The monitoring and evaluation of the project results and irrigation performance carried out regularly. The village Water Users Association guidance team comprising of Village Chief, Extension Officer and Irrigation Officer is formed for regular technical guidance to WUA and it is under a program called "Follow-up Action"

2.2 INDIAN EXPERIENCE

2.2.1 Ancient Period

The irrigation practice by wells, tanks and canals is used in India since long back. The ancient literature reveals that the civilization started by settling the people near the river banks for easy access to water. In the process of development they started growing crops with rainwater and thereafter by supplying water by wells, small tanks, etc. Vedas and other ancient Indian literature made frequent reference to the wells, canals, tanks, dams and the farmers are responsible for their operation and maintenance. There were several tanks in Tamilnadu, Karnataka and Andhra Pradesh constructed by Kings and operated and maintained by community managed system.

Vishnugupta Kautillya (300 BC) have also mentioned about dams and canals. In 2nd century AD in Tamilnadu, the Chola King Karikala built the Grand Anicut on the Cauvery river. In the Vijayanagar Empire (13th to 16th century AD), the rulers built a series of diversions and canals on the Tungabhadra river. The operation and management was done by local people without any grant from the ruler. In Himachal Pradesh most of hilly area is managed by communal system called Kuhls.

There are thousands of temple inscriptions found in South India relating to irrigation and land management. The temples are often the core institution of the period. The irrigation was managed by Village Sabhas or assemblies headed by adult male of the village. They had tank/canal supervision committees. These

village bodies exercised full control over water resources without the involvement of state.

Many systems were constructed by kings, or Lords or private persons, as this was considered as an act of merit. The village assemblies had also constructed some tanks or ponds. The system were transferred to the local people for management. The Village Sabhas maintained these systems by taking contribution from the people in the form of labour or Kind.

These village bodies have rules and regulations for supply and distribution of water among the farmers, prohibiting misuse of water, settlement of disputes etc.

2.2.2 Pre-Independence Period

In 18th century British Government established itself in India and took interest in the development work. After the famine of 1832-36 a large number of new irrigation works were taken up. Large barrages and reservoirs were built to store rain water in order to sustain agriculture in years of lean rainfall. The first largest canal system of country Upper Ganges Canal (1838-54) and many others like Eastern Yamuna Canal, Krishna Godavari Delta System, Sukkar Barrage, Barrage on Beas, Sutluj, Chenab, Upper Bari Doab Canal, Krishnaraj Sagar Dam, Mettur Dam, etc. were constructed to harness the irrigation resources on a large scale.

Most of the schemes constructed in British period were based on protective irrigation concept to provide relief from frequent draughts.

The British Government (East India Company) was interested in maximising land revenue and in making its collection accountable. Hence all irrigation works were managed by Civil Officers. Old system (Tamilnadu) which were managed by local people were also taken over by Government. Powers were given to the Engineers to fix water rights (settlement) and carry out maintenance. The British

built canal systems were integrated in the centralized administration which governed India. Norms of civil administration were also applied to the management of water resources. The projects were conceived, executed and managed as top-down engineering projects, and irrigation became the exclusive responsibility of the civil engineering profession. They ignored the concept that water management and distribution is as much an organizational and social skill as an engineering skill.

2.2.3 Post-Independence Period

After independence the Nation's main priority was to attain self sufficiency in food, fodder and fibre to feed the growing population. Union and State Government constructed large number of projects to provide the irrigation facilities to farmers. The British Government practice of operation and maintenance of the system by Irrigation Department continued and there was no time to involve the farmers in planning and transfer of management to them for operation and maintenance.

The construction of large number of major projects for creation of potential had given top priority and for operation and maintenance of the projects no importance or adequate budget was given. Due to inadequate operation and maintenance of the schemes deterioration of the systems resulted. The inexperienced staff of the department looking after O & M led to inequitable distribution of water, head and tail problems, irregular supplies and neglect in improving main system management. The irrigation coverage was far less than planned. Productivity and production was less than expected.

The gap between the irrigation potential created and utilised was widening in the new projects. The Govt. of India launched Command Area Development programme in 1974 comprising construction of field channels, field drains, land levelling/shaping, enforcing suitable cropping pattern, introducing Warabandi, organizing inputs and credits, linkage between Agricultural Universities and farmers

and their training. First emphasis was given to improve tertiary physical systems which reduced the gap slightly. Later it was noticed that the involvement of farmers and seeking their participation in water distribution, solving their disputes is very essential to provide water to all the fields in command areas.

National Water policy (1987) emphasized the participation of farmers and assistance from voluntary agencies in the process. It states, "Efforts should be made to involve farmers progressively in the various aspect of management of irrigation system, particularly in water distribution and collection of water rates. Assistance of voluntary agencies should be enlisted in educating the farmers in efficient water use and water management."

To promote the Farmer's Organisation (FO), Ministry of Water Resources (CAD), Govt. of India initiated subsidies for meeting management costs of the FO's, in the initial stage at the rate of Rs. 100/ha for first two years and Rs. 75/ha for the third year.

Participation of farmers in irrigation water management started with local condition and regionwise. Outlet Committees upto outlet level and water users co-operative societies at minor level are formed in many states for distribution of water equitably among the farmers and to collect the water rates. But without formal agreement with Irrigation Agency they do not sustain over a long period and slowly deteriorate.

The Ministry of Water Resources first issued guidelines in 1984 for formation of WUAs on a pilot basis. All the states were requested to introduce the WUA in one minor in each CAD project as early as possible and to ensure concentrated attention for the successful implementation of this pilot schemes.

From 1987 to 1994, a large number of pilot experiments were initiated in different states under major, medium and minor irrigation schemes, which differed significantly in respect of water availability, complexities and problems of irrigation networks controlling and regulating water flows, size of command area and number

of farmers involved.

There were different views among the Administrators, Irrigation Engineers, NGOs, Social Scientists and farmers in respect to size, area of FOs, formal or informal groups, mode of registration of FOs – whether as Cooperative Societies or Association, under Societies Registration Act or private company, duties, rights and responsibilities of the FOs and irrigation agencies, necessity of written agreement between them, entrusting collection of water rates to the FOs, giving freedom to the FOs to decide crops, water fees leviable to the farmers for providing irrigation services, necessity of involving NGOs and incentives to the farmers etc. The common National Policy can not be formed on these issues.

The Ministry of Water Resources issued various guidelines, program and Action Plan for Participatory Irrigation Management (PIM) to all the States for implementation. But implementation and change have come slowly.

The PIM is adopted by the States are as per their condition and suitability. In some States, Societies are formed for water users. Andhra Pradesh and M.P. has passed laws in State Legislative Assembly for Participatory Irrigation Management in 1997 and 1999, respectively.

Although PIM has been introduced and promoted in India for more than one decade, the acceptance of the concept has been sluggish, scattered and site specific (Gupta, 1999).

The progress of PIM in India is very slow and poor. The National Conference 1995 had stated the following reason :

1. PIM is not a national programme. No target has been fixed.
2. Inadequate staff support for PIM both in centre and states.
3. Legal support lacking.
4. Lack of clear accountability in supply of water.
5. Not enough water pricing to meet O & M expenditure.

Other reasons for poor progress of PIM may be :

1. Lack of political will
2. Attitude of farmers for change
3. Attitude of Irrigation Department
4. Approach for transfer of management.

2.2.4 *Recent Development of Water Users Associations in Different States*

Andhra Pradesh

Andhra Pradesh is an agrarian state with 70 percent of its population dependent upon agriculture. The contribution of irrigation to agriculture production is about 70 percent.

Andhra Pradesh has a background of farmer's participation below outlet, i.e., at farm level through 'Pipe Committees'.

In 1997, A.P. State Govt. passed the historic "Andhra Pradesh Farmer's Management of Irrigation System Act" in the Legislative Assembly to give the farmers organisations an effective role in the management and maintenance of the irrigation system for effective and reliable supply and distribution of water. This is first of its kind legislation in India empowered farmers and their organisations and enabled them to become decision makers and implementers in management of irrigation systems. All farmers were mandated to be members of WUAs. According to Act, the objective of the farmers organisation shall be to promote and secure distribution of water among its users, adequate maintenance of the irrigation system, efficient and economically utilization of water to optimise agricultural production, to protect the environment, and to ensure ecological balance by involving the farmers, inculcating a sense of ownership of the irrigation system in accordance with the water budget and the operational plan.

The organization has been formed in 3 tier :

1. Water Users Association (WUAs) : Upto hydraulic boundary of the minor at primary level.
2. Distributary Committee - At secondary level – comprising of one or more WUAs.
3. Project Committee – At project level – total command area or part thereof of an irrigation system.

Elections were conducted for WUAs by the District Collectors. By June 97, 10292 WUAs were created (5763 were unanimous) and by Nov. 97, 174 Distributary Committees were also formed.

Important Elements of the Programme

1. A series of measures were taken up for rehabilitation of system and funds were provided for this purpose. The minimum rehabilitation needs by walk through diagnosis and priority of all works are prepared. The funds of WUAs were given in the following manner :
   (i) Rs. 30,000 per WUA at the time of constitution to start functioning
   (ii) Rs. 50,000 per WUA with unanimous election
   (iii) Rs. 250/ha for repair
2. FOs will collect water fees and entire fees collected will be given to them at different levels as per distribution given below :

(Percentage)

Level of FO	Irrigation projects		
	Major	Medium	Minor
WUA	50	60	90
DC	20	30	-
PC	20	-	-
PRI	10	10	10

3. Operation and maintenance is the responsibility of the FOs. They have to prepare O & M plans. WUAs will give administrative approval and competent authority will give technical sanctions and prepare the estimates.

4. FOs have given powers to levy fines and fees, resolve disputes and file cases.

As a result of PIM the irrigation area and productivity is increased. The water distribution at tail end is improved. The maintenance work is done in less time with better quality and at lesser cost. The confidence and capacity of farmers had grown up and they have shown great ability of leadership. A sense of ownership has been created in the members of FOs. Thus less number of disputes and their better resolution is generated (Gupta & Shrivastava, 1999).

Gujrat :

Gujrat has also been facing the problem in irrigation sector of low utilisation of potential, poor maintenance of the schemes and water revenue recovery.

Gujrat has a tradition of co-operative societies in various sectors. A few NGOs and voluntary agencies took up water related activities in rural areas for Lift Irrigation schemes, check dams and recharge structure etc. by forming cooperatives. These cooperatives are registered under the Cooperative Act. The voluntary agency not only initiates to form the society but also help the societies in technical, financial and administrative matter.

Satish and Sunder (1990) gave thanks to the efforts of voluntary agency, the tribal have learnt how to use the irrigation water. In the years passed the people learnt to contribute to decision making in the activities like cleaning of field channels, water distribution, crop management, etc. The managing committee members are selected by the people. Conflicts are resolved among themselves. The tribal people have undoubtedly become prosperous (A case study of Panch Mahal, Distt. Gujrat).

The Mohini Cooperative of Ukai-Kakrapur project in Gujrat was also an example of successful PIM in the beginning but it failed after a decade. The main reason of failure was the change of leadership because first President made extraordinary efforts to mobilize the farmers and Govt. together for the success of Cooperative.

Now WALMI Gujrat and Aga Khan Rural Support (India) programme are actively experimenting in organizing farmers and eventually turning over the management of tertiary areas to farmers. For Sardar Sarovar Project sale of water to WUA is to be made as inbuilt compulsory feature.

For PIM, process of policy formulation, training of officers and mobilisation of farmers is going on and a systematic approach with strengthening of the systems is realised. The state accepted the principle of PIM as a policy measure through a government order issued on 1.6.95. As a follow up, an action plan was also declared in Nov. 95 with a target to bring 50 percent of the command area under PIM by 2003 (Gupta 1999).

Maharashtra

Maharashtra is the third largest state in the country and one third of its area is draught prone. The irrigation percentage is 11.4 and crop intensity is 130 percent. The state is also facing the problem of low utilisation of created potential.

Farmers participation in irrigation management in the form of Phad system is the oldest and prominent in the state. Phad system in north-western part and Malguari tanks in Vidharbha have been in the practice since two centuries back. The small scale irrigation scheme (runoff river scheme) managed by local communities are popularly known as Phad system. The irrigation scheme consist of a small diversion weir (bandhara) across the river and an irrigation channel with command area of one village. The river water is diverted through canal and distributed among the farmers with Phad system. Nowadays Phad system have

ceased to be functional due to change in the hydrological cycle.

In Maharashtra State Cooperative movement is quite strong and successful. It is deeply rooted in various other sectors like Sugar Cooperative, Milk Cooperative, etc. Hence as per recommendations of the Maharashtra State Irrigation Commission, State Government has accepted a Cooperative pattern for farmers participation in irrigation management.

Government of Maharashtra attempted to make new model for farmers participation. The supply of water on volumetric basis at head of minor to the societies and the entire management of water below that being taken over by the farmers group. Freedom of cropping for the association within the allocated quantum of water, concessional water rates, freedom of conjunctive use of water, water right, responsibility of maintenance and repairs of the smaller channel were the important feature.

Several Cooperative Water Users Societies (CWUS) have been formed in the states and irrigation management has been transferred to farmers through Memorandum of Understanding (MoU). The Objective of MoU was to have an agreement between the CWUS and the I.D. The MoU includes several key factors as freedom of crops, water rates on volumetric basis, conjunctive use of water, equity in distribution, water rights, incentive for timely payment, maintenance and repairs of minors and management support to CWUS. Shri Datta Cooperative Water Distribution Society was the first Society taking over water distribution on some agreed principles and registered under Cooperative Act. In this case, the seasonal water allocation was decided by the ID and registration was made as a Service Society by the Cooperative Department. As this was first case, considerable time was taken in finalizing the MoU and registration of the Society (Lele & Patil, 1994).

In spite of substantial groundwork, policy initiatives, NGOs help, the area transferred to WUA is very little and progress is slow and no clear cut policy for transfer in fixed timeframe has been emerged. Strong political will, time bound

action plan, leadership from ID and farmers organization is required for total transfer and success of PIM.

Bihar :

In Bihar agriculture and irrigation are very important as most of the people depend on agriculture. Productivity is low and created potential is not fully utilised because of incomplete distribution network. Traditional farmers participation in water distribution from ahars, pynes and tanks is less effective. Small farmers were organised for construction of community tubewells and its management under foreign aided program.

PIM introduced in Bihar through action research efforts of WALMI, Bihar in Paliganj Distributary. Farmers of Paliganj District covering about 76 villages have organized themselves and formed the Water Users Society. The management of the distributary with large command area was transferred without first doing rehabilitation work.

According to Gupta & Shrivastava (1999), WUAs have been constituted and registered under the State Cooperative Act in Bihar. 438 minor schemes (257 gravity and 181 lift) are constructed with World Bank aid and are to be handed over to beneficiary farmers by the end of the project (June 1999). But very little has been done so far to enhance the capability of farmers in managing these schemes successfully and in a sustained manner.

The progress of PIM in the state is slow, the strategy was that it should be implemented basically by grass root field engineers (AEs and JEs) with support from their senior officers and WRD. WALMI will help WRD in motivating, training, documenting the process and experiences, drawing lessons and constraints in implementation to the notice of Government. PIM implementation was taken up with whatever meagre funds were available with WRD without waiting for external help. More reliance was to be placed on the capability of farmers. Farmers were to

be made to realise that they had to solve their problems themselves. External agencies and government can only support their efforts.

Based on the success of Paliganj Distributary, the PIM is extending in 20 more distributary on macro-to-micro approach. The main constraint in the state is fund problem. If more funds for rehabilitation could be mobilised, more funds provided for action research alongwith training/mobilisation of farmers; and if the WALMI could be strengthen this replication could be done on a much large scale.

Madhya Pradesh :

Madhya Pradesh is the largest state of India with lot of natural resources. Narmada, Mahanadi, Tawa and Chambal are the main rivers of state with lot of water resources. Most of the major projects are storage dams which store water during monsoon for the irrigation and power generation purpose. The irrigation potential created in the state through major, medium and minor schemes is 32.67 lakh ha out of which only 19.74 lakh ha. is utilised, i.e., about 40% of the potential created is utilised. The gap existing between the potential created and actual utilisation is due to infrastructural, social and organisational constraints. The desired benefits of reliable, equitable and timely supply of irrigation water from head to tail canal system could not be achieved in most of the projects.

All the irrigation projects in the state are operated and managed by the State Government through Water Resources Department. Sampath (1996) states that although there has been definite increase in the irrigation potential in the state, the agricultural production even in irrigated areas are much less than in similar areas in the country and outside. Review of performance of medium projects completed earlier and major systems like Chambal, Hasdeo Bango, etc., has revealed the deficiencies as follows :

"Inequitable and unreliable supplies, bad management of physical system, slow development of potential over a long period, local drainage and water logging

problems, non-involvement of farmers and rural community in management, cornering of larger share by influential persons resulting in tail end depravement, coexistence of shortage of water excess use in same reach, etc."

Participatory Irrigation Management (PIM) through farmers participation in the form of management partnership between WUAs and Government Agencies is viewed as a means to improve the performance of irrigation system. According to M.P. Irrigation Act 1931, Irrigation Panchayats were formed for about 1000 acre of irrigated land in several projects of the State. The Irrigation Panchayats are constituted by the land owners through the elected members. The Irrigation Panchayats are now defunctional due to lack of proper representation, undefined powers and heavy defaults on the part of most of the farmers in paying irrigation dues debarring from the membership of these Panchayats.

The State Government adopted the National Water Policy 1987 and endorsed the concept of farmers participation in water management with an objective to transfer the minor level Irrigation System Management to Water Users Association (WUA). Several Govt. Agencies like WRD, Command Area Development Authority, Agriculture and WALMI tried to introduce PIM in the state. The WRD issued an executive order in 1995 to provide legal base for transfer of irrigation system to WUA by formation of Water Users Society in selected CAD projects under M.P. Societies Act, 1973. As a result Samrat Ashok Krishak Samiti Sanchi was registered first in M.P. under M.P. Societies Act 1973 as a pilot project. Similarly 65 pilot projects have been selected and total 18 WUAs were formed. Though these associations are formed but in fact, they are not functional as conceived due to lack of proper guidance and policy decisions. During this period, WALMI took over the training program on farmers involvement and developing Water Users Associations. WALMI organized training courses at different project sites where farmers and lower level functionaries of the Government are trained. The training program of WALMI provides the insight about the irrigation system, crops and crop

pattern, Irrigation practice, procedure for formation of WUAs, bye laws, roles and responsibility of WUAs and Government Agencies. These trainings motivated the farmers and in some areas results are very good (Puranik, 1997).

In 1999 M.P. State Legislative Assembly passed the M.P. PIM Act 1999 and became the second State in the country. This Act is called as Madhya Pradesh Sinchai Prabandhan me Krishkon Ki Bhagidari Adhiniyam (1999). This Act is provided for farmers participation in the Management of Irrigation System and extends to the whole of the State. The objective of Farmers organization shall be to promote and secure distribution of water among its users; adequate maintenance of the irrigation system, efficient and economical utilisation of water to optimize agricultural production, to protect the environment and to ensure ecological balance by involving the farmers, including a sense of ownership of the irrigation system in accordance with the water budget and the operational plan.

Water Users Association (WUA) is the primary level organization which consist of all water users of the command area under each of the irrigation system on hydraulic basis which may be administratively viable.

The structure of Farmers Organizations are according to the type of project based on service are as follows :

1. Major project (over 10000 ha) - Three tier FOs as
   - (i) Project Committee
   - (ii) Distributary Committee
   - (iii) Water Users Associations (WUAs)
2. Medium projects (2000 to 10000 ha) – Two tier FOs as
   - (i) Project committee
   - (ii) WUAs
3. Minor Projects (less than 2000 ha) - Single organization
   - (i) Water Users Associations

For over all control of the State's WUAs and their monitoring, there is a provision in the Act that the State Government may, by notification, constitute an Apex Committee consisting of the following members, namely :

(I) The Minister of Water Resources Department – Chairperson

(ii) Five persons from amongst the chairpersons of the Project Committee

(iii) Two persons from non-government organisations and

(iv) Three officers not below the rank of Chief Engineer or Equivalent from the Water Resources Department, Agriculture Department or Ayacut Department of the State Govt.

The Apex Committee constituted shall exercise such powers and functions as may be necessary to :

(a) lay down the policies for implementation of the provisions of this Act; and

(b) give such directions to any farmers organization as may be considered necessary, in exercising their powers and performing their functions in accordance with the provision of this Act.

The Madhya Pradesh Sinchai Prabandhan Me Krishkon Ki Bhagidari Adhiniyam 1999 consist of seven chapters as follows :

Chapter I Preliminary

Chapter II Farmers' Organization

Chapter III Objects and Functions of the Farmers' Organization

Chapter IV Resources

Chapter V Offences and Penalties

Chapter VI Settlement of Dispute

Chapter VII Miscellaneous

The Act also contains the prescribed forms for operation, maintenance and financial activities. The details of the Act and Chapters are appended in Appendix II.

Main Features of M.P. PIM Act :

Elections were conducted for WUAs and Territorial Constituencies (TC) by District collectors in April 1999. Total number of WUAs and TC formed are 2416 and 17213 respectively. The Presidents of WUA in 2408 WUAs and TC member in 16839 TCs have been elected. The Distributary Committee (DC) and Project Committee are not formed so far.

M.P. Government revised the water rate for different crops to give the financial support to WUAs. The distribution of percentage water rate collected between WUAs, DC and PC are given below :

Distribution Percentage of Water Rate Collected

Irrigation Project	Water Users Association	Distributary Committee	Project Committee	Village Panchayat
Major	50	20	20	10
Medium	60	30	-	10
Minor	90	-	-	10

Distribution of funds for Management, Maintenance and Administrative expenditure of WUAs are not clarified in the Act.

M.P. Government started the training peogramme for elected members of WUAs, Nominated Sub Engineers and Amin of Water Resources Department in 2 Phase under *"Formation of WUA and Capacity Building Programme"*. In first phase of training, exposure is given regarding objective of PIM, function of WUA, responsibilities, power and area of jurisdiction with future planning. In second phase the elected member of WUA, Nominated Sub Engineers and Amins were trained in organizational meetings, Water Management, Operation and Maintenance of canal, Financial Expenditure and its Accounting Procedure, Water Budget, Effective, Reliable and Equal Distribution of Available Water, etc. aspects by Resources Persons from WALMI and Water Resources Department.

Chapter 3

DESCRIPTION OF SAMRAT ASHOK SAGAR PROJECT AND SAMRAT ASHOK KRISHAK SAMITI

3.1 SALIENT FEATURES OF SAMRAT ASHOK SAGAR PROJECT

Samrat Ashok Sagar project is a major project of Vidisha and Raisen district of Madhya Pradesh. The project is constructed as irrigation cum flood protection scheme across Halali river which is a tributory to Betwa river. The Dam is located both in Vidisha and Raisen districts while most of the command lies in Vidisha district. The dam site of the project is 40 km North East of Bhopal and 16 km from Salamatpur railway station near village Khoa. It is also connected by road from Bhopal, Vidisha and Raisen. General location and index map is given in Fig. 3.1.

The project comprises of 945 m long and 29.57 m high earthen dam across river Halali. The main canal is taking off from saddle dam located on left bank. The main canal is 3.24 km long and Left Bank Canal and Right Bank Canal are taking off from main canal at km. 3.24. The left bank canal irrigates 18899 ha and right bank canal irrigates 6192 ha area of Vidisha and Raisen districts. The proposed irrigation area from the project is 25091 ha of Rabi and 12546 ha of Kharif.

The administrative approval to the project was accorded way back in 1963 for Rs. 404.27 lakh. The actual execution of the Head work started in the year 1973. The cost of the project was revised three times. The total Gross Command Area is 37419 ha out of which Culturable Command Area is 27924 ha. Net area served is 25091 ha against this annual irrigation is 37636 ha. The intensity of irrigation is thus 135%. The annual irrigation schedule in Vidisha district is 31,536 ha of 101 villages and 6070 ha of 33 village in Raisen district.

The important salient feature of the project are given in Table 3.1.

