

**A STUDY OF  
GOVERNMENT INSTALLED LIFT IRRIGATION SCHEMES  
IN JHABUA, MADHYA PRADESH**

*Promoted by*

**IWMI - TATA Water Policy Research Programme**

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## **PREFACE**

*The present study is one of the various studies promoted by IWMI-TATA Water Policy Research Programme being carried out under the collaboration of two NGOs, PRADAN and Sadguru Foundation and IWMI-TATA Research Project.*

*This study entitled as "A Study of Government Installed Lift Irrigation Schemes in Jhabua, Madhya Pradesh" has been carried out by three senior staff ; Kanhaiya Choudhary, Hitesh Shah and Harnath Jagawat, of N M Sadguru Water and Development Foundation. All the researchers have rich experience in design, implementation and management of community lift irrigation systems, and thus with this advantage, the study has its own value in terms of findings, conclusions and suggestions, both in respect of present study and implication on replicability.*

*One of the constraints faced by the researchers in this study was non-availability of complete recorded informations from the Government offices. Only partial informations were available on L. I. Schemes. Still worse constraint was the fact that no recorded data, written statements, account keeping or anything was available with the villages as the schemes were not institutionalized and such necessary information was not available in record form. The authors had to therefore rely very much on the observations, interviews and group discussions to collect the relevant informations. However, as the farmers as well as the officials were very cooperative and open, lot of reliable informations was gathered from them. The area being well known to the researchers, their knowledge on the area and schemes in general was useful in assessing the reliability and authenticity of the informations gathered from the farmers and the officials.*

*It is expected that this study will be useful to IWMI-TATA Water Policy Research Project and more so to the national and state planners involved in the development planning for the tribal regions.*

## GLOSSARY

°C	Degree Celsius
DRDA	District Rural Development Agency
GI	Galvanized Iron
Ha.	Hectare
HP	Horse Power
IWMI	International Water Management Institute
IRD	Integrated Rural Development
Km	Kilometer
L.I.	Lift Irrigation
LIS	Lift Irrigation Scheme
Lps	Litre per second
m	meter
NGO	Non Government Organization
PRADAN	The Professional Assistance for Development Action
PVC	Poly Venyle Chloride
Rs.	Indian Rupees
SBI	State Bank of India
SC	Scheduled Caste
ST	Scheduled Tribes

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# **A STUDY OF GOVERNMENT INSTALLED LIFT IRRIGATION SCHEMES IN DISTRICT JHABUA, MADHYA PRADESH**

## **1.0 BACKGROUND**

Rural poverty in our country has direct and strong relationship with the management of the land and water resources. Since independence, several Government sponsored programmes have been implemented for the reduction of rural poverty, many of them centered around the land and water resources development. However, the net result of all these programmes has not made desired impact in the removal of rural poverty. Often the development has been lop sided and in several cases such development has increased the regional imbalances. For example, the expansion of irrigation has benefited already better regions, pushing backward vulnerable and backward region like tribal regions and semi-arid regions. It is now a known fact that the abysmal poverty among tribals could be attributed to the non-use of available resources of the land and water.

In some tribal regions, the efforts have been made to utilize the land and water resources for the improvement in the living conditions of the tribals. One such region is district Jhabua in Madhya Pradesh. Jhabua has claimed massive programme of lift irrigation schemes. During the later half of eighties and in nineties, broadly from the year 1989 to 1999, totally 1,046 lift irrigation schemes were installed by the Government under the programme of District Rural Development Agency. This physical achievement by itself is very impressive, showing interest and commitment by the government in the development of irrigation in such a backward district. It was therefore, thought proper to study few of such lift irrigation schemes in Jhabua to find out their impact along with technical and social aspects and to determine the scope for the replicability of this programme in similar tribal regions.