SAMRAT ASHOK SAGAR PROJECT

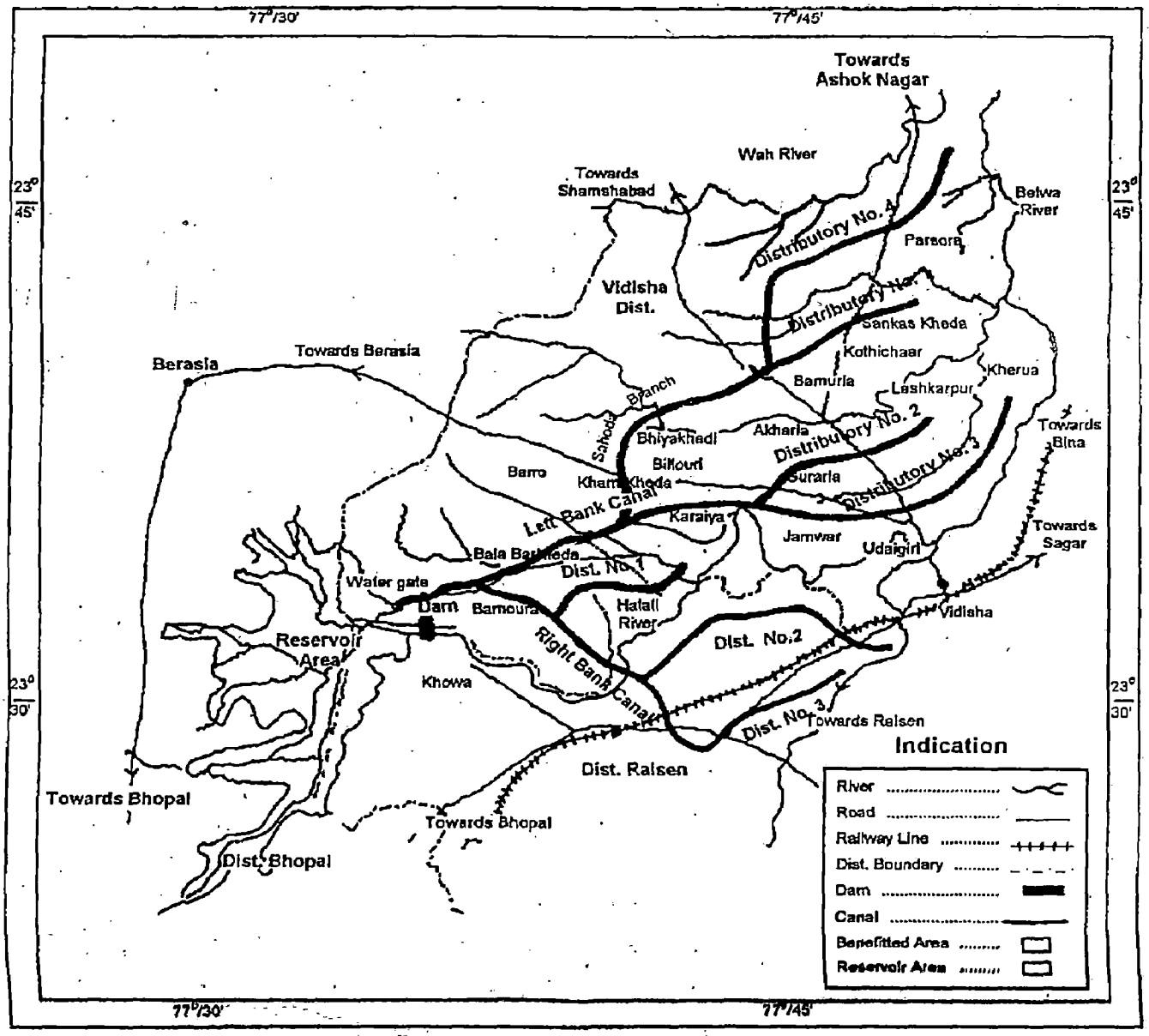


Fig. 3.1 : General Location and Index Map

Table 3.1 : Salient Features of Samrat Ashok Sagar Project

1.	Location of Dam :			
	1.1	State	:	Madhya Pradesh
	1.2	District	:	Vidisha & Raisen
	1.3	Latitude	:	23°30′ N
	1.4	Longitude	:	77°33′ E
	1.5	River	:	Halali river
	1.6	Dam site	:	Khoa village 16 km from Salamatpur railway station
2.	Hydrology :			
	2.1	Catchment area	:	699 sq. km.
	2.2	Maximum rainfall	:	1680 mm
	2.3	Minimum rainfall	:	536 mm
	2.4	Average rainfall	:	1108 mm
3.	Design Flood :			
	3.1	Standard project flood	:	4688 cumecs
	3.2	Maximum project flood	:	5665 cumecs
4.	Reservoir data :			
	4.1	TBL	:	RL 466.32 m
	4.2	MWL (Flood Control)	:	RL 464.19 m
	4.3	FRL (Irrigation)	:	RL 458.4 m
	4.4	FRL (Flood Control)	:	RL 459.61 m
	4.5	LSL	:	RL 448.95 m
	4.6	Crest of flush bar (Additional spillway)	:	RL 462.66 m
	4.7	Crest of ungated spillway	:	RL 459.61 m
	4.8	Water spread at FRL (Irrigation)	:	5259 ha
	4.9	Gross storage at MWL	:	67827 ha. m.
	4.10	Gross storage at FRL	:	25285 ha. m.

4.11	Live storage at irrigation FRL	:	22695 ha. m.
4.12	Dead storage	:	2590 ha. m.

5. Dam :

5.1	Type	:	Earthen dam
5.2	Top width	:	4.57 m
5.3	Maximum height	:	29.57 m
5.4	Length of dam	:	945.0 m

6. Spillway :

6.1	Length	:	41.15 m
6.2	Crest level	:	RL 459.61 m
6.3	Discharging capacity at MWL:		642 cumecs

7. Byewash :

7.1	Length	:	60.96 m
7.2	Crest level	:	RL 462.66 m
7.3	Discharging capacity	:	169.92 cumecs

8. Sluice :

8.1	Spill level	:	RL 447.23 m
8.2	No. and size of gate	:	2 Nos. (2.13 x 2.43 m)
8.3	Discharging capacity	:	80.99 cumecs

9. Irrigation :

9.1	Gross Command Area	:	37419 ha.
9.2	Culturable Command Area	:	27924 ha.
9.3	Net Area Served	:	25091 ha
	Annual Irrigation		
9.4	Kharif	:	12545 ha
9.5	Rabi	:	25091 ha
9.6	Total	:	37636 ha
9.7	Intensity of Irrigation	:	135%

10. Canal :

10.1	Length of main canal	:	3.24 km
10.2	Head discharge	:	22.64 cumecs
10.3	Length of LBC	:	17.61 kms
10.4	Head discharge	:	13.73 cumecs
10.5	Length of RBC	:	23.43 kms.
10.6	Head discharge	:	5.24 cumecs
10.7	Length of distributaries		
	10.7.1 Left Bank Canal		
	1. Sahoda Branch Canal	:	12.48 km
	Head discharge	:	8.63 cumecs
	2. D-1/SBC	:	9.72 km
	Head discharge	:	2.94 cumecs
	3. D-2/LBC	:	9.0 km
	Head discharge	:	2.88 cumecs
	4. D-3/LBC	:	16.50 km
	Head discharge	:	4.24 cumecs
	5. D-4/SBC	:	19.44 km
	Head discharge	:	4.35 cumecs
	10.7.2 Right Bank Canal		
	1. D-1/RBC	:	6.75 km
	Head discharge	:	0.853 cumecs
	2. D-2/RBC	:	4.41 km
	Head discharge	:	1.398 cumecs
	3. D-3/RBC	:	10.86 km
	Head discharge	:	1.367 cumecs
10.8	Length of Distributaries, Minors & Subminors of LBC	:	309.79 kms
10.9	Length of Distributaries, Minors & Subminors of RBC	:	109.48 kms
10.10	Length of high level canal	:	3.22 km
10.11	Discharge of high level canal:		0.42 cumecs

11. Financial :

11.1	Cost of project (March 1993) :		Rs. 2471.10 lakhs
11.2	Cost/ha (On annual irrigation) :		Rs. 6566/-
11.3	Cost/ha (On CCA)	:	Rs. 8850/-
11.4	Benefit Cost Ratio	:	2.68

12. Completion of Project :

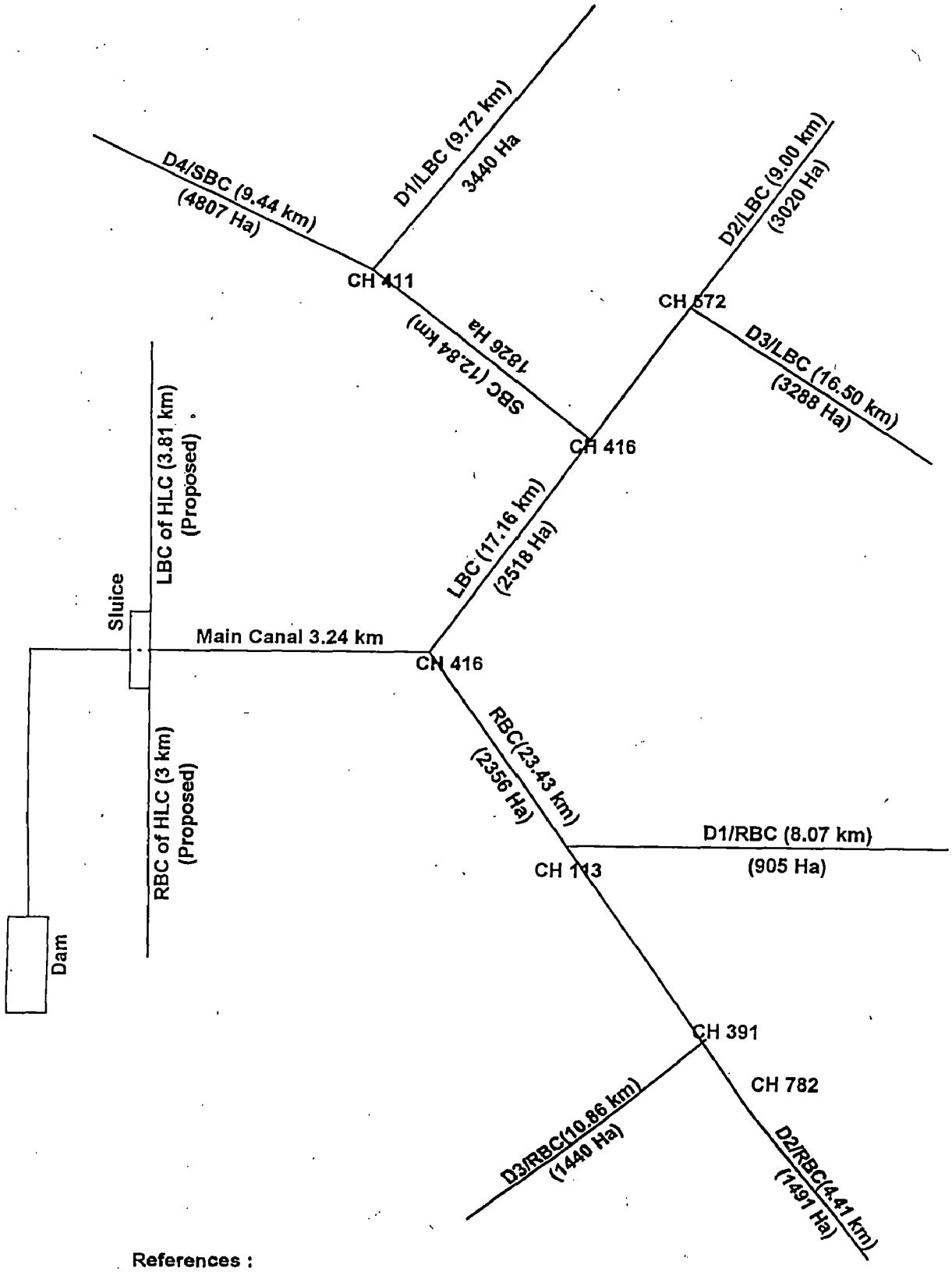
12.1	Commencement	:	1973-74
12.2	Completion of Work		
	Main Dam	:	1976-77
	Main Canal	:	1977-78
	Distribution Network	:	1995-96

3.1.1 Engineering Aspects

System Design : The command of Samrat Ashok Sagar Project is fairly flat. The distributories takes off from main canal and minors take off from the distributories. The distributories and minors in general have been aligned on the ridges to cover the maximum command under irrigation. Schematic diagram showing the layout of main canals and distribution system is given in Fig. 3.2.

Description of Canals : The main canal takes off from a saddle in the left bank of Halali river through sluice. The length of main canal is 3.24 km then it branches into the Left Bank Canal (LBC) and the Right Bank Canal (RBC). The left bank canal is aligned as a contour canal to run some distance and thereafter follows the ridge. The head discharge of LBC is 13.73 cumecs to irrigate 18900 ha of land.

The Right Bank Canal crosses Halali River itself and therefore provides irrigation facilities for the area of the right bank of Halali upto river Betwa. It irrigates 6192 ha area in Raisen and Vidisha districts with head discharge of 5.24 cumecs. It is aligned almost as contour canal. The important distributories taking off from the RBC are as follows :



References :
LBC : Left Bank Canal
RBC : Right Bank Canal
HLC : High Level Canal
CH : Chainage
D : Distributory
SBC : Sahoda-Branch Canal

Fig. 3.2 : Schematic Diagram of Samrat Ashok Sagar Project

(i) Distributary No. 1 : It takes off at RD 3390 m to irrigate 905 ha. The head discharge is 1.03 cumecs and length is 8.07 km.

(ii) Distributary No. 2 : It takes off from RD 23,430 m and is 4.41 km long. The head discharge is 1.92 cumecs to irrigate 1491 ha.

(iii) Distributary No. 3 : It takes off from RD 11,730 m to provide irrigation in 1440 ha. The head discharge is 1.67 cumecs and the length is 10.8 km.

There are total 80 nos. of minors and 41 nos. sub-minors in the left bank canal system. The total length of these minors and sub-minors is 242.65 km. In RBC there are 26 minors and 16 sub-minors. The total length of minors and sub-minors is 95.93 kms.

Basis for Water Allocation : Irrigation is provided on cropwise, short term agreement basis. The cultivators enter in to agreement with the Water Resources Department as per Irrigation Act 1931 and Rule amended in 1974 for supply of water for the specified crop in specified area. Wherever agreements are not drawn, water is also supplied on demand from cultivators after sanction by the Executive Engineer if the fields are in command and water is available.

Designed Crop Plan : Cropping pattern adopted at the time of formulation of project was considered as per details given in Table 3.2. But the crops after construction of the project did not develop as per designed cropping pattern. The cultivators take soyabean crop in Kharif followed by wheat and gram in Rabi. Soyabean is sown after commencement of monsoon, and normally there is no irrigation demand for soyabean. Soyabean is harvested in the month of October due to which sowing of Rabi crops are delayed. Sowing of Rabi crops are done after pre sowing irrigation. Due to late sowing the production of Kharif as well as Rabi crops are not satisfactory.

Table 3.2 : Crop Plan at the Start of Samrat Ashok Sagar Project 1978-79

Crop	Area in ha		Total	Assumed water requirement at outlet (mm)
	Left	Right		
Kharif				
1. Paddy	3777	1240	5017	660
2. Maize & Jowar	945	310	1255	203
3. Pulses	945	310	1255	100
4. Fodder	945	310	1255	100
5. Groundnut	945	310	1255	100
6. Soyabean	1888	620	2508	-
Total	9445	3100	12545	
Rabi				
7. Hy Wheat	9450	3096	12546	508
8. Local Wheat	9450	3095	12545	305
Total	18900	6191	25091	-
Grand Total	28345	9291	37636	

Source : Project Appraisal Report WRD, GOMP, Bhopal

Present Canal Operation Procedure : Water Resources Department is operating and managing the system to provide irrigation water to cultivators. To decide how much area is to be irrigated, the Department considers the water availability each year before the start of cropping season.

For seasonal operation programme the District Water Utilisation Committee headed by the Collector of the concerned district holds the meting at district headquarters, i.e., in Vidisha/Raisen. Concerned members of Legislative Assembly and the Executive Engineer Water Resources Department are the members of the Committee. Looking to the availability of storage water in dam, the committee decides the area to be irrigated. Accordingly, Executive Engineer prepares the

canal operation plan (Irrigation Ailan) for the season. Number of days and date of canal running and closure are also mentioned in the Ailan. The detailed program for opening and closing of different canals with name of villages to be irrigated, area, number of watering which can be given are finalised in consultation with cultivators through their Society or Irrigation Panchayat. After the announcement of irrigation program, the execution of short term agreement with the land holders being carried out at each village by the authorised staff of the Department, and water is supplied to farmers as per program fixed.

The main canals including distributary, minors and sub-minors are being operated as per program for Rabi irrigation, i.e., from October to March only as there is no Kharif irrigation has been developed.

Run-off : At present the water application is not properly planned. The run-off from the fields therefore goes to natural valley through natural nallas. At some places this water is however used by the cultivators by cross bunding and diverting it into their fields either by gravity or by pumping.

Maintenance of the System : The system is operated and maintained by Water Resources Department prior to the formation of Water Users Association in 1999. The estimates are prepared according to the Annual Inspection Register and repairs are to be carried out within the allotment made available. Repairs are carried out in closure period with the meager amount available after payment of wages to work charged, daily wages and permanent gang.

On-Farm Development : The irrigation staff of Water Resources Department perform water distribution. The on-farm activity is performed by the Command Area Development Authority (CADA) exist under the control of Commissioner of Bhopal Division for Samrat Ashok Sagar Project.

Water courses have been constructed in a surface area of 20,000 ha and

field channel in a area of 14000 ha. The distribution of water for irrigation in the Chak (40 ha) is arranged by cultivators themselves by operating the field channels. Tail reach farmers face the problem within the 'Chak' as effective 'Warabandi' is not implemented. Farm channels are generally constructed by the cultivators. The cultivators apply water to the fields by Furrows and Flood method of irrigation.

Coordination : Water Resources Department is responsible for construction and maintenance of the system upto the farm gates. The operation of the system is also the responsibility of Water Resources Department up to outlet and farmers manage below the outlet. Agriculture Department is responsible for providing agricultural advisory services through their extension wings and promotion of modern agricultural technology including Water Management.

Command Area Development Authority (CADA) is responsible for construction of water courses and field channels. Water and Land Management Institute (WALMI) conducting various water management training programs to develop skills and educate the farmers and officials.

3.1.2 Agricultural Aspects

Climate, Topography and Soils : The rainfall in the area is received from South West monsoon which breaks in the second week of June and last till the end of September. The main feature of rainfall in the area is that over 90 percent of the total rainfall occurs during June to September and it is uniformly distributed both in amount and time. The average annual rainfall as recorded by Vidisha rain gauge station is about 1100-1200 mm. The minimum temperature is recorded in the month of December to February and maximum in the month of May. The average maximum and minimum temperature during year is 32-33°C and 18-19°C respectively. The maximum average humidity percentage is 86 (morning) and 80(evening) in September. It is as low as 4 percent and 8 percent in driest months of April and May.

The catchment area as well as the area commanded by the project is a part of Malwas Plateau, with mean elevation of about 426.7 m above Mean Sea Level. The plateau is covered with fertile black soil (Kali Mitti) and clayey soil. All these soils are significantly retentive of moisture to grow all crops like rice, jowar, pulses, wheat, sugarcane and garden crops with irrigation. The area at present is predominantly a Rabi crop (wheat) zone.

Crops and Cropping Patterns : Crops grown in the command area for different season in irrigated and rainfed areas are indicated below :

Season	Irrigated	Rainfed
Kharif	-	Soyabean, Jowar, Pulses
Rabi	Wheat HyV, Wheat (Local), Gram	Wheat (Local), Gram, Alsi, Masur, Batla, Tiwada

Farmers adopted furrows and flood method of irrigation for major crops like wheat, gram, soyabean.

3.1.3 Socio-Economic Aspects

Socio-economic status and food habits of the people have their impact on crop diversification and selection. The land tenancy is an important factor influencing on farm developments and intensification of crop cultivation. The interest of land owner, owner-cum-tenant and tenant vary as far as the crop inputs are concerned. Nearly 19 percent of the land holdings in the command area are of size less than 1 ha which is held by about 56 percent of the farm families. Only about 5 percent of land holdings, covering about 35 percent of total land are larger than 6 ha. This reveals that there is a great scope for increasing the cropping intensity as well as for growing of labour intensive crops which will provide greater opportunity of work to the family members of the small and marginal farmers. The

normal size of the field is 2 to 5 ha and in combined property the size of field is 10 to 15 ha. Farms are operated by land owner and in some cases jointly operated. Farmers are well settled in 136 villages of command area.

Credit and Cooperatives : The facility of short term credit for inputs is available with Societies and Nationalised Banks, Regional Land Development Banks. cooperative Societies are operative in Vidisha and Raisen Blocks and number of farmers are the member of these cooperative societies.

3.2 DESCRIPTION OF SAMRAT ASHOK KRISHAK SAMITI

Govt. of India placed a great deal of emphasis on the participation of farmers in the management of irrigation after approval of National Water Policy in 1987. All the states were directed and guidelines were issued for implementation of Participatory Irrigation Management (PIM) through pilot project under CADA programme. States were requested to provide legal support to Water Users Associations. The Water Resources Department Govt. of M.P. issued an Executive Order in 1995 for speedy implementation of PIM in the state. As a result, Samrat Ashok Krishak Samiti of Samrat Ashok Sagar Project was registered under M.P. Societies Act 1973, first in M.P. The society covering an area of 504.43 ha of Tail minor of Distributary D-2 in Right Bank Canal System of Samrat Ashok Sagar Project. The Society has started functioning in the Tail Minor of D-2 at Sanchi. The Society was formed on 20-7-1995 by electing the Managing Committee in General Body Meeting. The elected Managing Committee consists of seven members including President, Vice President, Treasurer, Secretary, Joint Secretary and two members. The Sub Engineer of Water Resources Department and Rural Agriculture Extension Officer from Agriculture Department were nominated as Ex-Officio members.

3.2.1 Location and Area of Jurisdiction

Samrat Ashok Krishak Samiti located at Sanchi of Raisen District. The Irrigation Management of Tail Minor of D–2, Right Bank Canal of Samrat Ashok Sagar Project was transferred to the Society by Water Resources Department. The schematic diagram of Distributary D-2 is shown in Fig. 3.3. The command area of Tail Minor is 504.43 ha consist of 5 villages, three villages Kamapar, Nonakhedi and Kanakheda Kalan of Raisen Distt. and two villages of Berkhedi Birsa and Padriya Mafi of Vidisha District with 160 No. of farms.

The Society is formed in the Tail Minor because in irrigation project tail reach areas are most problematic, mainly due to non-availability of water. Hence the Tail Minor of D-2 was selected with a view that if productivity and water use efficiency in this area could be increased in an organised way, it will have an overall impact on whole of the project.

The village wise area of jurisdiction of the Society is shown in Table 3.3.

Table 3.3 : The Area of Jurisdiction of the Society

S. No.	Name of Village	Tehsil	District	Irrigated Land	
				No. of Farms	Area (ha)
1	Kamapar	Raisen	Raisen	55	153.966
2	Kanakheda Kalan	Raisen	Raisen	10	32.018
3	Nonakhedi	Raisen	Raisen	30	111.813
4	Berkhedi Birsa	Vidisha	Vidisha	45	123.202
5	Padariya Mafi	Vidisha	Vidisha	20	83.431
			Total	160	504.43

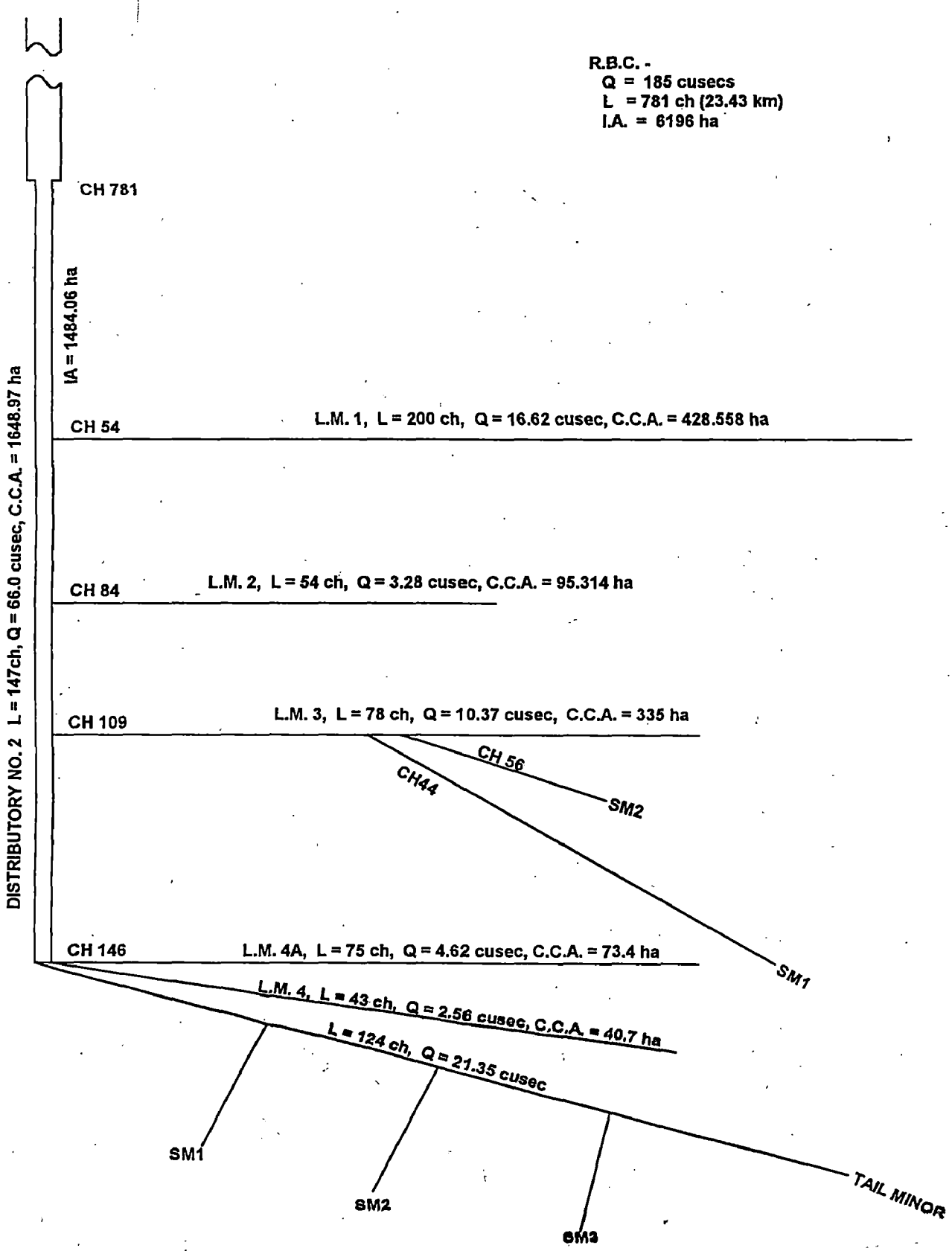


Fig. 3.3 : Schematic Plan of D-2 Disty of RBC of Samrat Ashok Sagar Project

3.2.2 Details of Tail Minor

The technical details of Tail Minor are as follows :

1.	Name of canal	:	Tail Minor/Disty-2/RBC			
2.	Offtake	:	RD 4410 m of D-2			
3.	Total length	:	3720 m			
			RD (m) 0-960	RD (m) 960-1560	RD(m) 1560-2400	RD (m) 2400-3720
4.	Bed width (m)		1.37	0.91	0.76	0.53
5.	Full supply depth (m)		0.91	0.84	0.68	0.45
6.	Free bord (m)		0.61	0.61	0.61	0.61
7.	Bank width (m)		1.22	1.22	1.22	1.22
8.	Side slope		2:1	2:1	2:1	2:1
9.	Bed level at head of tail minor	:	422.80 m			
10.	Full supply level at head	:	423.71 m			
11.	Top bank level at head	:	424.32 m			
12.	Max discharge	:	0.453 cumecs			
13.	No. of sub minors	:	Three, RSM 1, 2 and 3			
14.	Benefitted are	:	504.43 ha			
15.	Benefitted villages (1) Dist. Raisen		(1) Kamapar			
			(2) Nonakhedi			
			(3) Kanakheda Kalan			
	(2) Dist. Vidisha		(1) Berkhedi Birsa			
			(2) Padriya-Mafi			

3.2.3 Formation and Organisation of Water Users Society

Irrigation Management is transferred to the users in phased manner. The Water Resources Department of M.P. and Water and Land Management Institute (WALMI) have developed a model for formulation, role and functions of the society. The Water Users Society will be the main centre of farmers organising activities and established within the hydraulic boundary of a minor of command area upto 500 ha. The Water Resources Department and the Society have joint inspection of the minor and after development, minor will be handed over to the

Society for its management. The Water Users Society have an elected Management Committee (Executive Body) which have the representation from each outlet committee.

The Water Users Society is formed as a registered body under Co-operative Societies Act. Samrat Ashok Krishak Samiti has been registered under M.P. Society Registration Adhiniyam 1973 on 22-8-95.

In the general body meeting the Management Committee was elected as shown in Table 3.4.

Table 3.4 : Managing Committee of Samrat Ashok Krishak Samiti

(Effective from 20-7-95)

S. No.	Name	Post	Occupation	Village
1	Shri Surendra Kumar Patel	President	Agriculture	Kamapar
2	Shri Sher Singh Rajput	Vice President	Agriculture	Kamapar
3	Shri Mitthulal Tiwari	Treasurer	Agriculture	Nonakhedi
4	Shri Laxminarayan Patel	Secretary	Agriculture	Kanakheda Kalan
5	Shri Vishwanath Patel	Jt. Secretary	Agriculture	Nonakhedi
6	Shri Subhash Patel	Member	Agriculture	Kamapar
7	Shri Pramod Verma	Member	Agriculture	Rangai
	Ex-Officio Member			
1	Shri A. K. Gaur	Sub Engr., Water Resources Department		
2	Shri M. L. Panthi	Rural Agriculture Extension Officer		

The Ex-Officio member from Water Resources & Agriculture Department assist the society in the technical and agricultural matter.

3.2.4 Objectives of the Water Users Society

The main objective of Samrat Ashok Krishak Samiti is to ensure farmers participation in water management so as to optimize the use of available water and raise agricultural productivity in the command. The following are the objectives of the Society :

1. To receive and distribute the water according to the requirement for irrigation within the command area of the Tail Minor from canal through pipe or other means with permission from Water Resources Department.
2. To purchase or hire the pump set for irrigation and provide the same to the members on hire for efficient use of water.
3. The Society shall make available to member the advance agriculture, water and land management knowledge in consultation with experts.
4. To construct the water courses and field channels within the command area for proper water distribution and management.
5. To appoint the Manager for the work of Society, experts for agriculture and water management and labourer for the field work according to the need or as and when required.
6. To make available the seeds, fertilizer, pesticides and water etc. among all the members.
7. To prepare the cropping plan at the beginning of irrigation season according to the availability of water.
8. To resolve disputes among members.
9. To arrange training programme on modern crop production technology for the members
10. To carry out regional development works.
11. To provide facilities and promote agricultural production and other business connected with agriculture.

3.2.5 Members of the Society

The membership of the Water Users Society will be as follows :

1. Patrimony members : Any person who donate the Society Rs. 500/- in single payment or in 12 instalments of a year will be the patrimony member of the Society.
2. Life member : Any person who donate the Society Rs. 200/- will be the life member of the Society.
3. General member : The land holder of the command area who deposited Rs. 2/- per month of Rs. 24/- per year will be general member of the Society. The membership will remain only for the period for which the land holder has deposited the donation amount.
4. Honorary member : The Managing Committee of the Society make suitable person the Honorary members of the Society. Honorary members can take part in General Meeting but they do not have right to vote.

3.2.5.1 Application for Membership

Any person who wants to be a member of the Society should apply in written to the Managing Committee. Managing Committee have power to accept or reject the application.

3.2.5.2 Eligibility for Membership

The person is eligible for the membership of the Society by fulfilling the following condition :

1. Indian citizen
2. Age should not be less than 18 years.
3. Should have taken oath to follow the rules of the Society.
4. Should have good moral character and who does not drink.

3.2.6 Managing Committee of the Society

The members of the society elect the Managing Committee in the general meeting. The following office bearer and member of the Managing Committee were elected on the basis of majority of votes. The details are shown in Table 3.5.

Table 3.5 : Managing Committee of Samrat Ashok Krishak Samiti (Effective from 25-9-96)

S. No.	Name	Post	Occupation	Village
1	Shri Surendra Kumar Patel	President	Agriculture	Kamapar
2	Shri Rajendra Verma	Vice President	Agriculture	Kamapar
3	Shri Laxminarayan Patel	Treasurer	Agriculture	Kanakheda Kalan
4	Shri Subhash Patel	Secretary	Agriculture	Kamapar
5	Shri Vishwanath Patel	Jt. Secretary	Agriculture	Nonakhedi
6	Shri Lalit Tiwari	Member	Agriculture	Berkhedi Birsa
7	Shri Mahesh Verma	Member	Agriculture	Nonakhedi

The period of the Managing Committee is of 3 years or till the new Managing Committee is formed.

3.2.7 Rights and Responsibilities of the Managing Committee

The rights and responsibilities/functions of the Managing Committee shall be as follows :

1. To fulfill or arrange to fulfil the objectives for which Society has been formed.
2. To submit the annual accounts of income and expenditure duly audited in the General Body Meeting along with Progress Report every year.
3. To pay the wages of the employees of the Society and taxes on the property of the Society.

4. To appoint employee and teachers.
5. To carry out and implement all decisions of the General Body.
6. To demand the discharge and its duration in the canal as per requirement.
7. To maintain the canal system.
8. To carry out the agreement with water users.
9. To assist the Irrigation Department in recovery of water rate.
10. To settle disputes amongst the members.

3.2.7.1 Meeting of Management Committee

1. The meetings of the Managing Committee shall be held at least once in every month. The Agenda and notice of the meeting sent to every member of the Committee 7 days before the date of the meeting.
2. The quorum for the meeting shall be ½ of the members.
3. If there is no quorum for the meeting, the meeting shall be adjourned for an hour and be convened again on the same place. For adjourned meeting no quorum is required.
4. The President of the managing Committee can solve the disputes with permission of General Body. If parties are not satisfied, the decision of the Registrar will be final.

3.2.8 Rights and Responsibilities of General Body

All the members of the Society will be the members of General Body. The General Body meeting held at least once in a year. All the members shall be informed 15 days before the date of the meeting. The quorum for the meeting shall be 3/5 of the members.

The rights and responsibilities of the General Body are as follows :

1. To approve the previous years Annual Progress Report of the Society.

2. To create or/setup permanent assets and property for the Society.
3. To appoint auditors for the annual audit.
4. To discuss on the matter submitted by the Managing Committee.
5. To approve annual accounts of incomes and expenditures.
6. To approve annual financial budget.

3.2.9 Financial Resources of the Society

The financial resources of the Society are not mentioned in the bye-laws of the Society. However, following grants and subsidy are provided to the Water Users Organisations by the Government :

1. In Command Area Development Projects one time functional grant to Farmers Associations @ Rs. 500/ha (Rs. 225 : 225:50 to be shared by Centre:State:Farmers) is given by CADA to meet out the administrative expenditure.
2. Maintenance and repair grants at Rs. 20/- per ha of CCA to be given by State Govt. to the Water Users Associations.
3. Membership Fee collected from the members.

3.2.10 Financial Audit of the Society

The Society shall keep their fund in a Nationalised Bank or in a Post Office. All the transactions will be done by joint signature of President and Treasurer of the Society.

The Water Users Society shall get its accounts audited once in a year in a prescribed manner and submit the same to the Registrar, Firms and Societies, M.P., Bhopal.

3.2.11 Miscellaneous

The Managing Committee is free to make rules and sub rules for disposal of daily routine works.

Chapter 4

IMPACT EVALUATION OF WATER USERS SOCIETY

Irrigation plays an important role to increase the agricultural production. Irrigation water management is a process of optimum utilisation of organisation and resources (Irrigation water) to achieve optimum agriculture production. According to Raghuvanshi (1995) Irrigation Water Management performs three set of activities. One set of management activities focusses directly on the water. Water must be acquired, allocated, distributed and, if there is excess, it must be drained. A second set of management activities deals with the physical structures for controlling the water. These structures must be operated and maintained. A final set of activities focusses on the organisation which manages the water and structures and includes decision making, resource mobilisation, communication and conflict management.

Irrigation water management in Samrat Ashok Sagar Project rest with Water Resources Department of M.P. State. The created potential was not utilising properly so active participation of water users in the management of irrigation system was adopted by State Govt. In this context Samrat Ashok Krishak Samiti was formed in the Tail Minor of Disty. D-2 of Right Bank Canal. The Water Users Society was formed in the tail end of the canal because the availability of the water in tail reaches are in scarce. Individual effort can not achieve the goal. So the group of water users came forward to form a Water Users Society to achieve the common interest. The scarcity of water organised themselves and coordinated their activities to distribute water and benefits within organisation. The evaluation of impact of the Water Users Society is necessary to decide the future strategy and take measures for further improvement.

In this study, efforts have been made to study and evaluate the functioning

of the Water Users Society on the following lines :

1. Organisation
2. Water Management
3. Operation & Maintenance
4. Financial viability
5. Training and guidance to the Society.

4.1 ORGANISATION

Organisation can be defined as the structure and process by which a cooperative group of people being allocated its tasks among its members, identifies relationship and integrates its activities toward common objectives. Through organisation, people can achieve one or more objective which one cannot achieve individually. The common interest of group of people is the main reason for formation of organisation.

Farmers Organisation in irrigation water management plays a major role to ensure appropriate water use, distribution and application including operation and maintenance of irrigation system. The success of farmers organisation depends upon the participation of the farmers members and leadership in the organisation.

Irwan Effendi (1998) states that the level of participation in the group is influenced by farmers characteristics in adopting innovation.

From several characteristic, those which are relevant to the farmers participation in Water Users Associations are : formal education, farming experience, social and economic status, farm land area (holding size) attitude to changes, knowledge about WUA and cosmopolit behaviour of the member. These characteristic of the member farmer influence the level of participation in Water Users Associations activities.

4.1.1 Education

The level of education plays an important role and affects the acceptance of

farmers for a new technology and innovations. Higher the education of the member, he will be more innovative and receptive to the latest technique to maximise benefits.

Satpute (1981) conducted a study of knowledge and attitude of farmers and stated that there is significant relationship between education and knowledge level.

Patil (1986) conducted a study on adoption of water management practices in the command area of Krishna and found that higher the education level, higher was the level of adoption of irrigation water management practices in Krishna canal area.

The old and uneducated farmers are traditionally conservative and slow to change. They adopt the old practices and they don't know the benefits of new technology due to unawareness. Educated farmers are quite confident in applying latest methods of irrigation, new and high yield variety seeds, fertilisers and pesticides, etc. in their field. They also know about crop water requirement through irrigation, how to irrigate, when to irrigate and how much to irrigate. If every farmer adopt this concept, a lot of irrigation water can be saved and distributed to those who are in need of irrigation water, especially tail enders. At present a lot of irrigation water is wasted by the farmers due to unawareness about irrigation practices.

4.1.2 Socio-Economic Status

Social and economic status of the member increase the participation level in the organisational activities. The member who is social in nature will actively participate in organisation. The economic status relates to obtain maximum benefit or return on the investment. The member who invested a large amount in the agriculture will try to get maximum yield and benefit from it and attracted towards the organisational activities and irrigation water management. He accepts that benefits are higher and can be achieved only through the organisation.

Mani (1981) during his study on factors associated with participant and non-participants attitude towards an organisation opinion that less farming experience with high education, large farm size, more social participation, higher socio-economical status, greater mass media exposure developed more favourable attitude towards farm management.

Singh and Nagalwada (1978) studied the factors influencing the adoption of modern agricultural techniques in Maharastra State and opined that socio-economic status of farmers was found to have significant co-relation with the extent of adoption of wheat technology.

4.1.3 Attitude to Change

The attitude to changes is the characteristics of farmers which influence the level of participation in the organisation. Whether they are willingly ready to take the responsibilities of construction, operation and maintenance of the irrigation system, or taking it as passing of burden from Government to the users. The prolonged Government managed system made them dependent on the Government and they think that the Irrigation Water Management is the responsibility of the Government. Efforts should be made to motivate the farmers for change in attitude and sharing of benefits equally specially in head reaches so that homogeneity and conflict resolution between head and tail ender can be maintained. Proper technical knowledge and coordination creates the confidence in the member and they will come forward to take the responsibilities as a partner of the Government.

4.1.4 Knowledge about Water Users Association

The knowledge about Water Users Association influence the level of participation of the member. A member who knows about the organisation, its function, right and responsibilities and benefits of WUA, will attract towards the activities of the Water Users Association. The more the knowledge about the Water

Users Association higher will be the participation level of the member. The member take active part in attending the meetings, paying membership fee, taking part in decision making, being active in committee and being a leader if he has proper knowledge about the Water Users Association. The general awareness should be created in all the members specially marginal and small holding farmers regarding function, rights and responsibilities, maintenance and financial aspects of WUA. The benefits achieved should be communicated to all members which will create interest in them to know about the organisation and its functioning.

4.1.5 Cosmopolit Behaviour

The information input received from different sources by member influence the level of participation in the Water Users Association. The member tries to share his information with others through participation in the organisational activities. The information input of the member be positively correlated with participation. The young farmers with high outside contacts are more cosmopolite and had higher information of latest technology.

4.1.6 Team Work

Team work is considered as cooperation and coordination among the members of WUA with respect to irrigation water management. Team work spirit in the member arises within the group and it can not be imposed forcefully. Team work in Water Users Society is essential to achieve the common goal. Success of team work creates the confidence in the member, increases the participation level and trust in cooperative works.

4.1.7 Leadership

The activity and member's participation in an organisation is mainly influenced by leadership, which, according to Cartwrigt and Zander (1969), is an art of influencing people in to doing predetermined assignments.

Gupta & Shrivastava (1999) states that leadership is a critical need for sustainability right through the process of initiation, organisation and consolidation. All experiences suggest that proper identification, competence building, general acceptability and good performance of leadership are essential qualities for promoting and sustaining Farmer's Organisations. Strong leadership in the farmers enables a haphazard action from individual farmers to organised group action for the collective good.

Searching for leadership ability and locating an environment for its development is a very important task in the formation of Water Users Association. An attempt should be made to detect new leadership for such a new kind of activity because existing leaders often have their own interest, networks and may be having political links. The persons who have shown interest in agricultural productivity or concerned with irrigation problem would appear to be best suited.

The leader is expected to create confidence in the farmer, motivate them for active participation in the organisation, and remove their doubts about the policy. Leader has to ensure equitable distribution of available water and to organise proper maintenance works. He must make organisation internally strong by holding regular meetings and conducting them effectively; setting up transparent audit and accounting system and helping his organisation to lay down guidelines for managing the system, rules of use etc. and ensuing strict compliance. Leader must have good coordination with external agencies like Water Resources, Agriculture Department and other Water Users Associations. Above all he must produce results, and soon enough with increased incomes.

Leader should have capability to influence the member to follow or participate in achieving the objectives of the organisation. He must be supportive with members and office bearers of the organisation and have good communication facility. He should create sense of unity in the members providing communication facilities, taking initiative and decision in favour of the members and the organisation.

Training programme should be arranged for leader and office bearer of the organisation to develop the personal and professional skills. They should be well acquainted with their role, functions, rules and regulation of organisation, latest technology of agriculture, operation and maintenance practices and financial transactions. Preparation of irrigation schedule before any season, preparation of maintenance plan and its execution, operational difficulties of the system, process of expenditure, accounting and record keeping of income and expenditure are the main areas where attention is to be paid.

According to Irwan Effendi (1998) to achieve prominent role of the Water Users Association Chairman and officers, the Chairman and officer position should be handed to people with higher social status in the village, because social status of a person will significantly influence the participation level of the members in the organisation activities.

The role of the WUA Chairman in his leadership should be supported by village head and other parties, especially technical agencies because without their proper support it will be difficult for the WUA Chairman to carry out the proper management of irrigation water, institutional activities such as solving conflicts, communication, mobilization of resources, decision making, and improvement of irrigation system for the proper control of water use.

4.2 WATER MANAGEMENT

Irrigation involves management of water resources to provide water according to the requirement of crop as per cropping pattern, which is not sufficiently available from rainfall. Equity in distribution with adequate, assured and timely supply of water are the essential characteristics of irrigation water management.

Farmers managed Irrigation Water Management is treated successful if every member receive water equitably, in time with adequate quantity as per the

cropping patter. Water Users Association prepare the water allocation plan as per the cropping pattern of the area and the same quantity of water demand produced to the Irrigation Department for supply at head of the minor. There is general complaint of tail ender that they have not received water in time while head and middle reach farmers have less complaint.

Water users Association monitor the adequate quantity of water as per their demand at minor head. The adequate quantity received should be distributed among the farmers as per their holding. Most of the farmers do not take night irrigation and allow water to flow in natural drain. This would have created impact on less adequacy of water in the area.

Pre-intimation to rotational schedule of water distribution should be given to members. Proper communication or announcement (Ailan) of rotation schedule to the members required attention. Due to lack of communication many times farmers find it difficult to arrange other related inputs like seeds, fertilisers, insecticides, labourers etc., in time which further affects the productivity of the crops. Hence communication of rotational schedule is most important from farmers agriculture management view.

Water Users Society should also take care of other water management aspects as extent of irrigation, i.e., increase in irrigated area by improving the operation and maintenance of existing irrigation system. Proper on-farm works, suitable cropping pattern and water management skill, improve the water use efficiency and increase the yield. The member should be trained to adopt the scientific method of irrigation water application as required by crop, in proper time, in adequate quantity and frequency, so that wastage of water can be minimised.

4.3 OPERATION AND MAINTENANCE

Maintenance of irrigation system has now become a major problem. Routine maintenance is required to check the natural deterioration of the system. However

this becomes a problem when the system is not operated properly and when damages which caused by farmers gets accumulated in absence of routine maintenance. Reasons for neglected maintenance may be lack of sufficient funds, non committed inexperienced staff, lack of training in maintenance techniques, complex and time consuming working process and inadequate shut-down period.

Report of Central Water Commission made following recommendations about maintenance of canal :

(i) Farmers participation in the maintenance needs, assessment is particularly important as farmers are the first to notice deficiencies.

(ii) Maintenance might be contracted out preferably to Water Users Associations.

(iii) Farmers will be increasingly responsible for maintenance themselves.

The maintenance of irrigation system can be transfer to WUA as they can do the work in time, of better quality and cheaper too. They may also contribute group labour for some of the works. IIMI's India case studies confirms the proposition that maintenance by farmers not only leads to better results but in fact is a necessary condition.

Proper operation and maintenance of the system is pre-requisite for efficient functioning of farmers organisation. Without proper maintenance, availability of water in adequate quantity and timely is difficult and viability of farmers organisation will be suspected.

Maintenance work plan should be prepared by the farmers organisation assessing the condition of the system through a participatory walk through exercise. The normal operation and maintenance works includes desilting of canal, weed removal, embankment repairs, repair to canal gates, repairs to masonry structure and lining, oiling and painting of gates, emergency breach closing works etc. Reconstruction of sluices, regulators, measuring devices should be taken under rehabilitation works.

The evaluation of maintenance done by WUA covers the preparation of maintenance program according to the priority of the works and its implementation within the scheduled time frame. These aspects can be assessed from past data like expenditure on maintenance work and types of routine and special works carried out against the maintenance budget or norms. The future system improvement and development plan prepared by the WUA should also be evaluated.

4.4 FINANCIAL VIABILITY

Financial viability of Water Users Association is very important to the sustainability of the organisations and irrigation infrastructure. Organisation can not operate at a deficit or even an annual shortfall of funds will bankrupt the organisation in its early age.

The Water User's Association become financially viable if its source of income are more than the expenditure required. The source of income to Water Users Association are :

1. Management grants @ Rs. 500/ha (Rs. 225 : 225 : 50 to be shared by Centre : State : Farmers) is one time functional grant given to Command Area Development Projects for administrative expenses.
2. Share of water charges collected in the area of operation of the organisation
3. Membership fee collected from farmers for the services rendered in better management.
4. Penalty imposed on the farmers.
5. Interest on the fixed deposit amount.
6. Income from properties and assets attached to the irrigation system.

The expenditures of the Water Users Association are :

1. Repair and maintenance of the system under the area of operation.

2. Operational expenditure
3. Salaries and wages to the staff
4. Management and administration expenses.

Evaluation of financial aspects covers the resources of income and the expenditure plan. How the expenditure on maintenance, administration and management planned within the available resources and the procedure of the expenditure. The accounts and record keeping of income and expenditure should be scrutinize so that financial soundness of the organisation can be evaluated. The accounts of the organisation should be audited annually. In order to achieve financial viability and sustainability of the organisation, the Water Users Association has to generate more income to meet out the expenditure by proper planning and utilisation of resources. The plan for generation of resources for future development by the organisation is an important aspect and it should also be evaluated.

4.5 TRAINING AND GUIDANCE TO THE SOCIETY

The success of Participatory Irrigation Management achieved through active involvement of the participants, i.e., farmers and Government agencies related to Irrigation and Agriculture. The involvement of the member can be increased through increasing the awareness in the participants. In rural portion of India, generally farmers are low educated and not aware with day to day changes in the technology and policy. Awareness and involvement of the member farmers can be increased through proper training and guidance. There is need of training program for the members, WUA leader and office bearer, Irrigation and Agriculture officials for proper functioning and coordination among them. Participatory Irrigation Management is relatively new area in the Irrigation Management hence need of training and guidance are enormous and their nature varied according to the local condition.

Following training programme should be arranged and its monitoring is required.

Training for Members and WUA : The farmers and Water Users Association office bearer should be trained in the following :

1. Necessity of participation, function and benefits
2. Water distribution, scheduling of water, its methodology and frequency.
3. Educating farmers about improved irrigation method and its benefit in conserving the water. Avoiding wastage of water and adoption of night irrigation.
4. Application of latest technology of agriculture to increase the yield.
5. Measuring water flows, irrigated areas and charging water rates.
6. Procedure for conducting meeting, passing resolution, implementation and preparation of maintenance plan.
7. Function, rights and responsibilities of the member and organisation.
8. Maintenance of the canal network, timely and precisely to reduce conveyance losses and operational losses so that maximum quantity of water can be delivered to the crop.
9. Maintaining accounts of income and expenditure, balance sheet, profit and loss.
10. Correspondence and coordination with Govt. Departments and other Water Users Association.
11. Resolving disputes among farmers in sharing water.
12. Consumptive use of water in the command area to reduce water logging and salinity problem.

Training is a tool to improve the knowledge of members and office bearers regarding organisational, management, maintenance and financial aspects and to induct attitudinal change. The training package for farmers should be comprehensive and field oriented. Training material should be in local language

which is easy to understand by all the farmers. The audio-visual training is more effective for the farmers.

Training for Government Officials

After transfer of irrigation water management to water users, proper training and awareness in the Government officials specially in mid-level and low-level field officials of Irrigation Department is required. Irrigation Department officials are closely in contact with Water Users Association, so their knowledge and guidance influence the working of the organisation. Properly trained, motivated and supportive officials are required to assist the Water Users Association in attaining improved Irrigation Water Management. The official should be trained on following matter :

1. The concept of PIM, its necessity and benefits.
2. How to organise and motivate the farmers to participate in the Irrigation Water Management and assume the responsibilities of Operation and Maintenance of the system.
3. Objective, function, rules and regulations of Water Users Association, their organisation and working procedure. Function and responsibilities of office bearer of the organisation, Memorandum of Understanding (MoU) etc.
4. Water requirement of different crops depends upon climate, crop and crop growth stage and type of soil in the area.
5. Improved method of water application like border, check basin, furrows etc. for different crops in different soils and land slopes.

Properly trained and motivated official should provide guidance to WUA on the following matter :

1. Guidance to the leader for arranging farmers meeting, formulate or revise bye-laws and other legal matter and in decision making.
2. Helping the WUA to prepare the water demand schedule.

3. Guidance in preparing operation and maintenance plan of the organisation and its execution procedure.
4. Help the WUA to provide proper rules and regulations of Government regarding maintenance and financial expenditure procedures.
5. Help in maintaining the records of income and expenditure.
6. Help the organisation in selection and introduction of suitable cropping pattern.
7. Guidance and demonstration on field to read the gauges, computing the discharge from tables/graphs and measuring the quantity of water flows.
8. Proper guidance and technical support in operational difficulties of the system.
9. Help the WUA to increase the income and mobilisation of resources.

4.6 EVALUATION METHODOLOGY

Samrat Ashok Krishak Samiti was evaluated for organisational, management, maintenance and financial aspects and its impact on the society was reviewed. Secondary data such as project report, command area, land holding, cropping pattern, weather, soil, yield, etc., are collected from Water Resources and Agriculture Department.

Primary data collected from the field through direct interviews from the beneficiaries and office bearer of Water Users Society. The command area of the Society served by Tail minor of Distributary D-2 in Right Bank Canal is given in Table 4.1.

The command area of Samrat Ashok Krishak Samiti served by Tail minor is divided in three parts head reach, middle reach and tail reach. The villages Kamapar, Nonakhedi and Berkhedi Birsa are selected from head, middle and tail reaches for conducting the personal interview from the office bearer of the Society and actual beneficiaries. Farmers were classified in 4 categories of marginal, small, medium and large farmers on the basis of land holding size.

Table 4.1 : List of villages according to Tail minor reaches

S. No.	Canal Reach	Name of Village	District	No. of Farms	Area in ha.
1	Head reach	Kamapar*	Raisen	55	153.96
2	Head reach	Kanakheda Kalan	Raisen	10	32.016
3	Middle reach	Nonakhedi*	Raisen	30	111.813
4	Middle reach	Padriya Mafi	Vidisha	20	83.43
5	Tail reach	Berkhedi Birsa*	Vidisha	45	123.202
				160	504.43

The office bearer of the Society 7 numbers and other 30 numbers farmers from three villages were interviewed (Interview Schedule shown in Appendix No. I). The interview schedule was prepared in local language Hindi for better communication and understanding of the members. In the interview schedule, questions were asked from farmers regarding their education, income, holding size, their knowledge about Water Users organisations, attitude to change, team work in the Society, leadership support, maintenance and financial process of the Society.