## **1.1 DISTRICT PROFILE OF JHABUA**

District Jhabua in Madhya Pradesh is predominantly tribal district. Out of the total district population of 10,32,866 in census 1991, the tribal population was to the extent of 91%\*. The Government data indicated 36 % of the population as cultivators and about 3 % as agricultural labourers. This is apparently a fallacious data as the land records have not been updated and as a result the land remained in the name of father and grandfather in Government record

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\* The full data of census 2001 was not available as it is still not published, and therefore, the data of 1991 census is used. It was not proper in the interest of consistency to use some data of 2001 and some of 1991 census.

inspite of many divisions of the land. Corroborating with the figure of 3 % as agriculture labourers, it is safe to conclude that more than or about 90 % of the population of the district may be cultivators or in plain description dependants on agriculture. The district has 17 % area as forest land, 41 % cultivable land and 33 % wasteland (cultivable and non-cultivable). Once, the district was rich with forest cover. Considering the type of land, reasonably good rainfall and intensive drainage system, the district offers good scope for water resources development as well as the plantation, including forest development.

### **1.1.1 LOCATION OF THE DISTRICT**

Jhabua with an area of 7533 square kilometer is the western most district of Madhya Pradesh. It is about 320 km from the state capital, Bhopal and is more than 800 km from New Delhi, national capital. The district falls within region 5 (Central Malwa Highlands and Kathiawar Peninsula) of the National Bureau of Soil and Land use Planning system of ecological zones. The area lies between 22.5 and 23.8 north of equator. A railway line (Delhi to Bombay Paschim Railways route) passes through the area.

### **1.1.2 CLIMATE**

The climate in this area varies from dry sub humid to moist sub humid. The rainfall is erratic, unimodal and monsoonal and is spatiotemporally variable. About 90% of the annual rainfall falls in the Kharif and wettest month of the year is July or August. Average annual rainfall of the district is 786 mm. January is the coldest month (Mean minimum temperature varies from 9°C to 15°C and Mean maximum temperature varies from 26°C to 30°C ) while May is the hottest month (Mean maximum temperature varies from 39°C to 41°C and Mean minimum temperature varies from 21°C to 26°C ).

### **1.1.3 CROPPING PATTERN**

Three seasons are recognized, the Kharif or monsoon season from June to September, the Rabi season from October to March and Summer Season from March to middle of June. The important crops sown in the district are Maize, Cotton, Soybeans, Urad and Paddy in Kharif, Wheat, Gram in Rabi and Mung and vegetables in Summer. The winter and summer crops are possible only on availability of irrigation. Crops like Black gram, Pigeon pea, Tobacco, Pearl Millet, Hill Millet, Horse gram, Bengal gram and Ground nuts are also grown in the district.

#### 1.1.4 LAND USE

Total geographical area of the district is 7533 Sq. km of which 17 % is forest land, 41 % is cultivated area, 21 % is uncultivated waste land and 12 % is cultivated waste land including pasture and fallow. Out of this total cultivated area only 7 % is under irrigation in Rabi season as per Census 1991. As per District Statistical report 1994-95, the area under irrigation was reported at 16.44 % of cultivated area. The land use pattern is reflected in table below.

Sr. No.	Distribution of Land Use	Percentage
1.	Forest	17
2.	Cultivable Area	41
3.	Cultivable Waste Including fallow and Pasture	12
4.	Uncultivable Waste	21
5.	Other Cultivated Area	09

#### 1.1.5 PHYSIOGRAPHY, SOIL PROPERTIES AND DRAINAGE

Large portion of the district consists of undulating hills. Main rivers are Anas and Mod which are eventual tributaries of Mahi river. Big rivers Mahi and Narmada also touch Jhabua district. Most of the cultivated area is trapped between the hills forming the valleys. The area is well water divided and criss crossed by number of steams, rivers and rivulets, offering good scope for water resources development. Topography and soil properties are given in table below.