The data collected were analysed for Organisational Dynamics and to decide the factors which influence the knowledge about organisation of the member and indirectly their participation level in the organisation.

Selection of Variables

The members knowledge (understanding) about the organisation is considered as dependent variable and members education, farming experience, socio-economic status, holding size, team work and leadership support are taken as independent variable to study the influence of these characteristics on the level of knowledge about the organisation. The list of selected variables is given in Table 4.2.

Table 4.2 : List of selected variables

Category	Variables
Dependent variables	Y_1 Members knowledge (understanding) about organisation for Irrigation Water Management
Independent variables	X_1 Members education
	X_2 Farming experience
	X_3 Socio-economic status
	X_4 Holding size
	X_5 Team work
	X_6 Leadership support

Scoring of the Variables :

Dependent and independent variables are measured to prove the inter relations between the variables. The concept for various variables have been delineated for studying the extent of relationship among dependent and independent variables. The scales were developed on the basis of summated ratings (Likert, 1958) for measuring the dependent and independent variables.

The basic assumption of the method is that each statement in the scale covers the entire knowledge and management continuum and that individual's overall choice of degree of acceptance or rejection determines his position of the continuum.

Members Knowledge about Organisation (Y_1)

Members knowledge about the organisation is measured in terms of their response in answering the questionnaire about organisations functions, roles and responsibilities, legal support, powers etc. and information possessed by the respondents about the Farmers Organisation.

The scoring technique used to measure members knowledge about organisation for irrigation water management as points given to each statement as:

Very well known	:	4
Well known	:	3
Known	:	2
Not known	:	1

Education (X_1) : Education of the member is measured in terms of actual number of classes attended by the member. Score 1 is given to illiterate members those who can do signature.

Farming experience (X_2) : Farming experience of the member is measured as total number of years engaged in farming business.

Socio-economic status (X_3) : Socio-economic status shows the overall social and economic position of member in the Society. The socio-economic status is measured with the help of scores given to various characteristics such as education, income, social status, land, house, agriculture implements and other implements. The total score obtained by member was taken as measure of socio-economic status.

Holding size (X_4) : The size of land possessed by the member is considered as holding size. The score given as no. of ha. of land possessed by the member.

Team work (X_5) : Team work is a measure of cooperation and coordination among the members to work in farming with respect to irrigation water management. In the present study team work refers to the combined group actions of respondents or members of organisation in the study area. Scores for response given by the member on the statement are given as :

Most often	:	4
Often	:	3
Seldom	:	2
Never	:	1

Leadership support (X_6) : Leadership support plays an important role in the success of organisation and influence the members to take part in the organisation to achieve the target. His initiative, interest, imagination, activity and relations attracts the members for participation. Leader can clear the doubt among the members and increase their knowledge about the organisation. In the present study leadership support is considered as a capability of local person to advise and guide Farmers Organisations and carrying out individual and group activities.

The score is given on the basis of the responses obtained from the respondents about the activities of leadership for the betterment of the organisation.

Most often	:	4
Often	:	3
Seldom	:	2
Never	:	1

Multiple Correlation and Multiple Regression

Multiple correlations and multiple regression shows the combined influence of a group of variables, upon a variable which is not included in the group. The influence of members education, farming experience, socio-economic status, holding size, team work and leadership support on his knowledge about the organisation is studied through multiple correlation and multiple regression. How these independent variables influence the dependent variable and their weightage can be found out through multiple correlations and multiple regression.

The prediction power of each multiple regression equation was evaluated

with the help of multiple correlation coefficient (R) and the square of the correlation coefficient (R^2).

The multiple correlation (R) represented the linear correlation between farmers knowledge about organisation and the scores predicted from the independent variables were used in the multiple regression.

In multiple regression and multiple correlation, all independent variables and dependent variables were included and results obtained through Data Analysis and Microsoft-excel program of the computer.

The relative importance of the independent variables was established by standard partial regression coefficient.

Chapter 5

RESULTS AND DISCUSSIONS

Samrat Ashok Krishak Samiti performance is evaluated on organisational, management, maintenance and financial aspects. For organisational dynamics evaluation, primary data were collected from the actual beneficiaries and analysed statistically. The results and discussions have been presented in the following order.

5.1 ORGANISATIONAL ASPECTS

The organisational aspects of the Samrat Ashok Krishak Samiti is evaluated on the basis of its members knowledge (understanding) about the organisation and leadership influence. The knowledge about the organisation of the members varies with their education, farming experience, socio economic status, holding size, team work and leadership support.

Members of different category and different reaches were interviewed and attempt has been made to indicate the actual scenario of the study area. The sample distribution of farmers was analysed in Table 5.1 on the basis of education, farming experience, socio-economic status, holding size, team work and leadership support as independent variables and farmers knowledge about the organisation as dependent variable.

The distribution of dynamic variable was based at three levels – high, medium and low for which the means and standard deviations were calculated to define the classification of variables. Exception to these were education and holding size.

Table 5.1 : Sample farmers distribution according to their education, farming experience, socio-economic status, holding size, team work, leadership support as independent variables (X_1.....X_6) and their knowledge about the organisation as dependent variable (Y_1).

S. No.	Characteristics	Distribution	
		N = 37	Percentage
1.	X_1 Education		
	(i) Illiterate	12	32.4
	(ii) Middle school	7	18.9
	(iii)Higher secondary	12	32.4
	(iv)Graduate and Post graduate	6	16.2
2.	X_2 Farming experience		
	(i) High	4	10.81
	(ii) Medium	23	62.16
	(iii)Low	10	27.03
3.	X_3 Socio-economic status		
	(i) High	11	29.73
	(ii) Medium	12	32.43
	(iii)Low	14	37.84
4.	X_4. Holding size		
	(i) Marginal (< 1 Ha)	6	16.22
	(ii) Small (1 – 2 Ha)	7	18.92
	(iii)Medium (2 – 5 Ha)	13	35.13
	(iv)Large (> 5 Ha)	11	29.73
5.	X_5 Team work		
	(i) High	10	27.02
	(ii) Medium	18	48.64
	(iii)Low	9	24.32
6.	X_6. Leadership support		
	(i) High	9	24.32
	(ii) Medium	22	59.45
	(iii)Low	6	16.21
7.	Dependent variable		
	Y_1. Knowledge about the organisation		
	(i) High	9	24.32
	(ii) Medium	21	56.75
	(iii)Low	7	18.91

Education level of the farmers in the study area varies from illiteracy to graduation. But about one third of the population (32.4%) had no formal education. About 18.5% educated up to Middle School, 32.4% up to Higher Secondary and 16.2% are Graduate and Post Graduates.

Farming experience of most of the members is of medium range of 15 to 32 years. About 10.8% members have high experience, 62.16% have medium experience and rest 27% have low farming experience.

Socio-economic status of the members are of low and medium level. High socio-economic status found in 29.73% members while 32.43% members belong to medium and 37.84% members belong to low socio-economic status.

Holding size of the members are classified in 4 categories. About 16.2% are marginal, 18.92% are small, 35.13% are medium and 29.73% are large farmers. In general farmers have medium and large holding size.

The classification of team work and leadership support indicate that most of the farmers were at medium in both the levels. About 27.02% and 24.32% had achieved high category of team work and leadership support respectively.

5.1.1 Correlation Analysis

The farmers knowledge about organisation have been correlated with their education, farming experience, socio-economic status, holding size, team work and leadership support as independent variables. The correlation matrix obtained from computer program analysis is shown in Table 5.2.

The individual relationship of six variables (X_1-X_6) with farmers knowledge about organisation is shown in Table 5.3.

Table 5.2 : Correlation between farmers knowledge about the organisation (Y_1) with education (X_1), farming experience (X_2), socio-economic status (X_3), holding size (X_4), team work (X_5) and leadership support (X_6)

	Y_1	X_1	X_2	X_3	X_4	X_5	X_6
Y_1	1						
X_1	0.605616	1					
X_2	-0.561521	-0.689439	1				
X_3	0.749297	0.820915	-0.581024	1			
X_4	0.648239	0.753323	-0.495895	0.848236	1		
X_5	0.772188	0.416962	-0.362161	0.654506	0.511263	1	
X_6	0.810182	0.345254	-0.318626	0.555257	0.43724	0.816793	1

Table 5.3 : Zero order correlation between farmers knowledge about the organisation with independent variables.

S. No.	Independent variables		Dependent variable Farmers knowledge about organisation (Y_1)
1	X_1	Education	0.605*
2	X_2	Farming experience	-0.561
3	X_3	Socio-economic status	0.749*
4	X_4	Holding size	0.648*
5	X_5	Team work	0.772*
6	X_6	Leadership support	0.810*

* *Significant at 0.05 level of probability*

Correlation analysis shows that farmers knowledge about organisation have relationship with individual variables. The computed coefficients of correlation of most of the pre-determined dynamic variables with the knowledge about organisation were found significant at 0.05 level of probability except the farming experience. Farmers participation is negative with farmers of old age (long farming experience). Education, socio-economic status, holding size, team spirit and leadership support have got positive relationship with knowledge of farmers participation. The notable findings are that farmers knowledge (understanding) increases with high education, socio-economic status, holding size, team spirit and leadership support. These characteristics of members participation are discussed in detail as below.

Education : The farmers knowledge about organisation have relationship with education. As education increases the knowledge about organisation level also increases. Higher the education of the member, he will be more innovative and receptive to the latest technology and information. From sample analysis it is found that knowledge about organisation level is medium (66-71%) to low (34-29%) in low educated member while the knowledge level is medium (41-50%) to high (50%) in higher educated members. The relationship between education and knowledge about organisation level for different categories of education are shown in Table 5.4 and graphical representation in Fig. 5.1.

Table 5.4 : Relationship between level of education (X_1) and knowledge about the organisation (Y_1)

S. No.	Education Category	Number Total N = 37	Knowledge about Organisation Level		
			High	Medium	Low
1.	Illiterate (no formal education)	12 (32.4%)	0	8 (66.66%)	4 (33.33%)
2.	Middle School (Class 2 to 8)	7 (18.9%)	0	5 (71.4%)	2 (28.5%)
3.	Higher Secondary (Class 9 to 11)	12 (32.4%)	6 (50%)	5 (41.66%)	1 (8.33%)
4.	Graduate & P.G. (Class > 11)	6 (16.2%)	3 (50%)	3 (50%)	0
	Total	**37**	**9**	**21**	**7**

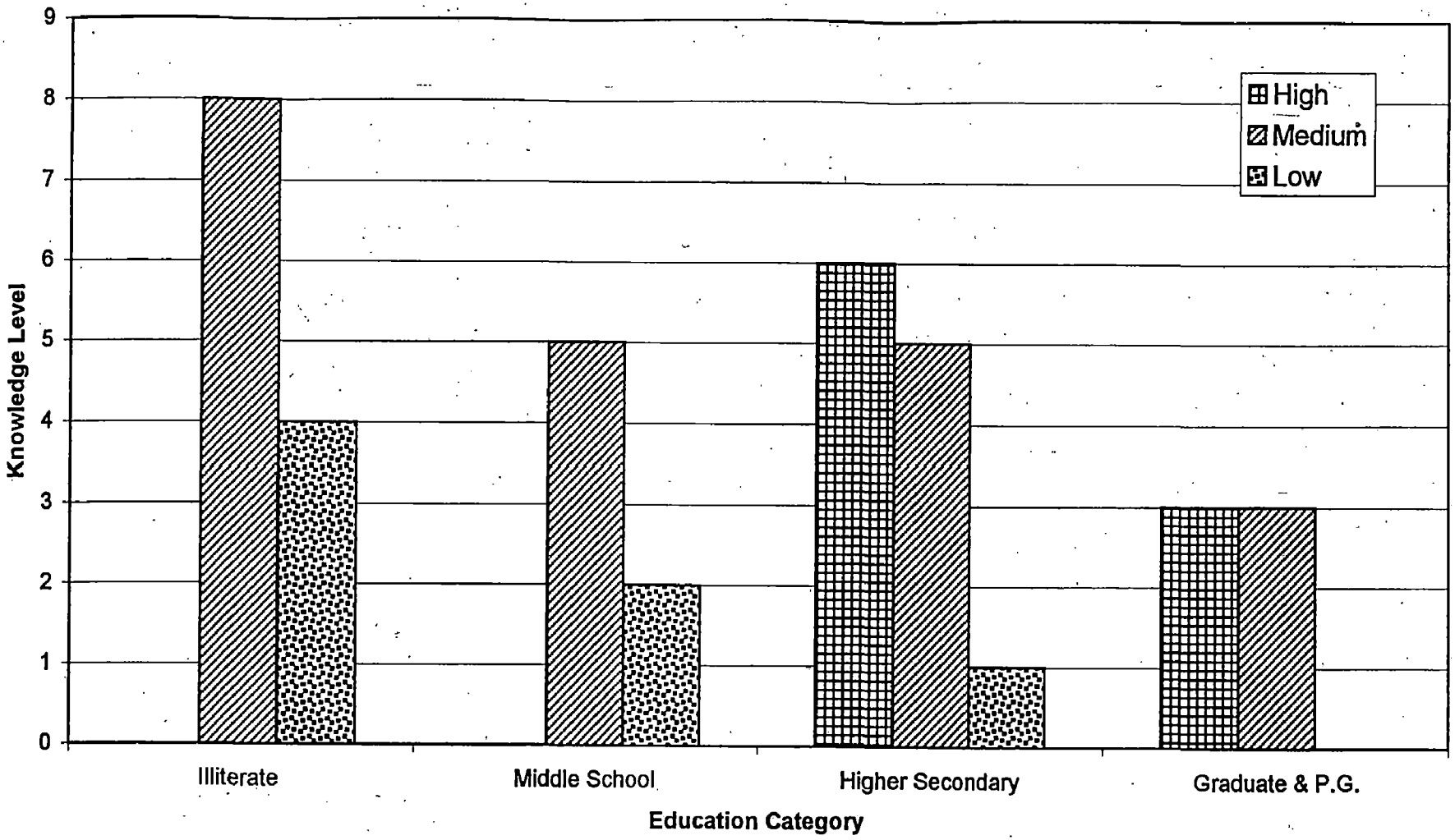


Fig. 5.1 : Relationship between level of education and knowledge about the organisation

Farming Experience : Farming experience does not show the relationship with knowledge about the organisation. Higher farming experience shows lower level of knowledge about organisation while lower farming experience shows higher level of knowledge about organisation. This may be explained as member having high farming experience are of old age and low education level. Old age farmers with high farming experience may stick with old traditional farming practices and do not want to take risk for new technology. Due to low education their information input is low and they are not aware with new policies of irrigation water management. The relationship between farming experience and knowledge about organisation level is shown in Table 5.5 and graphical representation in Fig. 5.2.

Table 5.5 : Relationship between farming experience (X_2) and knowledge about the organisation (Y_1)

S. No.	Farming experience	Number Total N = 37	Knowledge about Organisation Level		
			High	Medium	Low
1.	High (> 32 years)	4 (10.81%)	0	2 (50%)	2 (50%)
2.	Medium (16-32 years)	23 (62.16%)	4 (17.39%)	15 (65.21%)	4 (17.39%)
3.	Low (< 15 years)	10 (27.02%)	5 (50%)	4 (40%)	1 (10%)
	Total	**37**	**9**	**21**	**7**

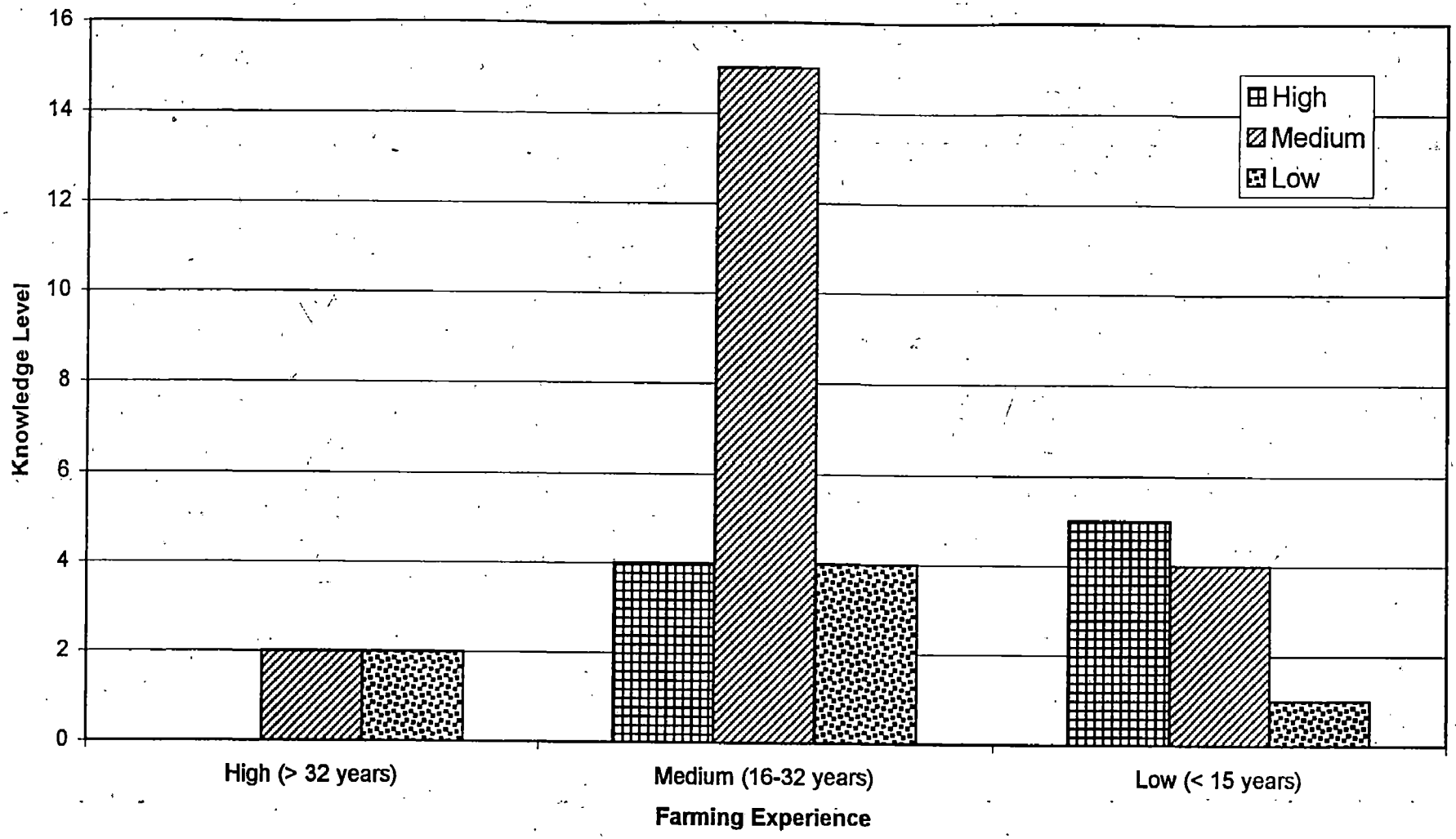


Fig. 5.2 : Relationship between farming experience and knowledge about the organisation

Socio-economic Status : Socio-economic status of the members shows significant relationship with their knowledge about organisation level. Higher the socio-economic status of the member, higher the knowledge about organisation and lower the status, the knowledge level is also low. Social and economic sound member tries to obtain maximum benefit by taking part in organisational activities and have more knowledge about the organisation. About 72% members of high socio-economic status have high knowledge about organisation while 65% members of low socio-economic status have low knowledge about the organisation. The relationship between socio-economic status and knowledge about organisation is shown in Table 5.6 and graphically on Fig. 5.3.

Table 5.6 : Relationship between socio-economic status (X_3) and knowledge about the organisation (Y_1)

S. No.	Socio-economic status	Number Total N = 37	Knowledge about Organisation Level		
			High	Medium	Low
1.	High	11 (29.72%)	8 (72.27%)	3 (27.27%)	0
2.	Medium	12 (32.43%)	1 (8.33%)	9 (75%)	2 (16.66%)
3.	Low	14 (37.83%)	0	9 (64.28%)	5 (35.71%)
	Total	**37**	**9**	**21**	**7**

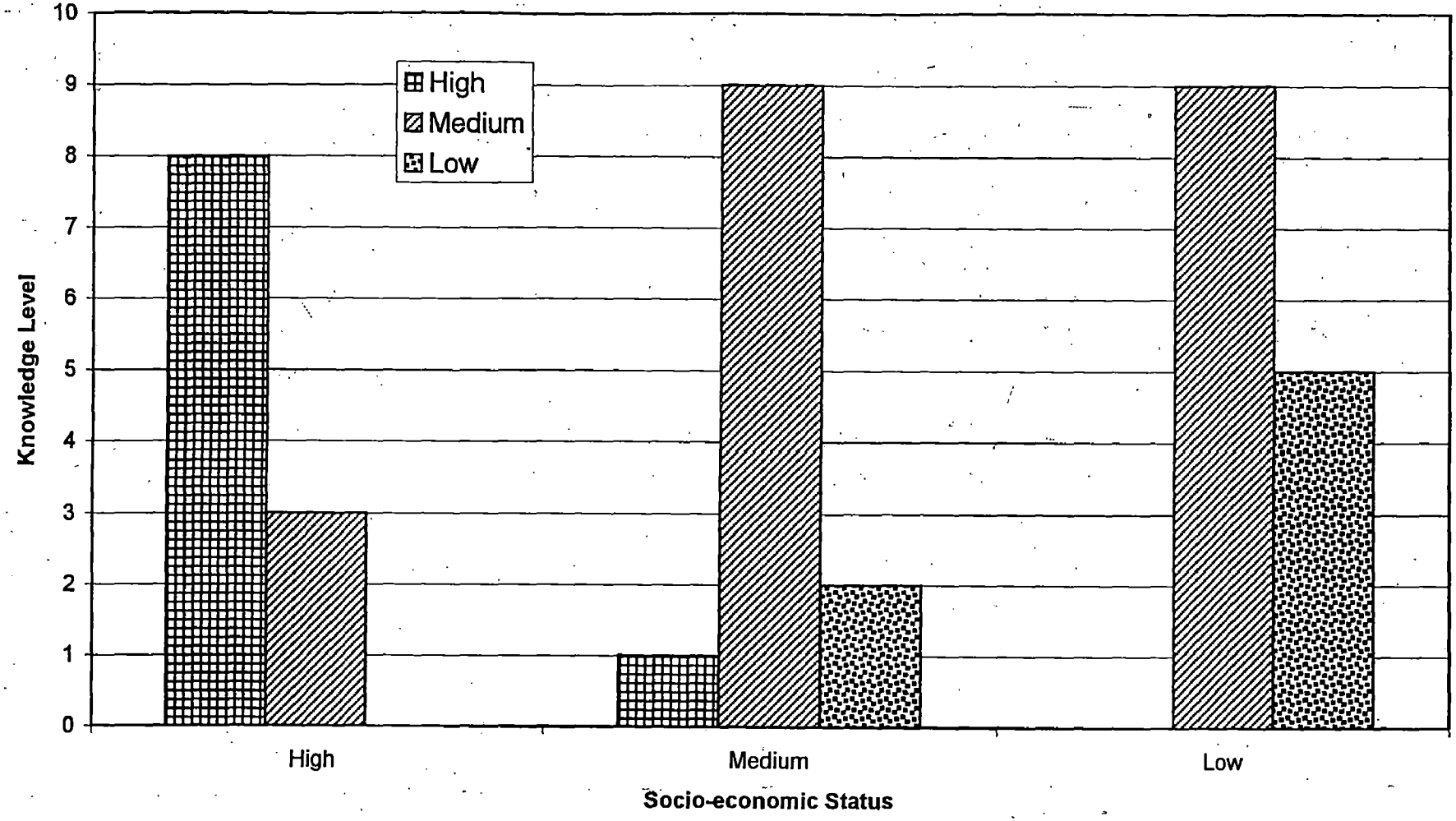


Fig. 5.3 : Relationship between socio-economic status and knowledge about the organisation

Holding Size : Knowledge about organisation level varies according to holding size of the member. Higher the holding size of the member the level of knowledge is also high (54%) while marginal and small farmers have low (50-28%) to medium (50-72%) level of knowledge. This may be explained as farmers having very small holding do not want to take risk by adopting new information and techniques of Water Users Society. As their knowledge about organisation is low they do not take active part in the society's activities and decision making process. The relationship between holding size and knowledge about organisation is shown in Table 5.7 and graphical representation on Fig. 5.4.