**TABLE-1:** Physiography and soil types

Topography	% Area	Main Soil type
Steep hill slopes	45	Shallow, yellowish, sandy loam to sandy clay loam; slightly acidic
Undulating upland	30	Shallow to medium depth ; sandy to sandy loams
Valleys	10	Medium to deep, pale to dark greyish brown, clay to clay loam
Plateau	15	Deep to very deep, dark, black cotton clay on elevated plateau

#### 1.1.6 ADMINISTRATIVE UNITS

The district has been divided for the administrative functions into 7 tehsils and 12 development blocks as shown in the table below

## Tehsils and Development Blocks

Sr.No.	Tehsil	Development Blocks (in each Tehsil)
1.	Jhabua	Jhabua, Rama
2.	Petlawad	Petlawad
3.	Thandla	Thandla
4.	Jobat	Jobat, Bhabra, Udepur
5.	Ranapur	Ranapur
6.	Meghanagar	Meghanagar
7.	Alirajpur	Alirajpur, Sondawa, Kathiwada

### 1.1.7 TRIBAL POPULATION

The total population of the district is 10,32,866. Out of this the population of scheduled tribe is 9,41,029 and that of schedule caste is 33,682. About 91% of total population is the tribals in which Bhil and Bhilala are the predominant tribes. Jhabua is designated as tribal district. Table below shows the total population, population of schedule tribe and schedule caste development block wise. This data is from census 1991 as the similar data is not yet available of the census 2001.

Development block	Area (Ha)	No. of House Holds	Population		
			Total	Scheduled caste	Scheduled tribe
Thandla	44753.81	15803	97353	1044 (1.07)*	91270 (93.75)
Petlawad	88528.19	22614	126559	2396(1.89)	101255 (80.0)
Meghnagar	32058.13	15608	9 8116	1589(1.61)	85559 (87.2)
Jhabua	43942.48	14655	103465	1025(1.00)	98095 (94.8)
Rama	59784.23	12333	83713	1158(1.38)	78978 (94.34)
Bhabra	31554.09	10356	63672	839(1.31)	61758 (96.99)
Udaigarh	36763.23	8834	58757	1251(2.13)	55502 (94.46)
Jobat	39335.29	9039	60580	1722(2.84)	57900 (95.57)
Kathiwada	71969.42	11811	72317	8721(1.20)	59314 (82.01)
Alirajpur	62095.43	12503	84247	3461(4.10)	77266 (91.71)
Sondawa	90031.84	16187	106450	9579(9.00)	98716 (92.73)
Ranapur	38781.23	11363	77637	897(1.15)	75416 (97.14)
<b>District</b>	<b>639597.35</b>	<b>161106</b>	<b>1032866</b>	<b>33682(3.26)</b>	<b>941029 (91.10)</b>

\* Data in the bracket shows the percentage

## **2.0 METHODOLOGY :**

Considering the time frame and practicality, it was decided to study five functioning L. I. Schemes installed by the Government in Jhabua district. As the aim was to bring out the factors for the success of L. I. Schemes, only successful L. I. Schemes were selected for the study along with one sample of defunct or non-performing L. I. Scheme. From the overall list of 1,046, in screening based on the factors as the size, years of commissioning, etc.

In first instance, 20 L. I. Schemes were selected from Jhabua Tehsil as the list of successful L. I. Schemes was available only for Jhabua Tehsil from the district office. From these 20 schemes, ultimately five schemes were selected on the basis of size, the year of commissioning, etc. The schemes selected are different from each other in terms of size of scheme, location, year of start, numbers of beneficiary farmers, etc.

In the overall list of the total L I Schemes in the district, most of the schemes are very small. Incidentally, the installed capacity in terms of HP was not available for all the schemes of the district and the data on installed capacity was available only for the schemes installed in the year 1991-92. The researchers were told by the district authorities that the schemes prior to 1991-92 and after 1991-92 were also of the same pattern and size, and therefore, considering the data of 1991-92 schemes, 15 % schemes were of 3 HP motor only, irrigating at an average five acres of land of 3 beneficiaries on an average. About 35 % of schemes were of 5HP motors covering on an average 12-15 acres of the land and 5 numbers of farmers. From the record, nearly 63 % of schemes were 7.5 HP or below, and thus, most of the schemes were very small. Usually 3 HP motors are owned by a single family of two - three brothers, and therefore, study excluded such schemes. 5 HP motors schemes were also serving the farmers who were either brothers or first cousins, making them a large family enterprise, rather than community schemes.

For this study, one scheme each of 5 HP ;10 HP ; 15 HP ; 20 HP and 30 HP category have been selected randomly from the list of successful L I Schemes, functioning from 5-10 years.

One non-functional scheme (6 years old) was also selected from a list provided by Government officials to look at the broader aspect to understand the reasons leading to failure of scheme. In this defunct scheme, out of total 35 beneficiaries, 15 beneficiaries were interviewed for various informations.

The study was carried out through in depth interviews with the respondents. Information was also gathered in informal group meetings and discussions

with the user groups and the Government and Bank officials. The method of random sampling was used for the selection of individual respondents from among the beneficiaries of the respective schemes. The total numbers of respondents interviewed were 60, which formed about 60 % of the user farmers (totaling 101) of these five schemes.

All the farmers in the command area are small and marginal farmers falling below poverty level having not more than 4 acres of land and all are tribals. Hence, no separate sampling on the basis of land holdings was made. In the interviews conducted, one person from one household was taken as respondent. However, 15 % of the respondents were women, who were part of the group interview.

A questionnaire guide was prepared and tested before going for the final interview. A final questionnaire was administered for collection of data keeping in view the terms of reference and objectives of the study.

Intensive field visits to all the functional and non-functional L. I. Schemes were undertaken to see the physical condition of the scheme along with quality of material used, present condition of the structure and equipments.

The major areas addressed in each schemes were ;

- Initiation and Implementation of scheme
- Technical aspect of the scheme
- Cost benefit analysis of each scheme
- Present physical condition of scheme
- Functioning of scheme
- Operation and maintenance of scheme
- Access to water
- Changes in cropping pattern
- Increase in income due to irrigation
- Changes in migration patterns
- Changes in social status
- Awareness about irrigation vis-à-vis role of users as collective unit / village institution
- Perception of farmers on irrigation system

Most of the factors and informations gathered were commonly applicable to almost all the schemes studied, and therefore, the analysis and reporting is done commonly.

### 3.0 PROFILE OF VILLAGE AND LIFT IRRIGATION SCHEMES UNDER STUDY

The table below reflects the Village Profile of selected villages

Sr No	Name of Village	Distance from Jhabua in Km.	Total Village in Acre	Total Population					Literacy in		No. of House hold
				Male	Female	Total	ST %	SC %	Male %	Female %	
1	Deojhari Panda	8	768.14	364	330	694	93.3	5.90	35.16	7.87	109
2	Mindal	3	760.10	407	401	808	100	0	19.16	9.47	101
3	Umariya Bajantri	10	698.91	341	362	703	100	0	7.91	0.08	102
4	Dhekal badi	10	1009.22	711	758	1469	94.07	5.17	18.0	2.37	231
5	Karadabad Badi	3	2336.35	1722	1669	3391	90.82	2.38	9.75	1.80	459