Table 5.7 : Relationship between holding size (X_4) and knowledge about the organisation (Y_1)

S. No.	Holding size	Number Total N = 37	Knowledge about Organisation Level		
			High	Medium	Low
1.	Marginal (< 1 Ha)	6 (16.21%)	0	3 (50%)	3 (50%)
2.	Small (1-2 Ha)	7 (18.9%)	0	5 (71.42%)	2 (28.57%)
3.	Medium (2-5 Ha)	13 (35.13%)	3 (23%)	8 (61.53%)	2 (15.38)
4.	Large (> 5 Ha)	11 (29.72%)	6 (54.54%)	5 (45.46%)	0
	Total	**37**	**9**	**21**	**7**

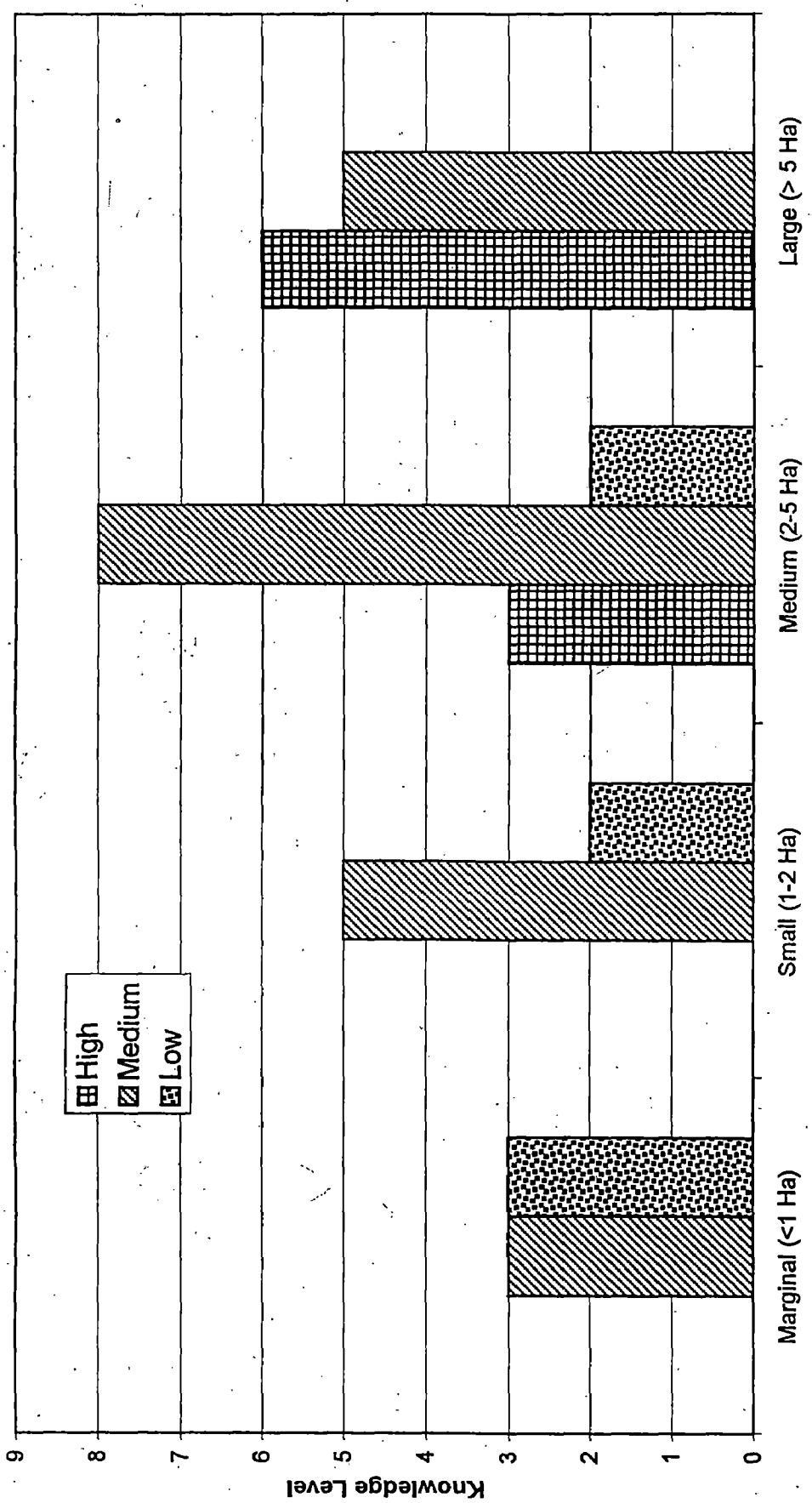


Fig. 5.4 : Relationship between holding size and knowledge about the organisation

Team Work : The member with high team work spirit is having high knowledge about the organisation. Team work increases the cooperation and coordination among the members which results the more information about each other and the organisation. During team work member comes in contact with office bearer and other persons of the Society and may know better about the organisation and its activities, and his faith in the organisation increases. The relationship between team work and knowledge about organisation is shown in Table 5.8 and on Fig. 5.5.

Table 5.8 : Relationship between Team work (X_5) and knowledge about the organisation (Y_1)

S. No.	Team work	Number Total N = 37	Knowledge about Organisation Level		
			High	Medium	Low
1.	High	10 (27.02%)	7 (70%)	3 (30%)	0
2.	Medium	18 (48.64%)	2 (11.11%)	14 (77.77%)	2 (11.11%)
3.	Low	9 (24.32%)	0	4 (44.44%)	5 (55.56%)
	Total	**37**	**9**	**21**	**7**

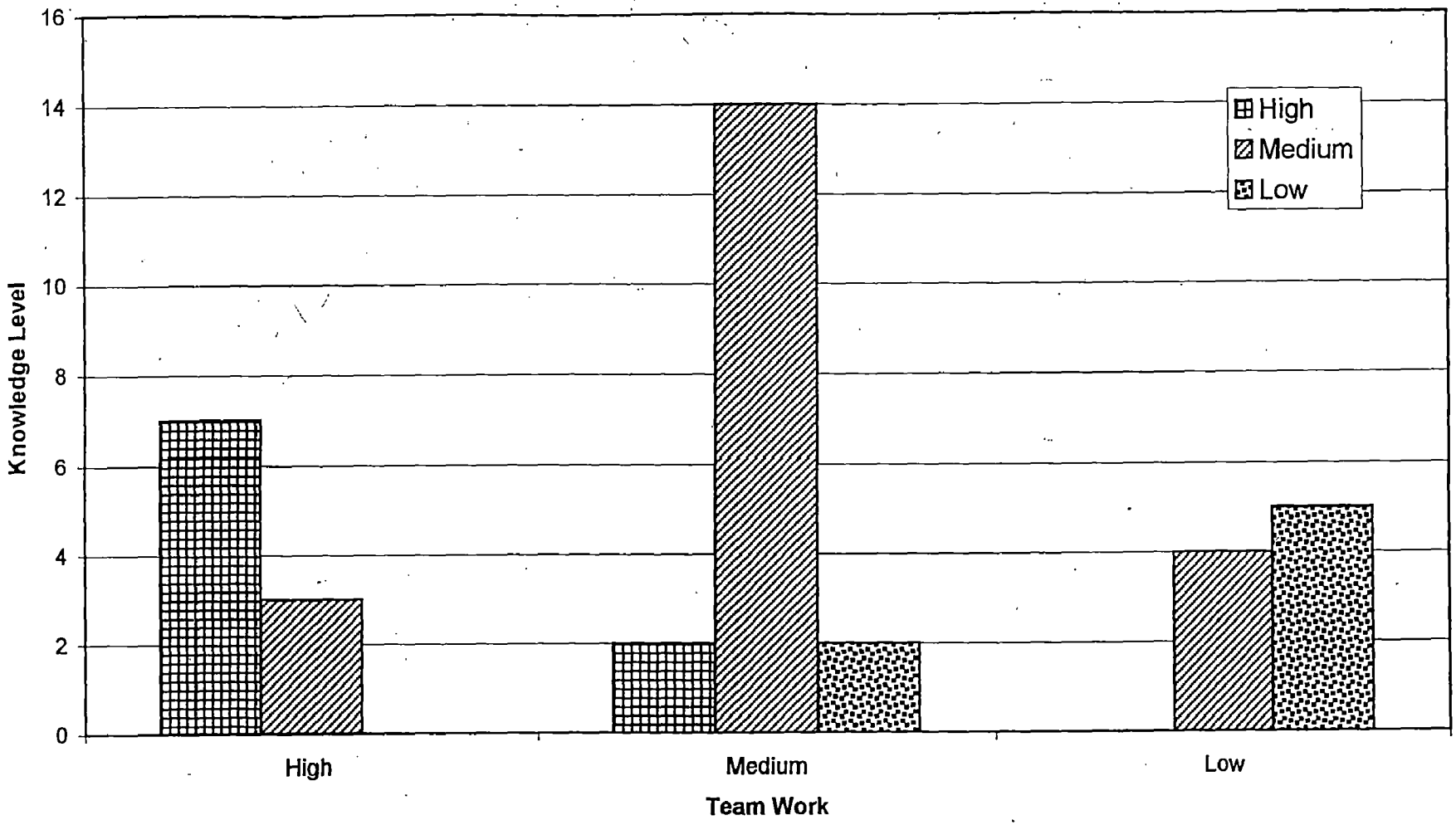


Fig. 5.5 : Relationship between team work and knowledge about the organisation

Leadership Support : Leadership support greatly influence the knowledge about organisation level of the member. The leadership support coefficient of correlation found to be most significant with knowledge level. Leader can influence the member to take part in the activities of the organisation and thus knowledge level of the member increases with leadership support. The sample distribution revealed that high leadership supported members have higher percentage in high knowledge about the organisation. The relationship between leadership support and knowledge about organisation is shown in Table 5.9 and its graphical presentation in Fig. 5.6.

Table 5.9 : Relationship between leadership support (X_6) and knowledge about the organisation (Y_1)

S. No.	Leadership support	Number Total N = 37	Knowledge about Organisation Level		
			High	Medium	Low
1.	High	9 (24.32%)	7 (77.77%)	2 (22.23%)	0
2.	Medium	22 (59.45%)	2 (9%)	17 (77.27%)	3 (13.63%)
3.	Low	6 (16.21%)	0	2 (33.33%)	4 (66.67%)
	Total	**37**	**9**	**21**	**7**

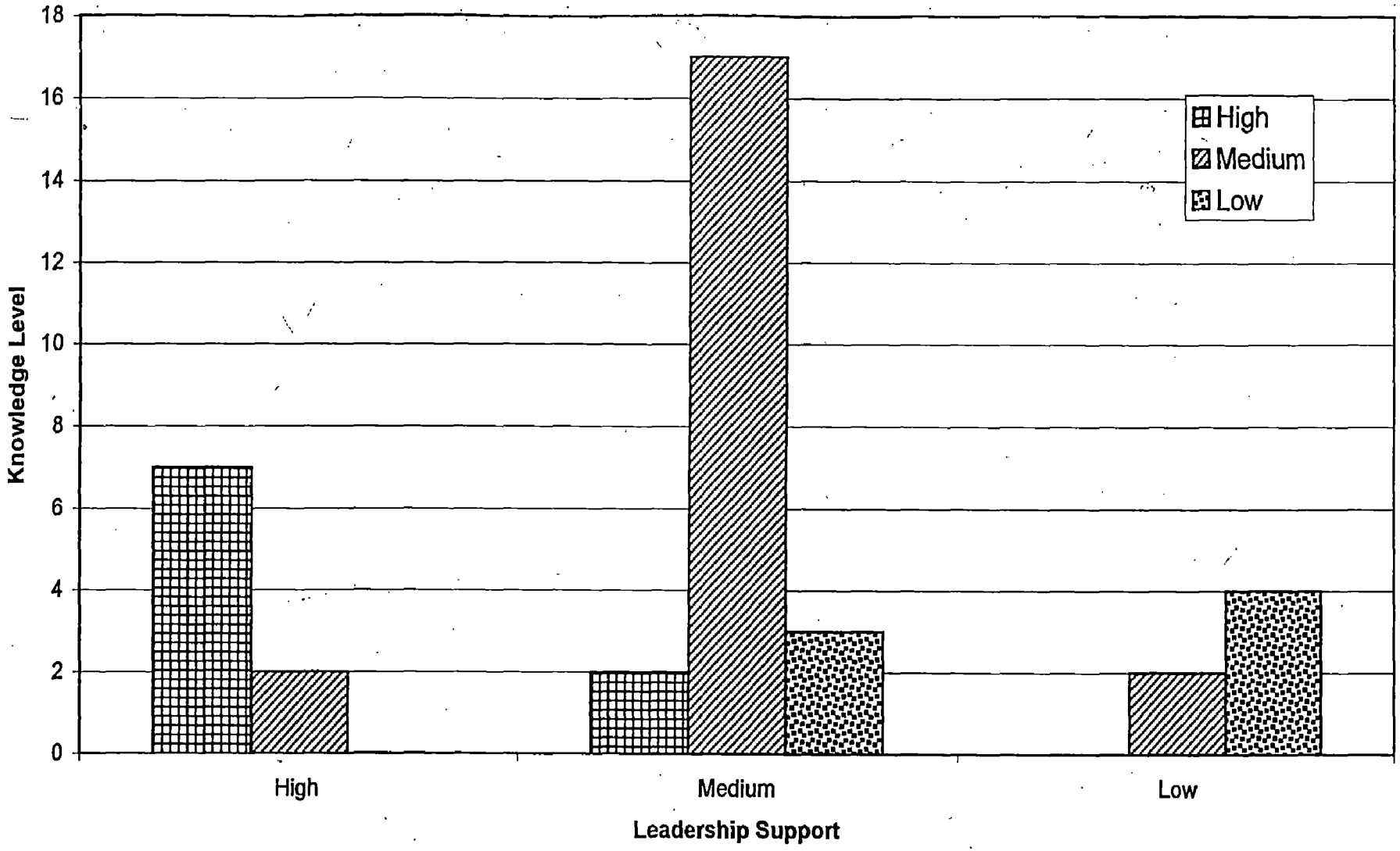


Fig. 5.6 : Relationship between leadership support and knowledge about the organisation

Correlation analysis shows that the knowledge about the organisation in the member varies with their education, socio-economic status, holding size, team work and leadership support. Therefore for successful organisation these variables must be increased.

The findings in respect of significant relationship of these variables on organisational dynamics were in line with the findings of Shukla (1963), Pareek (1966), Satpute (1981), Patil (1986), Mani (1981), Singh and Nagalwada (1978), Puranik (1997) and Irwan Effendi (1998), who studied the functional relationships of organisation at different places.

5.1.2 Multiple Regression Analysis

Multiple regression is a statistical technique used to observe the combined influence of independent variable, i.e., education, farming experience, socio-economic status, holding size, team work and leadership support on the dependent variables, i.e., members knowledge about the organisation.

In the present analysis multiple regression function with six independent variable and one dependent variable is developed on empirical hypothesis as

Empirical hypothesis : The scores of farmers knowledge about the organisation Y_1 will vary directly with their scores on socio-economic dynamic variables (X_1, X_2, X_3, X_4, X_5, X_6).

Null Hypothesis : The sum of squares for regression added by six variables is zero.

Multiple regression of six independent variables shows significant relationship (except farming experience) to farmers knowledge about organisation at 0.05 level of probability. The variables were fitted in the multiple regression equation and the findings are presented in Table 5.10.

Table 5.10 : Multiple regression analysis with six independent variables (X_1 to X_6) associated with farmers knowledge about the organisation (Y_1).

Independent variable	Partial coefficients 'b'	Std. Dev.	t Ratio
Education	0.1485	0.5059	0.2936
Farming experience	-0.3366	0.2027	-1.6600
Socio-economic status	0.4991	0.6696	0.7453
Holding size	0.5098	0.6827	0.7467
Team work	0.6793	0.9089	0.7474
Leadership support	1.7392	0.4620	3.7643
R^2 (adj) – 78.16%		F = 22.477	

Significant at 0.05 level of probability.

The computed F value 22.47 was significant at 0.05 level of probability. Thus the null hypothesis was rejected. The data in Table 5.10 supported the original hypothesis.

These six variables explained the extent of 78.16 percent variation in the farmers knowledge about the organisation scores. Out of these six variables fitted in multiple regression equation only five variables namely X_1 (education), X_3 (Socio-economic status), X_4 (holding size), X_5 (team work) and X_6 (leadership support) were contributed significantly to the prediction of farmers knowledge of social organisation.

The highest significant variable is leadership support correlated with farmers knowledge about the organisation. The success of an organisation and the participation of its member is highly influenced by leader of the organisation in his leadership implementation. The leadership support initiate and motivate the members to take part in the organisational activities to achieve the common object. The leadership support increases the participation level of members by

increasing their knowledge about the organisation.

The other important variables, i.e. formal education and socio-economic status of farmers which were significantly contributing to members knowledge about the organisation. The result shows that higher the education and socio-economic status of the member his knowledge about organisation will be higher.

Similar findings were obtained by Tekale (1992) and Choudhary (1990) while studying the agricultural management in Vidarbha region.

The other contributing significant variables, i.e., team work and holding size have significant relationship between the organisational knowledge and farmers involvement in group work to achieve maximum benefit from available land holding.

The members knowledge about the organisation increases the participation level of the member in Water Users Society. Irwan Effendi (1998) concluded in his study that participation level of WUA members in the organisation activities is significantly influenced by level of knowledge about WUA, social status and cosmopolit behaviour of the farmers. In order to increase the WUA members participation, guidance should be conducted by Agricultural Extension and Irrigation Officers to increase the knowledge about WUA organisation to the members and officers. The subject of guidance or extension are information on the objectives, functions and tasks of the WUA members and officers, and the organisation sanction according to the basic rules of the organisation, so the members and officer can achieve adequate knowledge about organisation, and eventually aware and realise the benefit of WUA. He also found that the influence of WUA leadership level on organisation dynamics is highly significant, while level of members participation influence significantly.

5.1.3 Impact of Samrat Ashok Krishak Samiti

Samrat Ashok Krishak Samiti was formed in 1995 as Water Users Society in

the command of Tail minor. During present study in 2000, it is found that the members knowledge about organisation increases from members of low knowledge (16.91%) to medium knowledge (56.75%). This shows that roots of the organisation is spreading in the area, which is a good sign for sustainable organisation but the input from Govt. agencies is essential for the proper growth of the organisation. Input from Govt. agencies in terms of training, financial support, adequate and timely water supply, reliable infrastructure, operation and maintenance procedures are essential for organisation to perform its function smoothly and create the confidence in the members. The sustainable organisation is the backbone of successful Participatory Irrigation management (PIM).

5.2 WATER MANAGEMENT

The Water Users Society is responsible for water management within its area of operation of tail minor. The main factors of water management, equity, adequacy and timeliness studied in the area through personal interview from farmers of head, middle and tail reaches.

Water Resources Deptt. allocated the water at head of tail minor and Water Users Society (Samrat Ashok Krishak Samiti) distribute the water in outlet command through outlet committees. The outlet committee distribute the water among farmers on rotational system, i.e., Warabandi system in the command of the outlet. After formation of the Society, water is distributed equally in head, middle and tail reaches.

During discussion with farmers it is noted that 85% of head reach and middle reach farmers get water equitably and adequately but they are not getting water timely because it is tail minor and efforts have to be made to receive water in time. About 65% farmers of tail end reported that they are not getting water equally, adequately and timely. The tail portion of the minor is flood prone area of river Betwa, so farmers lift the river water for irrigation. Due to unreliability of

water through canal, number of tube wells are in operation in tail portion. The other reason is the Water Resources Department also not provide adequate quantity of water timely at the Tail Minor head, which affects the distribution of water within the area of operation of the organisation.

Awareness of the member increased in the area regarding water management after formation of the Society. Through training from Water and Land Management Institute, the level of knowledge about the scientific method of irrigation and crop water requirement is increased. Farmers are now adopting improved method of irrigation as border strip for wheat crop.

After formation of the Society increase in production is reported by members that yield of wheat increased from 25 Q/ha to 32 Q/ha and gram 8 Q/ha to 14 Q/ha, due to proper water management and availability of water. The members cooperate each other at the time of irrigation thus the cooperative concept is increased in the members which is good signal for the organisation.

Water logging problem was noticed in village Kamapar and Nonakhedi but due to the effort and initiation of the Society, Command Area Development Authority, constructed the catch water drain and water logging is checked.

The impact of Samrat Ashok Krishak Samiti on water management is observed as increase in yield, better rotation of water, improved method of irrigation and better cooperation in the members.

5.3 OPERATION AND MAINTENANCE

Operation and maintenance of canal system in Samrat Ashok Sagar Project is the responsibility of Water Resources Department. The Department provides water to farmers. The decision on operational aspects of canal is taken in District Water Utilisation Committee meeting. The meeting is held in the office of the Collector and attended by Water Resources, Agricultural Officials and farmers organisation representatives. The function of operation and maintenance of

irrigation system upto outlet is performed by Water Resources Department and not by the farmers organistion. The organisation only performs the water distribution.

The Samrat Ashok Krushak Samiti and its member willing to take the responsibilities of operation and maintenance of tail minor, but it was not handed over to the Society by Water Resources Department. The operation and maintenance function performed by the Department in consultation with Society, but the keen interest of members to participate and taking responsibility of O & M was not encouraged by the Department.

During discussion with farmers it was observed that 68% were fully agree to take over the responsibilities of O & M of whole project while 11% were neutral and 21% were disagree to take the responsibility. The disagreement is due to lack of technical knowledge and confidence in the members who are low educated.

Most of the farmers reported that maintenance of main canal, distributaries, minors and micro-distribution network along with canal structures like cross regulators, head regulators, outlet, etc. are neglected and poorly maintained. The system is suffering with weed infestation, breaches in canal, broken canal lining, siltation, collapses of side slopes in some reaches and damaged structure. The system is unable to carry design discharge and reliable water supply to the fields. These problem can be solved by involving farmers in the maintenance activities and irrigation management can be improved.

The Water Users Society activate their member to maintain the water courses and field channels. Some essential maintenance work of irrigation system such as cleaning of canal, repairs to breaches, temporary crossing of drainage etc. were performed by the Society under 'Shramdan' by the members. This shows the awareness of Society and members regarding importance of maintenance.

5.4 FINANCIAL EVALUATION

Financial resources received by Samrat Ashok Krishak Samiti are listed as below :

1. One time functional grants @ Rs. 500/ha from Command Area Development Authority. In Rs. 500/ha share of Centre and State Govt. is Rs. 225/- each and Rs. 50/- is shared by the farmers. The Society has received Rs. 50443/- in the year 1996 and Rs. 1,69,000/- in the year 1999. The farmers share is collected in some part. All the farmers not paid their share.
2. Collection of membership fee from land holder @ Rs. 2/- per month or Rs. 24/year.
3. Donation from Patron and life members of the Society.

The operation and maintenance of the tail minor still not handed over to the Water Users Society, so the Society have not spend the money on maintenance. No instruction or guidelines issued by CADA to the Society for expenditure of the functional grant. However the Society leader and office bearer deposited all the funds in the Bank as Fixed Deposit. The guidelines for expenditure of only interest of Fixed Deposit for management purpose received by the Society very late.

Society had spent a very nominal amount on stationery and travelling allowance and all other expenditures of office, stationery, transport and welcome were borne by the Society office bearers personally.

Irrigation Department did not handed over the maintenance of tail minor to the Society and scope of expenditure is limited so the financial evaluation of Society can not be performed properly. However, it is observed that the leader and office bearer of the Society are more attentive in financial matter. The accounts of the Society audited annually by Chartered Accountant and the audit report is submitted to The Registrar, Firms & Societies every year.

5.5 OVERALL IMPACT OF SAMRAT ASHOK KRISHAK SAMITI

Samrat Ashok Krishak Samiti, Sanchi formed in Madhya Pradesh as pilot project to introduce the concept of Participatory Irrigation Management in irrigation system which were managed by Govt. since a long period. The evaluation

study shows that inspite of incomplete objective and lack of support from Government agencies, still Society shown the impact on :

1. Awareness in the members regarding water users organisation is increased. The members are preparing to take the responsibilities of irrigation system's operations, maintenance and management for which they were dependent on Govt. since a long. Sense of belonging to the system increased the confidence of member to become the partner of Government in Irrigation Water Management.
2. Socio-economic status of the members increased due to increase in yields, better water distribution, increase in irrigation area, adopting scientific methods of irrigation, better marketing etc. Through training farmers awareness in advanced agriculture technology, efficient use of water, maintenance of the system is increased.
3. Maintenance is not handed over to the Society even then the awareness and importance of maintenance is increased in the Society. Maintenance and repair of canal breaches, construction of temporary drainage crossing, disilting of canal, etc. done by the Society by collection from members and 'Shramdan'. This shows that organisation can maintain the system if they are properly trained and proper funds are provided.
4. The necessity of consumptive use of water (surface and ground water) is increased in the area of Society. The Society is formed in the command of tail minor and surface water availability is scarce and not assured so the members starts the use of ground water by tube wells for assured supply of irrigation water.
5. Good leadership and team work spirit in the members developed in the region. The coordination and cooperation in the members and office bearers of the Society is increased.

6. Response of Irrigation Department increased in water related problems from the Society. Problem of the Society are attended and corrective measures taken on priority than the problem of the individual.

7. From the experience of the Society the motivation in nearby area is increased and 18 other Water Users Societies are formed in different projects of M.P.

8. Many visitors from India and abroad visited the Society.

Chapter 6

SUMMARY AND CONCLUSIONS

6.1 SUMMARY

Irrigation plays an important role in agriculture production. Due to advancement in agriculture technology and introduction of high yielding varieties, fertilisers and pesticides load on irrigation facilities has been increased. Large number of irrigation projects were constructed before and after independence to create the irrigation facilities over the entire country and to meet out the present demand of irrigation. In the phase of construction irrigation potential has been created but less attention was paid on its full utilisation. So the gap between potential created and utilised is constantly raising. The gap in the utilisation of irrigation potential is a burning problem at National and State level. The reasons for low utilisation may be due to infrastructural, social and organisational constraint and lack of participation of its users.

From past experience of ancient India farmers managed tank and experience from abroad Participatory Irrigation Management is viewed by National Water Policy and State Water policy as means to improve the performance of irrigation system and to reduce the gap between created and utilised potential. Participatory Irrigation Management is involvement of farmers in all aspects of management process as partner of Government and to share the responsibilities of irrigation system.

Participatory Irrigation Management is implemented by various countries according to the local condition of users. In developed countries like USA and Mexico where the average holding size is large, the size of Water Users Association are large and top down approach is applied, while in developing countries like Indonesia, Philippines, etc., size of Water Users Association are small and bottom-up approach is adopted. Japan is the country where all the activities including

irrigation water management is performed by single organisation at village level called Mura.

Participatory Irrigation Management in different states of India is implemented in the form of Water Users Societies in Gujrat, Maharashtra, Bihar and Rajasthan State and recently Participatory Irrigation Management Act has been passed in Andhra Pradesh and Madhya Pradesh.

M.P. State Government promoted the Participatory Irrigation Management by forming Water Users Societies at the beginning in 1995 and later on by passing M.P. P.I.M. Act in 1999. Samrat Ashok Krishak Samiti is the first Water Users Society formed in M.P. to cover an area of 504.43 ha of tail minor of distributary D-2 of Right Bank Canal in Samrat Ashok Sagar Project Vidisha. The Society is registered under M.P. Societies Act 1973 on 22-8-1995.

The impact evaluation of Samrat Ashok Krishak Samiti is the main objective of the study. The study was conducted on the following objectives.

1. To assess and study the organisation dynamics of the Society and relationship between farmers socio-economic variables with their knowledge about the organisation and leadership influence.
2. To examine the functioning of Water users Society for irrigation water management, maintenance and financial aspects.
3. To identify the constraints of irrigation system affecting the effective functioning of farmers organisation.