Project Profile with basic details of all selected project is given below

Description	Name of village					
	Deojhari Panda	Mindal	Umariya Bajantri	Dhekal Badi	Kardabad Badi	
1	<b>Area under Lift irrigation in Acres</b>	43.81	52.56	49.87	18.10	83.98
	IRD (Families)	18.57	52.56	44.51	18.10	74.10
	Non IRD (Families)	25.24	-	5.36	-	9.88
2	<b>No. of families under irrigation</b>	19	21	20	6	35
	IRD	9	21	19	6	30
	Non IRD	10	-	1	-	5
3	<b>Source of Water</b>	Stop dam on Nala	Anas River	Anas River	Tank	Anas River
4	<b>Cost of the scheme in Rs. Lacs</b>	1.19	4.65	3.75	1.45	6.50
5	<b>Subsidy to farmer in Rs. Lacs</b>	0.59	2.13	1.66	0.69	3.00
6	<b>Financing Bank</b>	SBI, Jhabua	SBI, Jhabua	RRB, Jhabua	SBI, Jhabua	SBI, Jhabua
7	<b>Horse power</b>	10	20	15	5	30
8	<b>Discharge in Ips</b>	10	20.76	19.54	5.66	32
9	<b>Head in Rmt.</b>	20	31	34	22	34
10	<b>No. of outlets</b>	7	12	4	5	12
11	<b>Cost per hectare in Rs.</b>	15825/-	20000/-	19300/-	18392/-	19117/-
12	<b>Year of Start</b>	1992	1995	1995	1995	1995

## **4.0 FACTSHEET OF SCHEMES**

### **4.1 Initiation and Implementation of schemes**

Though all the schemes were need based and demand driven as the farmers drastically needed irrigation, it appeared from the discussion with various people including the farmers that the schemes were initiated by the Government under DRDA programme. Thus, one can say the process of initiating the schemes was undertaken by the Government agency. Some district officers who had seen lift irrigation schemes elsewhere and also heard about them took initiative in this programme and some district collectors successively expanded this programme as massive programme. All the five schemes under study were part of such massive programme. Ofcourse, the villagers gave their consent for the installation of the scheme on hearing from the Government officials. It was not only the consent, but, the villagers declared their agreement to give part of the capital cost of the schemes. As per the information available, 50 % of the capital cost was contributed by the farmers, which was initially arranged as a bank loan by the Government agency. This was very important aspect of the involvement of the beneficiaries. The loan was arranged for all the beneficiaries in the given scheme on the basis of their land holdings in the irrigation command. If there was any defaulter in the proposed command, he was not given bank loan and ultimately denied the benefit of the scheme.

From all the records available in the Government, banks and also from various discussions with the farmers, the implementation of these schemes was also commonly done by the Government agency by hiring private contractors. Neither the Government agency nor the NGO were involved in the implementation of all these five schemes.

The important aspect of these schemes is that in all the schemes excavation for the pipe lines was done by the farmers themselves, which was not reflected in the estimates and such item would be a very small portion of the cost even if it was included in the estimate.

As mentioned earlier, the community was not very actively involved in the implementation of the schemes. It was all Government's job. The Government did not involve community as a whole, but, as found out, they identified one lead person from the village or proposed command area and dealt with the community through him most of the time. Such identified person was a kind of leader of that village or hamlet, and therefore, he was useful.

The command area was earmarked by the Government engineers in their design and the beneficiaries falling in that command area became the members of that scheme.

From the records and discussions, it was found that it took 1 to 2 years to design, execute and complete each schemes after the conception. However, due to the personal interest of Collector, the electricity connections were given priority and it didn't take much time in getting electric connections in all cases.

### **A PROCESS OF TYPICAL L. I. SCHEME**

When the Collector decided to expand lift irrigation programme in Jhabua district, almost entire district administration was involved in this mass propagation of L. I. In village Mindal one official from the district was deputed to motivate the farmers for the L. I. schemes. The officer first identified one active member / leader of the village, Surpal Gumji and involved him in contacting and motivating other farmers, in the command area earmarked by the Government engineers in their design. Being a small scheme, a part of hamlet was to be the command area and all the farmers falling in the command area were approached to accept the scheme and accept the condition of bank loan as part of the capital cost was to be given by the beneficiaries. This part of loan was arranged by the Government by motivating the bankers. In this village all the beneficiaries of the scheme could get the bank loan through the good offices of the Government. As the schemes were funded by DRDA under IRD programme, all the beneficiaries were required to be IRD beneficiaries means small and marginal farmers. Incidentally, in such a poor region and tribal villages, most of the beneficiaries were meeting these criteria. Few of them not meeting these criteria were not eligible for the subsidy and loan. Having completed this process, the physical work was entrusted to contractor by the Government, in which there was no say of the beneficiaries. However, in order to reduce the capital cost, the farmers were motivated to do excavation of pipe line free of cost, which they did. It took about two years from conception to the physical completion of the scheme. However, the electric connection did not take much time as the interest by the District Collector fastens the connection.

During the implementation of the scheme and after the completion there was no attempt to organize community (beneficiaries) in to any kind of formal or informal institution. One man from among beneficiary was nominated as a leader and he was expected to manage the scheme with the cooperation of other beneficiaries. However, schemes being very small and most of the time and all the beneficiaries were close relatives and cousins, and as they were interested in getting irrigation, the post construction management did not cause serious problem.

## **4.2 Technical aspect of the schemes**

### **4.2.1 Suitability of site :**

The sites of all the schemes under study are suitable. One scheme is on tank. One on Nalla and three schemes are on river Anas, which is relatively big river.

Though the sites selected for all the 5 schemes were suitable, it was observed that at 3 sites Mindal, Umariya Bajantri, Kardawad Badi-1 schemes installed were very small against the scope and potential for bigger schemes considering the availability of water in relatively bigger river Anas. All the 3 schemes are on river Anas, where much bigger schemes were feasible.

The researchers having experience of design and implementation of L. I. Schemes, would like to share that if on a given lifting point of a source there is scope to install bigger scheme, it should be considered. By bigger L. I. Scheme it is not argued for very big L. I. Schemes of 500 or 1,000 acres. By big scheme, something between 150 to 300 acres, so that more land more farmers can be covered by proper use of available water and such schemes are manageable also. There is no fun in having 100 acres scheme when it is possible to install 300 acres scheme. By undertaking schemes of 100 acres in such situation is to deprive many more farmers the irrigation and thereby creating imbalance between irrigators and non-irrigators.

### **4.2.2 Soundness of design**

The design aspect of all the schemes was on the whole satisfactory considering the location and size. However, there was great scope for improved design, which could have helped in better coverage, better result and better technical sustainability of the scheme.

Few of important observations on technical aspects are as below ;

#### **i. Pumping hours :**

Pumping hours in design discharge calculation were taken as 16 hours a day, while electricity available was only for 4-6 hours a day, as reported by the farmers in recent years. This has resulted in under achievement of the design command and in the process affected the equity and benefits both.

**ii. Head Calculation :**

Total head is sum of static and frictional head. Frictional head taken in the technical proposal is very high considering the length and diameter of pipeline. This has resulted in over design of the scheme in terms of higher Horse power requirement and in turn resulting in avoidable higher operational cost, penalizing the tribal farmers unnecessarily.

**iii. H.P. Calculation :**

Horse power calculation for the motor is done properly. But, when it comes as 15.11 HP as in the case of Mindal L. I. Scheme it is rounded up to 20 HP which is not proper and justified. In fact, there is motor available of 15 HP giving the required discharge at the required head. So, going for the higher HP is not justified. Similar is the case with Dhekal Badi L. I. Scheme, where 3 HP motor could have served the purpose well in place of 5 HP motor installed. Possibly, the schemes were designed by the government engineers not having relevant and adequate experience in lift irrigation.

**iv. Machine Foundation and Head Works :**

Suitable Head works and machine foundations are missing in the design as well as in implementation. These technical deficiencies would certainly result in the stability and efficiency of the pump, motors, suction delivery lines and in long run affect the life of the machineries, besides causing recurring problems of burning of the motor and other difficulties.