For evaluation of the Society primary datas collected from the actual beneficiaries through interview schedule and secondary datas collected from Water Resources and Agriculture Department. Primary datas were collected by dividing the command area of the Society served by tail minor in three reaches, i.e., head reach, middle reach and tail reach. The head reach village Kamapar, middle reach village Nonakhedi and tail reach village Berkhedi Birsa selected for conducting the personal interview from the actual beneficiaries. Farmers were classified into four

categories of marginal, small, medium and large farmers on the basis of holding size.

The data collected were analysed for Organisational Dynamics. The organisational dynamics of the Society is evaluated on the basis of its members knowledge about organisation and leadership influence. Members education, farming experience, socio-economic status, holding size, team work and leadership support are taken as independent variable and members knowledge about the organisation is taken as dependent variable. Multiple correlation and multiple regression analysis were done to find out the relationship between independent variable and their influence on dependent variable. The analysis shows that

1. The independent variable farmers education, socio-economic status, holding size, team work and leadership support had significant relationship with farmer knowledge about the organisation. The members knowledge about organisation is related with the participation level of the member in the organisation activities. In multiple regression analysis education, socio-economic status, holding size, team work and leadership support found significant with their knowledge about the organization. The leadership support is found most significant variable for members knowledge about the organisation. Only farming experience shows non-significance. The knowledge about organisation in the members of the Society is found to be medium level, this shows that impact of formation of Water Users Society in the area started increasinig the participation level of the members. Proper guidance and training to the members is required for efficient functioning of the organisation.
2. Functioning of Water Users Society for irrigation water management studied by examining the equity, adequacy and timely supply of irrigation water to the members. The Society helps in distribution of water below outlet. During discussion with farmers, it is found that 85% members of head and

middle reach get water equitably and adequately but they are not getting water at proper time. About 65% of tail end farmers reported that they are not getting water equally, adequately and timely. The reasons may be non-receipt of allocated supply from Irrigation Department to the Society.

3. Awareness for efficient water utilisation, developing and maintaining relationship with Government agencies and adopting improved method of irrigation has increased in the members after formation of the Society. The impact of water management by Society resulted in increase in yield, better rotation of water, improved irrigation method of irrigation and creating more cooperation and team work in the members.

4. Operation and maintenance of the canal system was not included with the objective of the Society. The objective for which Society is formed do not match with the objective of Participatory Irrigation Management. The Society is ready to take the responsibilities of operation and maintenance of tail minor but Irrigation Department role was not positive. The Water Users Society activated its members to maintain the water courses and field channels. Some essential maintenance work of tail minor such as cleaning of canal, repair of breaches, temporary crossing of drainage, etc., were performed by the Society under 'Shramdan' by the members. This shows that the Society and members are aware with importance of maintenance.

5. Financial resources of the Society are functional grants received from Command Area Development Authority and membership fee from members, no maintenance grant is given to the Society. A nominal expenditure on stationery and transport were incurred by the Society. All the funds received kept in Bank as Fixed Deposit. Clear instruction guideline about expenditure were not issued to the Society.

6. Constraints found in the success of Participatory Irrigation Management can be grouped as poor infrastructure of irrigation system, lack of operation and

maintenance of irrigation systems, weaker management, gap in communication between users and Government agencies and poor administration.

6.2 CONSTRAINTS IN PARTICIPATORY IRRIGATION MANAGEMENT

Constraints in proper functioning of Water Users Society have been categorised as follows :

6.2.1 Poor Infrastructure of Irrigation System

The infrastructure of irrigation facilities does not carry desired water supply due to faulty design, poor construction of minors, water courses, field channels, water measuring and controlling structure and their improper placement, canal lining etc. Such poor infrastructure is not reliable for adequate and timely water supply. Infrastructure of irrigation facilities should be designed and constructed properly to carry the required discharge up to tail end of the system. The inadequacy affects the water distribution of the system which can not be easily managed and creates conflicts among the Water User Associations and members.

6.2.2 Lack of Operation and Maintenance

There is lack in operation and maintenance of irrigation system. Budget constraints for operation and maintenance of existing system have contributed to the chronic problem of deferred maintenance and system efficiency has come down and it has further resulted in non-availability of water. In most of the irrigation projects designed efficiency could not be achieved due to lack of proper documented operational procedure, neglected routine maintenance, inexperience and unskilled operation staff, bureaucratic indifference and non-accountability, procedural difficulties and corruption, etc. Maintained and properly operated system can improve the reliability and assured availability of water to all users. If Water Users Association get adequate and assured water supply most of their problem of water distribution can be solved and they can function smoothly.

6.2.3 Weaker Management and Poor Administration

Weaker management and poor administration both on the part of Government and farmers organisation is a constraint in proper utilisation of water. Lack of supervision, lack of appropriate water distribution system, lack of financial and legal support to users Societies, lack of training to farmers on water management and lack of incentives and recognition for good work on Govt. part contributed to weaker management in the irrigation system. Lack in enforcement of 'Warabandi' rotational water supply and lack of supervision at farm level were the constraints of Farmers Organisation. Poor administration in Farmers Organisation may be due to non control on water supply and non payment of water charges by farmers to the organisation. These constraints may be overcome by handing over the control on water supply and recovery of water charges to the Farmers Organisation.

6.2.4 Factions among the Farmers

The factions among the farmers are mostly on water distribution. Faction among farmers developed due to unassured water availability. Most of the farmers of head reach and middle reach draw more water than required, which results in lack of availability of water in tail reach area. Faction among the farmer makes the organisation weak, and has adverse impact on functioning of organisation. Organisation should solve the disputes among the farmers by equitable distribution of water between head and tail end.

6.2.5 Communication Gap Between Organisation and Govt. Agencies

Most of the problem arises due to gap of communication between Farmers Organisation and Govt. agencies. In the initial stage of Farmers Organisation it is the responsibility of Govt. agencies to communicate every instruction and guidelines to Users Association regarding their organisation, management, maintenance and financial expenditure matter. Cordial cooperation and

coordination between Government and farmers organisation is essential to overcome this constraint. Water Users Associations and farmers should be trained about their duties, functions and powers about irrigation water management.

6.3 PRE-REQUISITES FOR STRONG FARMERS ORGANISATION

Efficient functioning and sustainability of farmers organisation depends upon the following pre-requisites to the organisation :

I. Strong Government support and incentives : Farmers need strong Government support and incentives for viable Water Users Association. Legal, financial and administrative support from Government encourages the organisation for better functioning. Incentive for better collection of water rate, conservation of water, to irrigate more area and for better functioning of organisation should be provided to WUAs to create interest of members and office bearers. Subsidy on the basis of actual area irrigated than command area will provide additional incentive to WUAs for extended actual irrigation.

II. Well defined water allocation and distribution system : Well defined water allocation and distribution system is of primary importance for Water Users Associations. Water allocation system denotes the water scheduling and rotational water supply in the canals. Distribution of water stands for systematic way in terms of quantity to be distributed over a fixed period, i.e., Warabandi. WUAs should be intimated well in advance regarding water allocated to them so that Association can manage the distribution of water accordingly.

III. Proper maintenance and rehabilitation of irrigation system : The maintenance and rehabilitation of irrigation system before transfer is important for Farmers Organisations. The system should be able to carry the design discharge capacity. Without proper maintenance adequate and reliable water supply will not be possible. In this situation control over unit of water will be very difficult and viability of Water Users Association will be suspected.

IV. Placement of water control and measuring structure : Placement of water control and measuring structure at proper place is important for WUAs to control and measure the water received by them. In absence of installation of these structure at required place, it is difficult for WUAs to control and regulate the water properly. Secondly for distribution of water on volumetric basis installation of measuring structure at proper location is quite essential. WUAs and farmers should be consulted before installation of these structure for its maximum utilisation.

V. Water charges collection : In many states of India water charges collection is very poor and in some states administrative cost for recovery is more than the collection. By handing over the responsibility of water charges collection to WUAs the rate of collection may be increased and administrative burden of Government for recovery may be reduced. WUAs can recover water charges efficiently because they have better control on members for water distribution and daily contact with members. Attitudes of those farmers that, they can continue to get water in one way or another without paying for it will be changed as they can not demand for water if they had not paid for it. Also, due to social reason members willingly pay the dues of Village Society first than the Government. So WUAs will recover more water charges and their control on water and members will be increased and organisation will be more strong.

6.4 CONCLUSIONS

In the present study of Impact Evaluation of Water Users Society in the Command of Samrat Ashok Sagar Project Vidisha/Raisen Distt. of M.P. attempt has been made to study the impact evaluation on organisational, management, maintenance and financial aspects of the Society. Participatory Irrigation Management is a new concept for farmers and Government agencies after independence and it is in the initial stage of growth. Proper monitoring and evaluation of existing Water Users Association is essential to overcome the

constraints in initial stage so that it can be replicated successfully.

Following conclusions were drawn during the study.

1. Participatory Irrigation Management success depends on sustainable organisation. Success of organisation is achieved through active participation of its members and leadership support. The participation level of members depends upon the education, socio-economic status, holding size, team work and leadership support. Thus for sustainable organisation these characteristics needs to be improved by proper training and education regarding the functioning of Farmers Organisations for irrigation water management. Members with higher education and higher socio-economic status should be attended first in the task of capacity building.
2. The constraints in Participatory Irrigation Management such as poor irrigation infrastructure, lack of operation and maintenance, weaker management and poor administration, communication gap between organisation and Government agencies needs immediate attention on-line departments. The factions among farmers can be reduced by imparting adequate training exposure to farmers to improve their roles and responsibilities.
3. Well defined and adequate water allocation, rehabilitated or maintained infrastructure, well defined and documented operational procedures, placement of water control and measuring structure at proper location on canal, power for water charge collection, strong government support and sufficient maintenance grants are pre-requisite for strong Farmers Organisation.
4. Water Users Society office bearer should be trained properly regarding their functions, roles and responsibilities, operation and maintenance procedure, water management techniques, preparation of water distribution schedule, preparation of maintenance plan and its execution, income and expenditure matter, maintaining the financial accounts and record keeping, etc. so that

they can perform their duties properly. Instruction and guidelines should be issued to them timely so that the Society remain in touch with present practices.

5. Training is essential for members to improve the water management knowledge, skills and to induct attitudinal change. The training programme for farmers should be field oriented and should focus the issues like improved and scientific methods of irrigation; crop water requirement and cropping pattern; organisational skills; functions, rights and responsibilities; bye-laws of organisation; maintenance and repairs of irrigation systems; water measurement and accounting, etc. Training should be given to farmers regularly through field demonstrations so that all the farmers can understand and follow the improved irrigation water management practices.

6. Conjunctive use of water (surface and groundwater) should be included in the objective of Participatory Irrigation Management so that hydrological equilibrium of water table can be maintained and problems of water scarcity, water logging and salinity can be checked.

7. Role of Irrigation Department is very crucial and important in success of Participatory Irrigation Management. There is need to reorient their thinking and attitude to change from controllers to facilitators. Irrigation Department should play the role of motivator and catalysts to strengthen the Water Users Organisation, because Water Users Organisation's success will depend upon their management of main system and continuous involvement in the activities of organisation at lower levels.

8. Periodic evaluation of Water Users Associations and its impact on members is necessary for future implication of the policies and program. The evaluation studies should be documented properly so that further evaluation could not be affected by lack of data.

REFERENCES

Abernethy C. L. (1987). The Objective of Irrigation Water management and Methods of Measuring their Achievement. In Improvement in Irrigation Management with Special Reference to Developing Countries (ed. K. K. Framji). I.C.I.D. New Delhi State of Art No. 4, pp. 56-59.

Annonymous (1977). Guidelines for Performance Evaluation by Irrigation System. Pub. by Central Water Commission Ministry of Water Resources, New Delhi, pp. 1-29.

Annonymous (1987). National Water Policy. Published by Govt. of India, Ministry of Water Resources, New Delhi (Sept. 1987), pp. 1-15.

Annonymous (1996). Participatory Irrigation Management in M.P. In Conference of Participatory Irrigation Management, Organised by Ayacut Deptt. Govt. of M.P., Bhopal (12-13 Feb. 1996), pp. 1-4.

Arthur M. and Reynold L. Anderson (1978). The Huerta of Valencia. In Management of Irrigation System by Irrigation Communities in Spain and USA. Published by the M.I.T. Press, Cambridge Massachusetts and London, England. pp 11-52.

Banajed H. (1998). Public Participation in Water and Land Protection J. ICID Tenth Afro-Asian Conference Bali (July 19-24), pp. C3-1–C3-7.

Burdge R. J. and F. Vanclay (1995). Social Impact Assessment. In Environmental and Social Impact Assessment. Published by John Wiley and Sons Ltd.

Cartwrigt and Zander (1969). Group Dynamics. Published by Harver and Row Publisher, New York, Evanston, London.

Chivate, B. A. (1997). Performance Evaluation of Water Users Cooperative Societies from Maharashtra State. M.E. Dissertation, WRDTC, University of Roorkee, Roorkee.

Choudhary M. P. (1990). Information, Skill and Innovation Adoption Management Behaviour of Vidarbha Farmers. Thesis Ph.D. Punjab Rao Deshmukh Krishi Vidhayak Akola (M.S.).

Gonzalez F. J. (1995). New Departures in Water Management in Mexico. In Management of water Resources in North America Published by American Society of Civil Engineers, New York.

Gupta D. and L. P. Shrivastava (1999). Status of Participatory Irrigation Management in India. Published by Institute of Social Science, New Delhi.

Irwan Effendi (1998). Behaviour of water Users Association and the Implication on Organisation Dynamics. J. ICID Tenth Afro Asian Conference, Bali (July 19-24), Vol. II-A pp A35.1-A35.11.

Lele S. N. and R. K. Patil (1994). Conclusion and Recommendations. In Farmers Participation in Irrigation Management. A Case Study of Maharashtra. Published by SOPPECOM in Association with Horizon India Book, New Delhi, pp. 130-131.

Likert R. (1958). Measuring Organisational Performance. Harward Business Review, 36(2).

Mani K. C. and Knight A. J. (1981). Factors Associated with Participants and non Participants Attitude towards Regulated Market. Indian J. of Extension Education, Vol. XVII (No. 3 & 4) pp. 39-42.

Mohile A. D. and R. S. Pathak (1993). "Theme Paper" for the National Workshop on Farmers Participation in Management of Irrigation System. In the Proceedings of National Workshop on Farmers Participation in Management of Irrigation System. Organised by IWRS, University of Roorkee, Roorkee, pp. 7-14.

Palacios, E. (1995). Performance of Water User's Associations in the Operation and Maintenance of Irrigation Districts in Mexico. In International Conference on "Irrigation Management Transfer", Wuhan China (20-24 Sept., 1994). Published by International Irrigation Management Institute F.A.O. Rome (1995). pp. 403-412.

Pareek, U. (1966). Perception of Leadership – Role in Rural Settings Studies in Rural Leadership, Behavioural Centre, New Delhi, pp. 27-32.

Patil, M. V. (1986). A Study of Adoption of Water Management Practices followed by the farmers in Krishna Canal Area. M.Sc. (Agri) Thesis, M.P.A.V., Rahuri (M.S.).

Pathak R. S. (1991) Farmers Participation in Irrigation Water Management. Govt. of India, Ministry of Water Resources, New Delhi, pp. 93-94.

Puranik, R. P. (1997). Socio-Organisational Dynamics of Farmers Organisation for Irrigation Water management in Samrat Ashok Sagar (Halali) Project, Ph.D. Thesis, PKV Akola (M.S.).

Raghuvanshi C. S. (1995). Farmers Participation in Overall Planning and Management of Irrigation System. In Management and Organisation of Irrigation System. Published by Atlantic Publishers and Distributors, New Delhi, pp. 23-24.

Sampath, P. (1996). Relevance of Irrigation Management Policy activity from State and Connected Issues. In Conference on Participatory Irrigation Management organized by Ayacut Department Govt. of M.P., Bhopal (12-13 Feb. 1996), pp. 15.

Satpute S. K. (1981). A Study of Knowledge and Attitude of Farmers Towards the use of Insecticides. M.Sc. Thesis, College of Agriculture, Nagpur,

Satish S. and A. Sunder (1990). Voluntary Agency and Cooperative Lift Irrigation Societies : A Case Study of Panch Mahal District in Gujrat; In Peoples Participation and Irrigation Management. Published by Commonwealth Publisher, New Delhi, pp. 26-27.

Satoh, M. Okamoto and Y. Ogino (1990). How to Settle Water Users Conflicts during Draughts in Japan. Trans. of ICID 14th Congress Q43-R12.

Satoh M. (1998). Water Management by Organised Farmers in Japanese Irrigation System. J. ICID Tenth Afro Asian Conference, Bali (19-24 July, 1998), pp. C22-1 – C22-10.

Shukla, P. K. (1963). Rural Youth Club Problems of organisation Kurukshetra 13(3): 20-22.

Singh V. B. and L. D. Nagalwada (1978). Factors Influencing the Adoption of High Yielding Varieties of Paddy in Maharashtra. Jor. Rur. Ext. Vol. VI (Land 2), 17-19.

Singh, R. P. (1993). Important Issues on Farmers Participation in Irrigation Management. In the Proceedings of National Workshop on Farmer's Participation in Management of Irrigation System, Organised by IWRS, University of Roorkee, Roorkee (12-14 Oct. 1993), pp. 65-67.

Singh, B. R. and B. B. Jadia (1996). Policy Option for Organisational and Procedural Changes for Participatory Irrigation Management in M.P. In Conference on Participatory Irrigation Management Organised by Ayacut Deptt., Govt. of M.P. Bhopal (12-13 Feb. 1996), pp. 7-10.

Singh, B. R. and R. P. Puranik (1996). Policies for Participatory Irrigation Management. In Conference on Participatory Irrigation Management Organised by Ayacut Deptt., Govt. of M.P. Bhopal (12-13 Feb. 1996), pp. 44-47.

Sinha C.P. (1993). Subak System – A Wonderful Model of Farmers Role in Irrigation Management. In Proceedings of National Workshop on Farmers Participation in Management of Irrigation System. Organised by IWRS, University of Roorkee, Roorkee, pp. 62-64.

Tanwar, B. S. (1998). Water Management Through Peoples Participation in India. J. ICID Tenth Afro Asian Conference, Bali (19-24 July 1998), pp. C8-1 – C8-9.

Tekale, V. S. (1992). A Study of Management Behaviour of Vegetable Growers in Panchayat Samiti, Nagpur. M.Sc. Thesis, P.K.V. Akola (M.S.).

Van Nes A. R. and M. Syamsuddin (1998). Irrigation Management Turnover on Java, Indonesia. J. ICID Tenth Afro Asian Conference, Bali (19-24 July 1998), Vol. II-C, pp. C6-1 – C6-12.

Other Literature Cited

Project Report (1978) Halali Project (Samrat Ashok Sagar) Irrigation Cum Flood Protection Scheme Vidisha and Raisen District of M.P. Published by Chief Engineer, Chambal Betwa Basin Irrigation Department Bhopal.

Sanchhepika (1995). Published by Samrat Ashok Krishak Samiti, Sanchi.

A. P. Act No. 11 (1997). Andhra Pradesh Farmers Management of Irrigation System Act.

Project Report (1999). Samrat Ashok Sagar Project (Halali) Distt. Raisen/Vidisha. Published by Chief Engineer, Operation and Maintenance, Water Resources Deptt., Bhopal.

Sinchai Prabandhan Me Krishkon ki Bhagidari, Booklet for Water Users Associations and Field Workers. Published by Govt. of M.P. W.R.D. Bhopal (April 1999).

M.P. Act No. 23 (1999). The Madhya Pradesh Sinchai Prabandhan Me Krishkon Ki Bhagidari Adhiniyam,1999. Published by M.P. Gazette (Extra-Ordinary) Dated 18 Aug. 1999.

APPENDIX-I

INTERVIEW SCHEDULE

ORGANISATIONAL DYNAMICS OF SAMRAT ASHOK KRISHAK SAMITI

Farmers Interview Proforma

Socio Economic Variable

1 Name of farmer: Age:
Village: Tah: Distt:
2 Education:
3 Farming experience:
4 **Socio Economic Status:**

A. Income :

I). Labour ( )
II). Cast Business ( )
III). Business ( )
IV). Service ( )
V). Agriculture ( )

B.Education:

I). Illiterate ( )
II). Primary ( )
III).Middle ( )
IV). High School ( )
V). Graduate/P.G. ( )

C.Social Status:

I). Member of social organisation/institution
II). Representative of more than one social organisation
III).Office bearer of social organisation
IV). Social worker
V). None

D. Land Holding:

I). Below 1 ha. ( )
II). 1 - 2 ha. ( )
III). 2 - 3 ha. ( )
IV). 3 - 4 ha. ( )
V). 4 - 5 ha. ( )
VI). More than 5 ha. ( )

E. Housing:

I). Homeless ( )
II). Hut ( )
III). Kachha House ( )
IV). Mixed House ( )
V). Pakka House ( )

F. Farm Implements:

I) .No Bullock ( )
II). 1 - 2 Bullock ( )
III) More than 2 Bullock ( )
IV). Tractor ( )
V) Oil Engine ( )
VI). Electric Pump ( )
VII). Harvestor ( )
VIII). Thressor ( )

G. Other Implements:

I). Radio ( )
II). T.V. ( )
III). Cycle ( )
IV). Motor Cycle ( )
V). Jeep ( )
VI). Car ( )
VII). Other ( )

5 Land holding & possession :

I).Total land owned by the family.	Ha.
II)Land taken on lease for farming.	Ha.
III).Land leased out for farming.	Ha.
IV).Total land.	Ha.
V).Total land sowned.	Ha.
VI).Irrigated area.	Ha.
VII).Unirrigated area.	Ha.
VIII).Farm location on canal.(Minor)	Head/Middle/Tail
IX).Farm located in the command area.	Head/Middle/Tail

6 Farmers knowledge about Water Users Society/Organisation

S.N	Statement	Very well known	Well known	Known	Not known
1	Farmers organisation exists for irrigation water management.				
2	FO is a recognised body.				
3	FO is developed at minor level.				
4	FO has its own rules & regulation.				
5	FO is having a management committee which is elected by the member farmers.				
6	FO receive volumetric water supply from WRD & further distribute it to their members.				
7	FO supervise,maintain & repair the irrigation system.				
8	FO receive managerial subsidy from Govt.				
9	FO maintain the income & expd. records.				
10	FO motivate the members for adoption of cropping pattern.				
11	FO arrange to provide scientific and technical information to their member through training and demonstration.				
12	FO establishes interlinkage with concerned department for their effective functioning				
13	FO resolves the conflicts among the farmers.				
14	FO levy penalty against those who dema damage the irragation system				
15	FO work better with the help of local leadership support.				
16	Govt. has fixed policy to promote farmers organisation for irrigation water management.				

7 **Attitude to changes:**

S.N	Statement	Fully Agree	Agree	Neutral	Disagree
1	Farmers organisation should take over the responsibilities of O&M of the irrigation system whole.				
2	FO should involve in planing & design of irrigation project.				
3	FO should limted to the Maintenance of water course & field channels.				
4	Water rates should be collected by FO.				
5	Decision on conflict resolving by FO should be final.				

8 Team work in the Water Users Society

.N.	Activity	Most often	Often	Seldom	Never
1	The Water User Society gives adequate opportunity to its members and office bearers to work together .				
2	Members and office bearers in the society have confidence in their delegated authorities.				
3	Sociey maintains satisfactory relations between members , village leader and Govt. offica officials.				
4	Members taking keen intrest in the activity of the society.				

9 Leadership Support

.N.	Specific Activity	Most often	Often	Seldom	Never
1	Leader always try to maintain harmoneous relations between officials and non-officials of the society.				
2	Leader actively engaged in utilising the community resources for Agriculture Development Programme.				
3	Leader always encourgae people participation in the society activities.				
4	Leader always encourage farmers in Agriculture activities launched by the society.				
5	Leader takes pain to remove the difficulties and problems of society as and when required.				
6	Leader use his power and influence for the betterment of the society.				

10 **Cosmopoliteness :**

.N	Item.	S.Agree	Agree	Disagree	S.Disagree
1	Learns from his own experience as well as from others				
2	Learning from own experience				
3	Learning through communication media				
4	Use of local resources/facilities				
5	Distant place experience				
6	Sharing of experience pays in forming				

APPENDIX- II

PARTICIPATORY IRRIGATION MANAGEMENT

IN

MADHYA PRADESH

(M.P. PIM ACT-1999 & RULES)

MADHYA PRADESH ACT

No. 23 OF 1999.

THE MADHYA PRADESH SINCHAI PRABANDHAN ME KRISHKON KI BHAGIDARI ADHINIYAM, 1999.

[Received the assent of the Governor on the 12th August, 1999; assent first published in the "Madhya Pradesh Gazette (Extraordinary)" dated the 18th August, 1999.]

An Act to provide for Farmers' participation in the Management of Irrigation System and for matters connected therewith or Incidental thereto.

Be it enacted by the Madhya Pradesh Legislature in the Fiftieth Year of the Republic of India as follows:—

CHAPTER-I—PRELIMINARY

Short title, extent and commencement.

1. (1) This Act may be called the Madhya Pradesh Sinchai Prabandhan Me Krishkon Ki Bhagidari Adhiniyam, 1999.

(2) It extends to the whole of the State of Madhya Pradesh.

(3) It shall come into force on such date as the State Government may, by notification in the Official Gazette, appoint and different dates may be appointed for different areas and for different provisions.

Definitions.