**v. Pump House / Control Room :**

Pump house to keep electrical equipment, control panels, and other accessories is very important for the efficiency and life of a scheme, Pump house is available at only one L. I. Scheme Kardavad. In 4 of the 5 schemes studied, pump house are missing in design and implementation. The reason by the official for this was to minimize the capital cost and fit the scheme in the pre-determined and permissible low amount. Though this justification is alright for the government, such compromise in the important technical aspect definitely affect the scheme

**vi. Distribution Chambers / Outlets:**

Water is taken to the field from a GI pipe bend kept as outlet and there is no masonry chamber / outlet in any scheme. This system is very vulnerable causing lot of operational problems, as well as water losses and other difficulties like frequent and recurring damage to the GI bend outlet attached to open portion of PVC pipe by children and cattles. Also when adequate pipes are not provided for the conveyance of water, the water losses would be enormous, particularly in such scheme which has very heavy operational cost due to use of electricity.

**vii. Quality of material used and workmanship:**

The quality of material used was by and large quite satisfactory, however, workmanship was lacking in case of connection of PVC - GI pipe. This is neither plugged with the concrete nor with the soil. At the connection point, it should be properly loaded. There was no information available on the specific brand of PVC pipes, whether they were high quality brand. Some portion of PVC pipe line was open and exposed, which was liable to be damaged by climatic conditions like heat and also by children, cattles and during ploughing. This was confirmed by the farmers.

**4.3 Cost / Cost- Benefit Analysis:**

Cost of the scheme is shared 50 % each by user farmers and government. Farmers were provided loan from Banks on per hectare land under irrigated command basis. Cost per hectare comes within Rs. 20,000 which is within limit. However, cost of excavation which was done free by the farmers was not included in the cost. Also, when head works, machine foundations and distribution chambers were not provided perhaps the scheme should have costed less than its reported cost.

Overall Cost benefit analysis of schemes comes to more than 1.5, suggestive of viability of scheme. With the suitable change in cropping pattern and introducing horticulture and vegetable on part of the land, the cost benefit ratio could improve substantially, making the schemes highly profitable.

**4.4 Present Physical Condition:**

Due to three consecutive drought years (1999 : 2000 : 2001) schemes have not run completely. Hence, things are not in place. In some case burnt motor was lying as it is, electrical fittings were not in shape. Outlet's plates were not

in place. This is natural in such successive years of drought when schemes could not operate.

The most positive aspect observed was that the farmers were extremely positive to put everything in place as soon as they find that irrigation would be available in normal monsoon year. All the farmers clearly indicated that if water sources are adequately recharged they would certainly operate the schemes in Rabi 2002. This clearly indicates the confidence and interest of the farmers based on their experience and profitability of the system installed.

#### **4.5 Functioning:**

All the five schemes have functioned successfully for 2 to 5 years. In last three years, they could not function because of lack of water on account of successive drought. For such non-functioning during drought years, neither the people nor the technical aspects could be held responsible. Though the schemes functioned successfully during normal year, the achievement in command area was not full due to various factors, mainly non-availability of electricity for the designed hours. However, the fact that these schemes functioned successfully in normal years against many odds need to be recognized and the farmers need to be given credit for the functioning.

The community management and institutional aspect in the functioning of the schemes will be described separately elsewhere in this report as it requires special description in view of special situation.

#### **4.6 Recovery of Dues**

There were two types of dues, operational cost and loan on capital cost were reported during the study though detailed information were not available in the record at the village level as no such records were maintained.

The operational cost was fully paid by the users, a good sign for such schemes.

However, the recovery of loan on capital cost was mixed. In one scheme, full loan was repaid in a very short period. This is because that scheme Deojhari Panda functioned for longer period and cropping pattern was better. Whereas, in remaining 4 schemes the recovery of loan component was partial. Two reasons could be attributed for partial recovery in those schemes. The schemes functioned for lesser period that too under the constraint of inadequate power supply, and therefore, less coverage of area for each farmer and second important reason was the spell of drought for three successive years. We cannot blame the farmers under the above

circumstances for poor or partial recovery of loan. Talking with the farmers, we found that if the schemes had run continuously for 5-6 years, they would have definitely repaid the loan amount. Ordinarily such loans on capital cost are to be repaid in about 10 years period.