2. (1) In this Act, unless the context otherwise requires:—

(a) "area of operation" in relation to farmers' organisation means a contiguous block of land in the command area of an irrigation system as may be notified by the State Government for the purposes of this Act;

(b) "ayacut road" means a road within the area of operation of a farmers' organisation for the purpose of irrigation and agriculture but does not include a road vested in a Gram Panchayat, Janpad Panchayat, Zila Panchayat, Nagar Panchayat, Municipal Council, Municipal Corporation or Public works Department of the State Government;

(c) "command area" means an area irrigated or capable of being irrigated either by gravitational flow or by lift irrigation or by any other method from a Government or the Government aided source and includes every such area whether it is called 'ayacut' or by any other name under any law for the time being inforce;

(d) "competent authority" means the competent authority appointed under Section 21;

(e) "distributory system" means and includes,—

(i) all main canals, branch canals, distributories and minor canals constructed for the supply and distribution of water for irrigation;

(ii) all works, structures and appliances connected with the distribution of water for irrigation; and

(iii) all field channels and other related channels and structures under a pipe outlet;

(f) "drainage system" in relation to an irrigation system includes,—

(i) channels either natural or artificial, for the discharge of waste or surplus water and all works connected therewith or ancillary thereto;

(ii) escape channels from an irrigation or distribution and other works connected therewith, but does not include works for removal of sewage;

(iii) all collecting drains and main drains to drain off surplus water from field drains; and

(iv) all field drains and related structrures under pipe outlets;

(g) "farmers' organisation" wherever it occurs, shall mean and include,—

(i) water users' association at the primary level consisting of all the water users' as constituted under section 3;

(ii) distributory committee at the secondary level as constituted under section 5; and

(iii) project committee at the project level, as constituted under section 7;

(h) "field channel" includes a channel existing or to be constructed by the State Government or by the land holders or by any agency to receive and distribute water from a pipe outlet or an opening in a water course for irrigation of field belonging to Government or private owners,—

(i) "field drain" includes a channel excavated and maintained by the land holder or by any other agency, to discharge waste or surplus water from the land holding under a pipe outlet and includes drains, escape channels and other similar works existing or to be constructed;

(j) "financing agency" means any commercial bank or any co-operative society or any other bank or organisation established or incorporated under any law for the time being in force, which lends money for the development of the area of operation of the farmers' organisation;

(k) "hydraulic basis" means the basis for identifying a viable irrigated area served by one or more hydraulic structures such as headworks, distributories, minors, pipe outlets and the like;

(l) "Irrigation system" means such major, medium and minor irrigation system excluding those which are under the control of Panchayat for harnessing water for irrigation and other allied uses from Government sources and includes reservoirs, open head channels, diversion systems, anicuts, lift irrigation schemes, tanks, wells and the like;

Explanation :—(i) 'major irrigation system' means irrigation system under major irrigation project having irrigable command area of more than 10,000 hectares;

(ii) 'medium irrigation system' means irrigation system under medium irrigation project having irrigable command area or more than 2,000 hectares and upto 10,000 hectares;

(iii) 'minor irrigation system' means irrigation system under minor irrigation project having irrigable command area upto 2,000 hectares;

(m) "land holder" means an owner and or a tenant recorded as such in the record of rights under the Madhya Pradesh Land Revenue Code, 1959 (No. 20 of 1959) in respect of land in the notified ayacut area of an irrigation system;

(n) "maintenance" means execution of such works on the irrigation system as are necessary to ensure that the physical system designed to the standards operates for proper distribution of water to the land holders in the area of operation;

(o) "operational plan" means a schedule of irrigation deliveries with details of the mode and duration of supplies drawn up for regulation of irrigation in the command area of an irrigation system;

(p) "warabandi" means a system of distribution of water allocation to water users by turn, according to an approved schedule indicating the day, duration and the time of supply;

(q) "water allocation" in relation to an irrigation system means distribution of water determined from time to time by a farmer's organisation in its area of operation;

(r) "water user" means and includes any individual or body corporate or a society using water for agriculture domestic, power, non-domestic, commercial, industrial or any other purpose from a Government source of irrigation;

(s) "canal officer" means the following Officers of the Water Resources Department namely:—

(a) The Chief Engineer;

(b) Superintending Engineer;

(c) Executive Engineer;

(d) Sub-Divisional Officer; and

(e) Canal Deputy Collector.

(2) The words and expressions used in this Act, but not defined, shall have the same meaning as assigned to them in the Madhya Pradesh Irrigation Act, 1931 (No. 3 of 1931).

CHAPTER-II—FARMERS' ORGANISATION

Delineation of water users' area and constitution of an association.

3. (1) The District Collector, may by notification and in accordance with the rules made under this Act, in this behalf, delineate every command area under each of the irrigation systems on a hydraulic basis which may be administratively viable; and declare it to be a water users' area for the purpose of this Act:

Provided that in respect of the command area under the minor and lift irrigation systems, the entire command area may, as far as possible form a single water users' area;

(2) Every water users' area shall be divided into territorial constituencies, which shall not be less than four but not more than ten, as may be prescribed;

(3) There shall be a Water Users' Association called by its local distinct name for every water users' area delineated under sub-section (1);

(4) Every Water Users' Association shall consist of the following members, namely:—

(a) (i) all the water users' who are land holders in a water users' area:

Provided that where both the owner and the tenant are land holders in respect of the same land, the tenant;

(ii) all other water users in a water users' area;

(iii) three ex-officio members one of Amin Cadre and one of Sub-Engineer Cadre from the Water Resources Department who will Act as Co-ordinator between the Government Departments and the Farmers' Association and the third from the Agriculture Department or Ayacut Department who will Act as Advisor.

(b) the member specified in sub-clauses (i) to (iii) of clause (a) shall constitute the general body of the Water Users' Association;

(c) a person eligible to become a member of more than one territorial constituency of a Water Users' Association under sub-clause (i) of clause (a) shall be entitled to be a member of only one territorial constituency and he shall exercise his option thereof;

(d) the members specified in sub-clause (i) of clause (a) alone shall have the right to vote;

Managing Committee of Water Users' Association.

4. (1) There shall be a Managing Committee for every Water Users' Association, which shall consist of a President and one member from each of the territorial constituencies of the Water Users' Area;

(2) The District Collector shall make arrangements for the election of President of the Managing Committee of the Water Users' Association by direct election by the method of secret ballot in the manner prescribed.

(3) The District Collector shall also cause arrangements for the election of the members of Managing Committee by the method of secret ballot in the manner prescribed.

(4) If the Managing Committee of the Water users' Association does not have a woman member, the Managing Committee shall co-opt a woman as a member who shall ordinarily be a resident of the farmers' organisation area.

(5) The President and the members of the Managing Committee shall, if not recalled earlier, be in office for a period of five years, from the date of the first meeting.

(6) The Managing Committee shall exercise the powers and perform the functions of the Water Users' Association.

Delineation of Distributory area and constitution of the Distributory Committee.

5. (1) The State Government may, by notification and in accordance with the rules made in this behalf, delineate every command area of the irrigation system, comprising of two or more Water Users' Associations, and declare it to be a distributory area, for the purpose of this Act.

(2) There shall be a Distributory Committee called by its local distinct name for every distributory area declared as such under sub-section (1).

(3) All the Presidents of the Water Users' Association in the distributory area, so long as they hold such office, shall constitute the general body of the Distributory Committee including two

nominated official members, one of them shall be an Assistant Engineer of Water Resources Department, who will work as a Co-ordinator between the various departments, Water Users' Associations and Distributory Committee, and the second member will Act as an Advisor who will be from Agriculture or Ayacut Department.

Election of Managing Committee of Distributory Committee.

6. (1) There shall be a Managing Committee for every Distributory Committee.

(2) The District Collector shall cause arrangements, in such manner as may be prescribed for the election by the method of secret ballot of the President, and Members of the Managing Committee which shall not be more than five from amongst the members of the general body of the Distributory Committee.

(3) If the Managing Committee of the Distributory Committee does not have a woman member, the Managing Committee shall co-opt a woman as a member who shall ordinarily be a resident of the farmers' organisation area.

(4) The term of office of the President, and the members of the Managing Committee shall be five years from the date of the first meeting of the Managing Committee.

(5) The Managing Committee shall exercise the powers and perform the funtions of the Distributory Committee.

Delineation of Project area and construction of Project Committee.

7. (1) The State Government; may by notification and in accordance with the rules made under this Act in this behalf, delineate every command area or part thereof, and declare it to be a project area for the purposes of this Act.

(2) There shall be a Project Committee called by its distinct name for every project area declared as such under sub-section (1).

(3) All the Presidents, of the Distributory Committees in the project area so long as they hold such office, shall constitute the general body for the Project Committee. The Project Committee shall have two nominated members, one of whom shall act as a co-ordinator between various departments and farmers' associations and who will be an Executive Engineer of Water Resources Department and second member will act as Advisor who will be from Agriculture or Ayacut Department. The nominated members shall not have the right to vote.

Election of Managing Committee for Project Committee.

8. (1) There shall be a Managing Committee, for every Project Committee.

(2) The District Collector, shall cause arrangements in such manner as may be prescribed for the election, by the method of secret ballot, of Chairperson, and Managing Committee consisting of not more than nine members from amongst the members of the general body of the Project Committee.

(3) If the Managing Committee of the Project Committee does not have a woman member, the Managing Committee shall co-opt a woman as a member who shall ordinarily be a resident of the farmers' organisation area.

(4) The term of office of the Chairperson, and the members of the Managing Committee shall be five years from date of first meeting.

(5) The Managing Committee shall exercise the powers and perform the functions of Project Committee.

Apex Committee.

9. (1) The State Government may, by notification, constitute an Apex Committee consisting of the following Members, namely:—

(i) The Minister Water Resources Department—Chairperson.

(ii) five persons from amongst the Chairperson of the Project Committee;

(iii) two persons from non-government organisations; and

(iv) three officers not below the rank of Chief Engineer or equivalent from the Water Resources Department, Agriculture Department or Ayacut Department of the State Government.

(2) The number of members may be increased by such number as may be considered necessary by the State Government.

(3) The Committee, constituted under sub-section (1) shall exercise such powers and functions as may be necessary to,—

(a) lay down the policies for implementation of the provisions of this Act; and

(b) give such directions to any farmers' organisation as may be considered necessary, in exercising their powers and performing their functions in accordance with the provisions of this Act.

Procedure for recall.

10. (1) A motion for recall of a Chairperson or President or member of a Managing Committee, as the case may be, of a farmers' organisation may be made by giving a written notice as may be prescribed, signed by not less than one third of the total number of members of the farmers' organisation, who are entitled to vote:

Provided that no notice of motion under this section shall be made within one year of the date of assumption of office by the person against whom the motion is sought to be moved.

(2) If the motion is carried with the support of the two thirds majority of the members present and voting and half of the total number of members of the association voting at a meeting of the general body specially convened for the purpose, the District Collector or the State Government, as the case may be, shall by order remove him from office and the vacancy shall be filled in the manner specified in Section 15.

Constitution of Sub-Committees in farmers' organisation.

11. The Managing Committee of a farmers' organisation may constitute sub-committees to carry out all or any of the functions vested in each organisation under this Act.

Farmers' organisation to be a body corporate.

12. Every farmers' organisation shall be a body corporate with a distinct name having perpetual succession and a common seal and subject to the provisions of this Act vested with the capacity of entering into contracts and of doing all things necessary, proper or expedient for the purposes for which it is constituted and it shall sue and be sued in its corporate name represented by the Chairperson or the President, as the case may be;

Provided that no farmers' organisation shall have the power to alienate in any manner, any property vested in it.

Changes in Farmers' organisation.

13. The State Government may, in the interest of a Farmers' Organisation in the command area, by notification, and in accordance with the rules made in this behalf,—

(a) form a new farmers' organisation by separating the area from any farmers' organisation;

(b) increase the area of any farmers' organisation;

(c) diminish the area of any farmers' organisation;

(d) alter the boundaries of any farmers' organisation; or

(e) cancel a notification issued under this Act for rectifying of any mistake:

Provided that no such separation, increase, diminution, alteration or cancellation shall be effected unless a reasonable opportunity is given to the organisation likely to be affected.

Disqualifications of Candidates or Members.

14. (1) No officer or servant of the Government of India or any State Government or of a local authority or an employee of any institution receiving aid from the funds of the State Government shall be qualified for being chosen as or for being a Chairperson, or President or a member of a managing committee.

(2) No person who has been convicted by a criminal court for any offences involving moral turpitude shall be qualified for being chosen as or for being a Chairperson or President, or a member of a Managing Committee.

(3) A person shall be disqualified for being chosen as a Chairperson or a President or a member of a managing committee if on the date fixed for scrutiny of nominations for election he is;—

(a) of unsound mind;

(b) an applicant to be adjudicated as an insolvent or an undischarged insolvent; or

(c) a defaulter of land revenue or water tax or charges payable either to the State Government or to the farmers' organisation;

(d) interested in a subsisting contract made with, or any work being done for, the Gram Panchayat, Janpad Panchayat, Zila Panchayat or any State Government or Central Government or the farmers' organisation:

Provided that a person shall not be deemed to have any interest in such contract or work by reason only of this having share or interest in;—

(i) a company as a mere share-holder but not as a director;

(ii) any lease, sale or purchase of immovable property or any agreement for the same; or

(iii) any agreement for the loan of money or any security for the payment of money only; or

(iv) any newspaper in which any advertisement relating to the affairs of the farmers' organisation is inserted;

Explanation.—For the removal of doubts it is hereby declared that where a contract is fully performed it shall not be deemed to be subsisting merely on the ground that the Gram Panchayat, Janpad Panchayat, Zila Panchayat, the Farmers' organisation, the State Government or Central Government has not performed its part of the contractual obligations.

(e) a person rendered landless due to sale or transfer of land of area or operation after constitution of Water Users' Association;

(f) employed in Government or Semi Government organisation or local body;

(4) A Chairperson or a President or a member of a Managing Committee shall also become disqualified to continue in office if he,—

(a) absents from three consecutive meetings without reasonable cause;

(b) is a person who incurs any of the disqualifications mentioned sub-section (1), (2) and (3) and he shall cease to hold the office forthwith:

Provided that disqualification under clause (a) shall not apply in the case of women who are in advanced stage of pregnancy and for a period of three months after delivery.

(5) A member of the Water Users' Association or a Chairperson or a President or a member of a Managing Committee shall become disqualified to continue the office, if he/she ceases to be a land holder;

Filling up of Vacancies.

15. (1) A vacancy arising either due to disqualification under sub-section (4) of Section 14 or due to death or resignation or by any reason such vacancy shall be filled up by nomination in the following manner, namely:—

(a) a vacancy in the Water Users' Association shall be filled, by nomination by the managing committee of the Distributory Committee in the manner prescribed;

(b) a vacancy in the Distributory Committee shall be filled, by nomination by the managing committee of the Project Committee in the manner prescribed;

(c) a vacancy in the Project Committee shall be filled by nomination by the Apex Committee in the manner prescribed, and

(d) a vacancy in the Apex Committee shall be filled by nomination by the State Government in the prescribed manner.

(2) The District Collector shall take necessary steps to conduct elections to fill up any vacancy caused within a period of one month from the date of occurrence of such vacancy.

(3) The term of office of a member or a President or a Chairperson of a farmers' organisation, elected under sub-section (2), shall expire at the time at which it would have expired, if he had been elected at the ordinary election.

CHAPTER-III—OBJECTS AND FUNCTIONS OF THE FARMERS' ORGANISATION

Objects.

16. The objects of the farmers' organisation shall be to promote and secure distribution of water among its users; adequate maintenance of the irrigation system, efficient and economical utilisation of water to optimise agricultural production, to protect the environment, and to ensure ecological balance by involving the farmers, inculcating a sense of ownership of the irrigation system in accordance with the water budget and the operational plan.

Functions of Water User Association.

17. The Water Users' Association shall perform the following functions, namely:—

(a) to prepare and implement a warabandi schedule for each irrigation season, consistent with the operational plan based upon the entitlement, area, soil and cropping pattern as approved by the Distributory Committee, or as the case may be, the Project Committee;

(b) to prepare a plan for the maintenance of irrigation system in the area of its operation at the end of each crop season and carry out the maintenance works of both

distributory system and minor and field drains in its area of operation with the funds of the association from time to time and to provide funds for the maintenance of staff including such persons who are placed by the State Government with the Water Users' Association for the purpose of regulation and maintenance of irrigation system.

(c) to regulate the use of water among the various pipe outlet under its area of operation according to the warabandi schedule of the system;

(d) to promote economy in the use of water allocated;

(e) to maintain a register of land holders as published by the revenue department;

(f) to prepare and maintain a register of co-opted members;

(g) to prepare and maintain an inventory of the irrigation system within the area of operation;

(h) to monitor flow of water for irrigation;

(i) to resolve the disputes, if any between the members and water users in its area of operation;

(j) to raise resources;

(k) to maintain accounts;

(l) to cause annual audit of its accounts;

(m) to assist in the conduct of elections to the managing committee;

(n) to maintain other records in such manner as may be prescribed;

(o) to abide by the decisions of the distributory and project committees;

(p) to conduct general body meetings in such manner as may be prescribed;

(q) to conduct regular water budgeting and also to conduct periodical social audit in such manner as may be prescribed.

Functions of Distributory Committees.

18. The Distributory Committee shall perform the following functions, namely:—

(a) to prepare an operation plan based on its entitlement area, soil, cropping pattern at the beginning of each irrigation season, consistent with the operational plan prepared by the project committee;

(b) to prepare a plan for the maintenance of both distributories and medium drains within its area of operation at the end of each crop seasons and execute the maintenance works with the funds of the committee from time to time and to provide funds for the maintenance of staff including such persons who are placed by the State Government with the Distributory Committee for the purpose of regulation and maintenance of irrigation system;

(c) to regulate the use of water among the various Water Users Associations under its area of operation;

(d) to resolve disputes, if any, among the Water Users' Associations in its area of operations;

(e) to maintain a register of Water Users' Associations in its area of operations;

(f) to maintain an inventory of the irrigation system in the area of its operation, including drains;

(g) to promote economy in the use of water allocated;

(h) to maintain accounts;

(i) to cause annual audit;

(j) to maintain other records as may be prescribed;

(k) to monitor the flow of water for irrigation;

(l) to conduct general body meetings in such manner as may be prescribed;

(m) to abide by the decisions of the Project Committee;

(n) to cause regular water budgeting and also the periodical social audit in such manner as may be prescribed;

(o) to assist in the conduct of elections to the managing committee.

Functions of Project Committees.

19. The Project Committee shall perform the following functions, namely:—

(a) To approve an operational plan based on its entitlement, area, soil, cropping pattern as prepared by the competent authority in respect of the entire project area at the beginning of each irrigation season;

(b) To approve a plan for the maintenance of irrigation system including the major drains within its areas of operation at the end of each crop season and excute the maintenance works with the funds of the committee from time to time and to provide funds for the maintenance of staff including such persons who are placed by the State Government with Project Committee for the purpose of regulation and maintenance of irrigation system;

(c) to maintain a list of the distributory committee and Water User's Association in its area of operation;

(d) to maintain an inventory of the distributory and drainage systems in its area of operation;

(e) to resolve disputes if any among the distributory committees;

(f) to promote economy in the use of water;

(g) to maintain accounts;

(h) to cause annual audit of its accounts;

(i) to maintain other records in such manner as may be prescribed;

(j) to conduct general body meetings in such manner as may be prescribed; and

(k) to cause regular water budgeting and also the periodical social audit in such manner as may be prescribed.

Power to levy and collect fee.

20. A farmers' organisation may, for carrying out the purposes of this Act, achieving the objects of the organisation and performing its functions, levy and collect such fee as may be prescribed from time to time.

Appointment of competent authority and his functions.

21. (1) The State Government may, by notification, appoint such officer from the Water Resources Department, or any other department, as it considers necessary, to be the competent authority for every farmers' organisation for the purposes of this Act.

(2) The competent authority appointed under sub-section (1) shall be responsible to the respective farmers' organisations in the implementation and execution of all decisions taken by the farmers' organisation in the prescribed manner and shall provide technical advice and ensure that the work is executed in accordance with the technical parameters.

CHAPTER-IV—RESOURCES

Resources of Farmers' Organisation.

22. The Funds of the farmers organisation shall comprise of the following namely:—

(i) grants and commission received from the State Government as a share of the water tax collected in the area of operation of the farmers' organisation;

(ii) such other funds as may be granted by the State Government and Central Government for the development of the area of operation;

(iii) resources raised from any financing agency for undertaking any economic development activities in its area of operation;

(iv) income from the properties and assets attached to the irrigation system;

(v) fees collected by the farmers' organisation for the services rendered in better management of the irrigation system; and

(vi) amounts received from any other sources.

CHAPTER-V—OFFENCES AND PENALTIES

Offences and Penalties.

23. Whoever without any lawful authority does any of the following acts, that is to say:—

(a) damages, alters, enlarges or obstructs any canal;

(b) interferes with, increases or diminishes the supply of water in, or the flow of water from, through, over or under any canal;

(c) interferes with or alters the flow of water in any river or stream, so as to endanger, damage or render less useful any canal;

(d) being responsible for the maintenance of water course or using water course, neglects to take proper precautions for the prevention of waste of the water thereof, or interferes with the authorised distribution of the water therefrom or uses such water in an unauthorised manner;

(e) receiving water in his fields for irrigation, neglects to take proper precautions for the prevention of waste of such water;

(f) corrupts or fouls the water of any canal so as to render it less fit for the purposes for which it is ordinarily used;

(g) being a permanent holder, occupier, cultivator or agricultural labourer, resident in a village in which a proclamation under Section 36 of the Madhya Pradesh Irrigation Act, 1931 (No. 3 of 1931) has been made, neglects to attend at the place appointed or refuses or neglects to carry out the duties allotted to him;

(h) destroys, injures, defaces or removes any land mark, level mark, water gauge or other apparatus fixed by the authority of a canal officer;

(i) causes animals or vehicles to pass on or across any of the works, banks or channels or any canal after such passage has been prohibited by a canal officer;

(j) causes or knowingly and willfully permits animals to graze or be tethered upon the bank or border of any canal after such grazing or tethering has been prohibited by a canal officer;

(k) removes or injures any tree, bush, grass or other vegetation growing on any canal; or

(l) eases himself on the banks or in the channel of a canal.

shall on complaint made by a Farmer's Organisation:—

(i) be punishable in respect of offences mentioned in clauses (a) to (h), with imprisonment which may extend to two years, or with fine which shall not be less than one thousand Rupees but which may extend to five thousand Rupees or with both; and when the offence is a continuing one, with an additional fine not exceeding twenty rupees for every day after the first during which the offence has been persisted in; and

(ii) be punishable in respect of offences mentioned in clauses (i) to (l) with fine which shall not be less than Rupees five hundred but which may extent Rupees two thousand and if the same person is subsequently convicted for a like offence he shall be liable for imprisonment which may extend to six months for each such subsequent conviction. **Minimum Penalty.**

24. Nothing in this Act shall prevent any person from being prosecuted and punished under any other law for the time being in force for any act or omission made punishable by or under this Act : **Punishment under other laws not barred.**

Provided that no person shall be prosecuted and punished for the same offence more than once.

25. (1) A farmers' organisation may accept from any person who committed or in respect of whom a reasonable belief can be inferred that he has committed an offence punishable under this Act or the rules made thereunder, a sum of money not less than rupees one thousand in case of offences mentioned in clause (a) to (h) of Section 23 and Rs. Five hundred for the offences mentioned in clause (i) to (l) of Section 23 by way of composition. **Composition of offences.**

(2) On payment of such sum of money, no further proceedings shall be taken against him/her in regard to the offence, so compounded by the Farmers' Organisations.

CHAPTER-VI—SETTLEMENT OF DISPUTE

Settlement of disputes.

26. (1) Any dispute or difference touching the constitution, management, powers or functions of a farmers' organisation arising between members shall be determined by the managing committee of the farmers' organisation.

(2) Any such dispute or difference arising between a member and the managing committee of a Water Users' Association or between two or more Water Users' Association shall be determined by the managing committee of the Distributory Committee.

(3) Any such dispute or difference arising between a member and the managing committee of a Distributory Committee or between two or more Distributory Committees shall be determined by the managing committee of the Project Committee.

(4) Any such dispute or difference arising between a member and the managing committee of a project committee or between two or more project committees shall be determined by the Apex Committee, whose decision shall be final.

(5) Every dispute or difference under this section shall be disposed of within fifteen days from the date of reference of the dispute or difference.

Appeals.

27. (1) A party to a dispute or difference aggrieved by any decision made or order passed by the managing committee of a Water Users' Association may appeal to the managing committee of the Distributory Committee, whose decision thereon shall be final.

(2) Any party to a dispute or difference aggrieved by any decision made or order passed by the managing committee of a Distributory Committee may appeal to a Project Committee, whose decision thereon shall be final.

(3) Any party to a dispute or difference aggrieved by any decision made or order passed by the managing committee of a Project Committee may appeal to the Apex Committee, whose decision thereon shall be final.

(4) Any appeal under sub-section (1) or sub-section (2) or sub-section (3) shall be preferred within 15 days of communication of the decision or the order to the person aggrieved.

(5) Every appeal under this section shall be disposed of within 15 days from the date of filing of the appeal.

CHAPTER-VII—MISCELLANEOUS

Records.

28. (1) Every farmers' organisation shall keep at its office the following accounts, records and documents, namely:—

(a) a map of the area of operation of the farmers' organisation alongwith map of the structures and distributory networks prepared in consultation with the Water Resources Department;

(b) a statement of the assets and liabilities;

(c) minutes book;

(d) books of account showing receipt and payments;

(e) books of account of all purchases and sales of goods by the farmers' organisation;

(f) register of measurement books, level field books, work orders and the like;

(g) copies of audit reports and enquiry reports;

(h) all such other accounts, records and documents as may be prescribed from time to time;

(i) stock register;

(j) list of users with details of land holding;

(k) register of penalties;

(2) The books of accounts and other records shall be open for information to the members of the farmers' organisation.

Audit.

29. Every farmers' organisation shall get its accounts audited once in a year in the manner prescribed.

Recovery of dues.

30. All the amounts payable or due to a farmers' organisation shall be recoverable as arrears of land revenue.

Meetings.

31. The meetings of the farmers' organisation and the managing committees thereof at such intervals, the procedure, the presidency and the quorum there of shall be, such as may be prescribed.

Resignation.

32. (1) A member of the managing committee of a farmers' organisation may resign his office by a letter sent by registered post or tendered in person to the Chairperson or President of the managing committee concerned.

(2) The President of the managing committee of a Water Users' Association may resign his office by a letter sent by registered post or tendered in person to the President of the Distributory Committee concerned.

(3) The President of the managing committee of a Distributory Committee may resign his office by a letter sent by registered post or tendered in person to the Chairperson of the Project Committee concerned.

(4) The Chairperson of the managing committee of a Project Committee may resign his office by a letter sent by registered post or tendered in person to the Chairperson of the Apex Committee.

(5) The resignation as above mentioned shall take effect from the date of its acceptance or on the expiry of 30 days from the date of its receipt which ever is earlier.

Appointment.

33. (1) The State Government may, by notification, appoint controlling officers not below the rank of a Commissioner of a revenue division to exercise the general control and superintendence over the competent authorities and the District Collectors in performance of their functions under this Act or rules made thereunder.

(2) The powers to be exercised and the functions to be performed by the controlling officers shall be such as may be prescribed.

Transitional arrangements.

34. The Government may, by notification, appoint an officer or officers to exercise the powers and perform the functions of a farmers' organisation and the managing committee there of till such time such farmers' organisation is duly constituted or reconstituted and such managing committee assumes office under the provisions of this Act.

Authentication of orders and documents of organisation.

35. All permissions, orders, decisions and other documents of the farmers' organisation shall be authenticated by the signature of the Chairperson or President of the farmers' organisation or any other member of the managing committee authorised by the managing committee in this behalf.

Acts not to be invalidated by informality or vacancy etc.

36. No act or proceedings of the managing committee of a farmers' organisation shall be invalid by reason only of the existence of any vacancy in, or defect in the constitution of the said committee.

Deposit and administration of the funds.

37. (1) The farmers' organisation shall keep their funds in a Nationalised Bank or a Co-operative Bank namely; the District Co-operative Central Bank or the Madhya Pradesh State Apex Co-operative Bank.

(2) The funds shall be applied towards meeting of the expenses incurred by the managing committee of the concerned farmers' organisation in the administration of this Act and for no other purpose.

Sinking fund.

38. (1) The managing committee of the farmers' organisation shall maintain a sinking fund for the repayment of moneys borrowed and shall pay every year into the sinking fund such sum as may be sufficient for repayment within the period fixed of all moneys so borrowed.

(2) The sinking fund or any part thereof shall be applied in or towards, the discharge of the loan for which such fund was created, and until such loan is wholly discharged it shall not be applied for any other purpose.

Budget.

39. The managing committee of a farmers' organisation shall prepare in such form in every financial year a budget in respect of the next financial year, showing the estimated receipts and expenditure of the committee and shall place before the general body of the farmers' organisation for its approval in such manner as may be prescribed.

Protection of acts done in good faith.

40. (1) No suit, prosecution or other legal proceedings shall be instituted against any person for anything which is in good faith, done or intended to be done under this Act or under the rules made thereunder.

Power to remove difficulties.

41. (1) If any difficulty arises in giving effect to the provisions of this Act or as to the first constitution or reconstitution of any farmers' organisation after the commencement of this Act, the Government, as the occasion may require by order published in the Madhya Pradesh Gazette, do anything which appears to them necessary for removing the difficulty.

(2) All orders made under sub-section (1) shall as soon as may be laid on the table of the Vidhan Sabha.

Savings.

42. (1) Nothing contained in this Act shall effect the rights or properties vested in a Gram Panchayat, Janpad Panchayat, Zila Panchayat, Nagar Panchayat, Municipal Council or Municipal Corporation under any law for the time being in force.

(2) Nothing contained in this Act shall apply to the minor water bodies in the Scheduled Area of the State.

Power to make rules.

43. (1) The State Government may, by notification in the Official Gazette, make rules to carry out the purposes of this Act.

(2) Every rule made under this Act shall as soon as after it is made be laid before Vidhan Sabha.

नियंत्रक, मुद्रण तथा लेखन सामग्री, मध्यप्रदेश द्वारा शासकीय केन्द्रीय मुद्रणालय, भोपाल से मुद्रित तथा प्रकाशित—1999.

डाक-व्यय की पूर्व-अदायगी के बिना डाक द्वारा भेजे जाने के लिए अनुमत. अनुमति-पत्र क्र. भोपाल-एम.पी. 2 डब्ल्यू. पी./505/99.

पंजी. क्रमांक भोपाल डिवीजन एम. पी. 2/पी-122 99.

मध्यप्रदेश राजपत्र

(असाधारण)

प्राधिकार से प्रकाशित

क्रमांक 703] भोपाल, सोमवार, दिनांक 18 अक्टूबर 1999—आश्विन 26, शक 1921

जल संसाधन विभाग
मंत्रालय, वल्लभ भवन, भोपाल

भोपाल, दिनांक 18 अक्टूबर 1999

क्रमांक 32-1-99-मध्यम-इकतीस.—मध्यप्रदेश सिंचाई प्रबंधन में कृषकों की भागीदारी अधिनियम, 1999 (क्रमांक 23 सन् 1999) की धारा 43 द्वारा प्रदत्त शक्तियों को प्रयोग में लाते हुए राज्य सरकार, एतद्द्वारा, निम्नलिखित नियम बनाती है, अर्थात् :—

नियम

1. संक्षिप्त नाम और प्रारम्भ.—(1) इन नियमों का संक्षिप्त नाम मध्यप्रदेश कृषक संगठन नियम, 1999 है.

(2) ये "मध्यप्रदेश राजपत्र" में उनके प्रकाशन की तारीख से प्रवृत्त होंगे.

2. परिभाषायें.—इन नियमों में, जब तक संदर्भ से अन्यथा अपेक्षित न हों,—

(क) "अधिनियम" से अभिप्रेत है मध्यप्रदेश सिंचाई प्रबंधन में कृषकों की भागीदारी अधिनियम, 1999 (क्रमांक 23 सन् 1999);

(ख) उन शब्दों तथा अभिव्यक्तियों के, जो इन नियमों में प्रयुक्त हैं, किन्तु परिभाषित नहीं हैं, वे ही अर्थ होंगे जो अधिनियम में उनके लिए दिए गए हैं.

3. साधारण निकाय का सम्मिलन.—(1) साधारण निकायों के सम्मिलन, अधिनियम की धारा 17 के खण्ड (त), धारा 18 के खण्ड (ठ) एवं धारा 19 के खण्ड (ञ) के अधीन वर्ष में कम से कम दो बार, एक बार खरीफ के पूर्व तथा एक बार रबी सीजन के पूर्व, होंगे. सम्मिलन, यथास्थिति सभापति (चेयरपर्सन)/अध्यक्ष की अध्यक्षता में होंगे तथा उसकी अनुपस्थिति में उपस्थित सदस्य अपने में से एक व्यक्ति को सम्मिलन की अध्यक्षता करने के लिए निर्वाचित करेंगे.

भोपाल, दिनांक 18 अक्टूबर 1999

क्र. 32-1-99-मध्यम-इकतीस.—भारत के संविधान के अनुच्छेद 348 के खण्ड (3) के अनुसरण में, इस विभाग की अधिसूचना क्रमांक 32-मध्यम-इकतीस, दिनांक 18 अक्टूबर, 1999 का अंग्रेजी अनुवाद राज्यपाल के प्राधिकार से एतद्द्वारा प्रकाशित किया जाता है.

मध्यप्रदेश के राज्यपाल के नाम से तथा आदेशानुसार,
व्ही. एस. वर्मा, सचिव.

Bhopal, the 18th October 1999

No.32-1-99-M-XXXI.—In exercise of the powers conferred by Section 43 of the "Madhya Pradesh Sinchai Prabandhan Me Krishikon Ki Bhagidari Adhiniyam, 1999" (No. 23 of 1999), the State Government hereby makes the following Rules, namely:—

RULES

1. Short title and commencement.—(1) These rules may be called the Madhya Pradesh Farmers' Organisation Rules, 1999.

(2) They shall come into force with effect from the date of their publication in the "Maddhya Pradesh Gazette".

2. Definitions.—In these Rules, unless the context otherwise requires,—

(a) "Act" means the Madhya Pradesh Sinchai Prabandhan Me Krishko Ki Bhagidari Adhiniyam, 1999 (No. 23 of 1999);

(b) The words and expressions used in these rules, but not defined, shall have the same meaning as assigned to them in the Act.

3. The General Body Meetings.—(1) The meetings of the General Bodies under clause (p) of Section 17, clause (l) of Section 18 and clause (j) of Section 19 of the Act, shall be held at least twice in a year, once before the kharif and once before the rabi season. The meetings shall be presided over by the Chairperson/President, as the case may be and in his absence the members present shall elect once person from amongst themselves to preside/chair the meeting.

(2) The meeting of the General Body may also be called at any time by the President or Managing Committee members through a majority resolution or by members of the organisation through a requisition signed by not less than one third of the members who have voting right.

(3) General Body meeting shall also be held on receipt of a direction from the Government or from the Commissioner, Ayacut or by the next higher Committee or the Farmers' Organisation in respect of matters relating to urgent public importance.

4. Notice of meeting.—(1) Notice of every meeting shall be given by the Managing Committee of Farmers' Organisation to all the members at least seven days in advance, specifying the place, date, time and agenda items for the meeting:

Provided that in cases of emergency a meeting may be called at three days advance notice.

(2) The notice may be sent by hand or post or publication or by beat of drum and shall be pasted on the notice board of the concerning organisation.

5. Quorum for the General Body.—(1) The quorum for a meeting shall be not less than one third of the total members of the concerning organisation.

(2) If there is no quorum for the meeting it shall stand adjourned and be convened on such date and time as the Managing Committee may determine. At such adjourned meeting no quorum shall be necessary and the members present may transact the business for which the meeting was called.

(3) In a General Body meeting, the items specified in the agenda alone will be discussed. No other subjects will be discussed without the express permission of the Chairperson/President or the majority decision of the members present in the meeting.

6. **Minutes of the Meeting.**—(1) Every proceeding of the General Body shall be recorded in the minutes book maintained for the purpose and authenticated by the Chairperson or President or the person who has presided over the meeting, as the case, may be. A copy of the minutes shall be sent to the authority at the next higher committee.

7. **Procedure for taking up works.**—For the purposes of taking up works under clauses (b) an (n) of Section 17, clause (b) and (j) of Section 18 and clause (b) and (i) of Section 19 of the Act, the Farmers' Organisation shall adopt the following procedure:—

(1) System Diagnosis for Maintenance Works,—

(i) Prior to the commencement of every crops season (kharif & rabi) the Managing Committees and Competent Authority of every Farmers' Organisation shall undertake to assess the condition of the system (system diagnosis) through a participatory walk through exercise.

(ii) The Farmers' Organisation shall inspect each and every hydraulic structure and record its status.

(2) All works shal be categorised as follows:—

(i) Normal Operation and Maintenance Works which includes ordinary repairs, such as:—

(a) Desilting;

(b) Weed removal;

(c) Embankment repairs;

(d) Revetment;

(e) Repairs to shutters;

(f) Repairs to masonry and lining;

(g) Cleaning & Oiling of screw gearing shutters;

(h) Painting of hoists and gates etc;

(i) Emergent breach closing works, and

(j) Maintenance of inspection paths.

(ii) Deferred Maintenance Works (Rehabilitation Works)—

(a) Reconstruction of sluices;

(b) Reconstruction/repairs to drops regulators;

(c) Reconstruction of measuring devices;

(d) Rehabilitation of the system; and

(iii) Original Works—

(a) Modernisation of the System; and

(b) Any other construction works in the irrigation system. The above works shall be executed by the Farmers' Organisation, under the supervision of the Water Resources Department at the rates not exceeding estimated rates.

(3) **Identification of normal operation and maintenance works-participatory walk-through.**—The Chairperson/President along with the Managing Committee members shall organise a participatory walk through within the area of operation of the Farmers' Organisation and identify all the critical reaches, which need immediate repair as listed out above. The competent authority shall assist the Farmers' Organisation in preparation of detailed list of works to be undertaken.

(4) Prioritising Works.—The Managing Committee of the Farmers' Organisation shall discuss the list so prepared and fix up priority or works to be taken up immediately.

(5) **Preparation of estimates.**—The competent authority shall prepare estimates within a fortnight for the works so prioritised according to the hydraulic particulars as maintained by the Water Resources Department at the prevailing schedule of rates.

(6) **Administrative approval.**—The Managing Committee of the Farmers' Organisation shall accord administrative approval for the estimates prepared subject to availability of funds. Each administrative approval shall be recorded in the register of administrative approvals in Form-I.

(7) **Technical Clearance.**—(a) The powers for giving technical clearance by the Competent Authority shall be as follows:—

(i)	Special Repairs:	
(a)	Executive Engineer	Up to Rs. 5,000/-
(b)	Superintending Engineer,	Up to Rs. 50,000/-
(c)	Chief Engineer,	Up to Rs. 5,00,000/-
(ii)	Ordinary repairs : Executive Engineer,	Full powers within the funds provided to Farmers' Organisation.

(b) a Competent Authority may accord technical clearance vested in an authority lower than him;

(c) the Competent Authority, shall record all the technical clearances in the register of technical clearance in Form-I appended to the rules, and

(d) the technical clearance shall not exceed the Administrative approval;

(e) inrespect of a Distributory Committee, the Project Committee, the Competent Authortiy may cause the technical clearance to be given by an appropriate officer under his control as per the financial powers mentioned in clause (a).

(8) **Manner of taking up works.—(a) Works as approved by the Managing Committee of the Farmers' Organisation shall be taken up for execution by the Farmers' Organisation itself;**

(b) **Under no circumstances Chairperson/President or Managing Committee Member of the Farmers' Organisation execute a work directly in his individual capacity;**

(c) The cost of works executed shall not exceed the estimated costs; and

(d) The competent authority shall record the initial measurements and final measurements for quantifying the work done for making payments by the Farmers' Organisation.

(9) **Maintenance and Adherence to the Designed Hydraulic Particulars.**—The competent authority shall be responsible for the maintenance and adherence to the approved hydraulic particulars. He shall ensure that the designed hydraulic particulars of an irrigation system are not altered with. He shall guide the Farmers' Organisation in supervising works.

(10) **Limitations on Works.**—No Farmers' Organisation shall have the power to interfere with the designed hydraulic particulars of an Irrigation system. Any violation will invite the penal provisions under section 23 of the Act; and the rules made there under.

(11) Publication of List of Works to be Taken-Up.—(a) The lists of works to be taken up should be given wide publicity by means of display in the office of the Farmers' Organisation and other public places and institutions within the area;

(b) Along with the lists other particulars of works, estimates, values, and mode of execution should be given wide publicity; and

(c) If any member wishes to have access to any of the records relating to works to be taken up, he may do so on payment of the fee as fixed by the Farmers' Organisation.

(12) **Freedom to Add Other Funds or Extra Contributions.**—The members are free to contribute resources either in cash or by way of material or labour.

(13) Proof of Works Done.—The competent authority shall maintain Level Field Book, and Measurement Book for recording the work done by the Farmers' Organisation.

(14) Payment for the Works Done.—All payments for works done above Rs. 1000/- shall be paid by cheque. The Farmers' Organisation shall maintain a record of all payments made in the Cash-book date-wise.

(15) Original Works.—A Farmers' Organisation may take up any original work withing its area of operation subject to the following conditions; namely:—

(a) Specific approval shall be obtained from the authority vested with such powers to do so.

(b) The estimates for works shall be prepared by the Water Resources Department and works shall be let out to the Farmers' Organisation wherever they come forward for execution of such works at the estimated rates.

(c) If the Farmers' Organisation agrees to take up any work, an agreement shall be entered into with the Water Resources Department.

(d) Payments shall be made to the Farmers' Organisation based on the out turn of work on fortnightly basis or even earlir as may be mutually decided.

(e) Where the Farmers' Organisation does not come forward the procedure as prescribed under the "Works Department Manual" shall be followed or as per any direction given by the Government from time to time.

Social Audit of Farmers' Organisation.—(1) At the end of each crop season the Farmers' Organisation shall Social Audit as detailed below:—

(i) Social Audit shall be done for both water utilisation against the water budgeting and expenditure incurred

for maintenance of the system with reference to the funds available to each of the Farmers' Organisation.

(ii) The Social Audit shall cover:

(a) Equity in water distribution;

(b) Increase in production;

(c) Increase in productivity;

(d) Crop diversification;

(e) Multiple croping;

(f) Water use efficiency;

(g) Utilisation of resources for execution of works;

(h) Improvement in the cultivated areas of the Farmers' Organisation compared to previous season; and

(i) Quality of works undertaken.

(2) The Social Audit so-conducted shall be made known to all the beneficiaries under the Farmers' Organisation by way of displaying a list containing the benefits accured with reference to funds spent on the notice board of the office of each of the Farmers' Organisation.

(3) Whenever a work is taken up, the estimated cost of the work, item of work proposed to be executed, details of the executors of the work etc., are to be exhibited on a board at the place of the work; so that every beneficiary under the Famers' Organisation is aware of the details of the work being executed and expenditures to be incurred.

(4) The Competent Authority shall render all assistance in the conduct of the social audit. The revenue and agriculture officials shall also render the requisite assistance.

(5) The Social Audit so conducted shall be recorded and a copy thereof be sent to the Distributiry Committee in the case of Water Users Association, to the Project Committee in the case of Distributory Committee; and to the Apex Committee and to the Government in the case of Project Committee.

(6) The auditor shall incorporate the Social Audit Report in his annual audit report together with his specific observations on rectification of defects, if any, noticed in the social audit.

9. **Operational Plan and Water Budgeting.**—Water Budget for Farmers Organisation—The Managing Committee of the respective Farmes' Organisation shall, along with the assistance of the competent authority, prepare a water budget for the area of operation under its control as detailed below:—

(i) One month before the onset of the Kharif season, the Project Committee shall, subject to such directions as may be given by Government from time to time, work out the anticipated inflows and existing availability in the reservoir and work out the water allocation to all the Distributory Committees; the Distributory Committees in turn shall allocate the water made available to Water Users' Association in its jurisdiction:

Provided that in the case of medium irrigation projects, the Project Committee shall allocate to the Water Users' Associations.

(ii) A Farmers' Organisation in distributing water to its member constituents shall have regard to allocations meant for drinking waters, or for any specified purpose as may be decided by Government from time to time.

(iii) For the Rabi season, the Project Committee will determine the area to be thrown open for irrigation based upon the actual availability of water at the begining of Rabi Season. The water so available shall be allocated equitably among the Distributory Committees and Water Users' Associations. In the case of medium or minor irrigation system, equitable distribution shall be achieved by adopting circular rotation over a period.

(iv) Each of the Farmer' Organisation, shall draw up an operational plan which shall spedify the quantity of water to be drawn on a fortnightly basis.

(v) The drawls of water shall be monitored each day at specified gauge points as decided by the Farmers' Organisation.

(vi) Review of the drawals and distribution shall be done by each of the Farmers' Organisation at the end of each fortnight and corrective measures taken.

(vii) At the end of each season the repective Farmers' Organisation shall prepare a report of water received and utilised along with the area irrigated, quality of water supply and extent of crops.

(viii) The Farmers' Organisation shall analyse the shortcoming and deviations in water budget and report to the next higher tier.

(ix) In respect of a minor irrigation system the Water Users' Association shall decide the operational plan, date of release of water, which are to be thrown open for irrigation depending upon the storage/inflows into the tank.

10. **Water Regulation.**—After a water budget is prepared, the Farmers' Organisation shall draw up a plan of water gulation as follows:—

(a) The dates of release and closer shall be informed to all members well in advance;

(b) Equitable distribution of water amongst all users shall be the main principle in water regulation;

(c) A Farmers' Organisation shall draw water and monitor flows based on the operational plan prepared;

(d) A Warabandi Schedule (Turn-Schedule) shall be prepared for each outlet in a Farmers; Organisation;

(e) The Farmers' Organisation shall, record the cropwise area in the command area with the assistance of the Competent Authority, and

(f) A Farmers' Organisation may, for the purpose of monitoring, install such devices as may be required within its jurisdiction.

11. **Accounts/Finance.**—(1) The Farmers' Organisation shall open an account in a nationalised bank or co-operative bank namely; the District Co-operative Central Bank or the Madhya Pradesh State Apex Co-operative Bank in its name. The account shall be operated jointly by the President or Chairperson as the case may be and one of the Managing Committee members as nominated by the Managing Committee. The Farmers' Organisation shall maintain the cash-book and accounts of expenditure with appropriate vouchers and receipts.

(2) Every expenditure should be supported by a receipt, or voucher which shall be duly passed for payment by the president.

(3) All expenditure has to be approved by the finance sub-committee, at least once a month.

(4) **Account Registers to be maintained.**—Every Farmers' Organisation shall maintain accounts register. Each of the following record shall bear the name, address and the seal of the Farmers' Organisation and shall be machine

umbered; namely:—

(a) Cash book;

(b) Bill registers;

(c) Contingent registers;

(d) Receipts books; and

(e) Cheque register.

12. **Records to be maintained.**—Each of the Farmers' Organisations shall maintain the following records, other than the records specifically mentioned in the Act in these rules. An up-to -date copy of the Act/Rules/Directions and orders of Commissioner/Government:—

(a) The following maps shall be maintained by each Water Users' Association; namely :—

(i) Map showing the boundaries and jurisdiction of the association, water conveyance system, within the boundaries of the association;

(ii) Map showing the notified command area with Serial numbers as prescribed in sub-rule (6) of rule 3 of the Farmers' Organisation Constitution, rules, 1999.

(b) the following registers shall be maintained; namely:—

(1) Property Register and Records.—These records shall contain the details of properties, assets and liabilities vested in a Farmers' Organisation like lands, buildings, canal banks etc.—

(i) **Inventory Register (Component Register).**—An inventory register in Form 2 shall contain particulars of hydraulic particulars of structures, including details of canals and with their hydraulic particulars.

(ii) Register of Vacant Land and Buildings in Form 3.

(iii) **Miscellaneous Property Register.**—Other minor properties such as trees grass etc. in form 4, and

(iv) **Register of Machines.**—shall contain the list of machines working and condemned in Form-5.

(2) **Membership Register and Records.**—Registers relating to memberships as specified in sub-rule (1), (2) and (3) of Rule-4 of the Farmers' Organisation Constitution rules, 1999.

(3) **Water Flows Register and Records.**—Every Farmer' Organisation shall be supplied with water, based on the operational prepared plan. These flows need to be monitored daily at specified locations as decided by Farmers' Organisation—

(i) A Reservior Gauge Register in Form-6.

(ii) A Canal Gauge Register in Form-7.

(4) Area Crops Register and Records—

(i) Command Area Register in Form-8.

(ii) Farmer Wise Demand Register in Form-9

(5) Works Register and Records:

(i) Register of Administrative Sanctions in Form-1.

(ii) Register of Technical Clearance in Form-1.

(6) Cash register and Records:

(i) Cash Book in Form-10.

(ii) Receipts Book in Form-11.

(iii) Bill Register in Form-12.

(iv) Cheque Memo Register in Form-13.

(v) Special Fee Register in Form 14.

(7) **Minutes Regiter and Records.**—Every proceeding of a General Body meeting, a Managing Committee meeting, a Sub-Committee meeting shall be recorded separately in a minutes book.

13. **Levy & Collection of Fees.**—(1) The Farmers' Organisation may by resolution passed by the General Body of the concerning committee levy a fee.

(2) a fee under sub-rule (1) shall be levied for the following purposes for the Farmers' Organisation:—

(a) to provide facilities or;

(b) to provide specific servies;

(c) to meet any urgent needs of the Farmers' Organisation;

(d) to build up assets of the Fatmers' Organisation, and

(e) to improve the system.

(3) After passing the resolution by the General Body the competent authority shall prepare the estimate for the purpsoe as specified in sub-rule (2) and the Managing Committee shall decide a levy of fee proportionate to the land holding or to the number of members. The Managing Committee after it's decision shall serve the demand notice to the concerned.

(4) all fees collected shall be duly accounted for and the receipt thereof be given to the concerning person.

(5) a fee collected for which specific purpose shall be used only for that purpose—

(a) In default of payment of fee by any member, the Managing Committee shall prepare a list of defaulters along with amounts due.

(b) The defaulters list so prepared in clause (a) shall be sent to the Sub-Engineer, Water Resources Department of the area in whose jurisdiction the area of operation of a Farmers' Organisation lies for recovery.

14. **Financial Audit.**—At the end of each, financial year, and not later than three months after the commencement of the new financial year, each of the Farmers' Organisation shall cause its accounts to be audited as follows:—

(i) the Managing Committee shall appoint an Auditor who has adequate experience in normal auditing work

(ii) the Auditor so appointed shall be a person of repute in the area of operation of the Farmers; Organisation, who has reasonable knowledge in accounts;

(iii) the appointment of the Auditor shall be approved by the Managing Committee of the Farmers' Organisation;

(iv) the Auditor so appointed shall take all steps necessary to scrutinise the accounts of receipts and expenditure, within thirty days from the date of his appointment and furnish the audit report along with the statement of accounts and balance sheet to the President of the concerned Farmers' Organisation;

(v) the audit report shall be submitted to the General Body in its meeting for its approval;

(vi) the Managing Committee of a Farmers' Organisation shall provide the audit report to the General Body, and

(vii) if the overall transations exceed Rs. 10 lakhs per annum, the Farmers' Organisation shall engage a Chartered Accountant for audit of accounts.

15. **Functions of Competent Authority.**—In the functioning of the Managing Committee of the Farmers;; Organisation, the Competent Authority, appointed under sub-section (1) of Section 21 of the Act, shall—

(a) attend the meeting convened by the Managing Committee, and participate in the discussions but he has no voting right;

(b) assist in the preparation of maintenance plan;

(c) prepare estimates for works identified for execution; the estimate shall be prepared as per the norms and the rules prescribed by the Water Resources Department in this regard.

(d) accord technical clearance to the maintenance works, as per the powers delegated. The technical clearance shall be limited to the administrative sanctions for the work;

(e) ensure that no alteration or change is made in the irrigation system, with reference to the approved hydraulic particulars;

(f) bring to the notice of Water Resources Department any tampering or changes made in the system, by any Farmers' Organisation in contravention of the hydraulic particulars. He shall ensure that action is taken in accordance with the Act;

(g) provide technical details of the system to the member of the Managing Committee;

(h) assist the Managing Committee in the preparation and approval of operational plan;

(i) advise and assist on water regulation, based on the water supplies and seasonal condition;

(j) prepare water budgeting for the Farmers' Organisation;

(k) help in assessment of areas irrigated;

(l) help in training any helper appointed by the Farmers' Organisation in discharging their duties;

(m) guide the Farmers' Organisation in maintaining various registers and

(n) record measurements for the work done and pass the bills for payments by Farmers Organisation based on the approval of the works sub-committee.