#### **4.7 Operation and Maintenance of Schemes:**

The schemes are operated by the farmers themselves and the entire operational cost is borne by the farmers / users without any kind of support from any other source. Incidentally, for few years, there was no recurring cost on electricity as the electricity was free to the farmers in Madhya Pradesh. Recently, in the electricity policy changes, the farmers and these schemes have to pay electricity charges. They are paying these charges. However, the present tariff system is exploitative in the sense that even when schemes do not operate during drought year, the flat charges are levied and the farmers are in a way penalized, even though they have not operated the schemes and not got any benefit. This policy issue will be dealt separately in this report as it deserves special mention and special comments.

It was reported by the farmers that besides electricity charges, there is no much maintenance and reparation expenses on these schemes, excepting burning of motors, which was normal phenomenon. The rewinding and reparation of burnt motors was taken care by the farmers themselves by raising money on equal sharing basis from the users. In some cases, such motor burning was frequent and farmers paid the money fully every time. For example, in case of 30 HP motor, the burning was reported three times in recent years and on each time it costed about Rs. 4,500/- for the rewinding and reparation of the motors.

The maintenance of pipes including occasional replacement and reparation is done by the farmers themselves. The schemes being small and pipes being of small diameters, it is manageable for the farmers to maintain and repair them in case of need.

It was clearly observed that the farmers considered the schemes very important for their livelihood and they displayed great stake and responsibility in maintaining the scheme and also in contributing fully the cost on the maintenance and operation.

In case someone is unwilling to share the cost for the operation and maintenance, he is not given water.

No rules and regulations have been framed for the operation and maintenance and the things are taken care in the most informal manner under

a kind of collective responsibility combined with social pressure. So far this has worked well and the farmers have expressed satisfaction on the existing system. They did feel the institution arrangement could be better.

It is interesting to note that there is no formal or informal institutional building around these schemes. Not even committee is thought of by the promoters of the schemes, in this case the DRDA. However, there is a Chairman in each scheme, appointed by the DRDA to look after these schemes, though there is no institution or committee. One wonders how can there be a Chairman without institution or committee? What is more interesting and perhaps intriguing is that the electric connection is taken in the name of the Chairman. In other words, the electric connection of the scheme is in one name and that person is appointed a Chairman on permanent basis. It is alright that this has worked well so far, particularly, for the period when electricity was not charged in Madhya Pradesh. Now that the electricity is charged and in case the payment is not made and the amount gets accumulated, such Chairman would be in great soup, as he would be prosecuted or entire recovery will be made from him. We will deal with this aspect of electricity and institutional arrangement separately elsewhere in this report.

#### **4.8 Access to Water - Equity Aspect :**

This is a ticklish and interesting aspect for such schemes. The very fact that these are very small schemes hardly benefiting even 10 % of the households or less than 10 % of the land in the given village, the equity aspect as far as the entire village is concerned becomes unattainable and irrelevant. One can argue lengthily for and against such situation. However, the ground reality has to be accepted as it is. In case of some schemes, particularly, on river Anas, it could be argued that bigger schemes could have been taken up covering larger area and larger households, atleast to the extent of 35 - 50 % of the households and 35 -50 % of the land. Such comments and observations may be useful for future planning, but, not to the existing schemes.

Within the above constraint of small schemes with limited coverage of area and households the farmers have been displaying great deal of equity in distributing the water equitably to all the farmers who had paid towards the part of the capital cost of the schemes. Due to inadequate power supply, when it was not possible to irrigate the entire command, the farmers displayed exemplary equity by providing water equally to all the farmers. For example, if water is available only for ten acres during particular season, ten farmers will get irrigation for one acre each. This is reported uniformly by all the farmers of all the schemes.

#### 4.9 Change in Cropping Pattern :

After availability of irrigation, the definite cropping changes were reported by the farmers. There were no cropping changes in Kharif even after irrigation. The changes were observed in Rabi season. Infact, before irrigation, there were hardly any crops in Rabi season, excepting some crops without irrigation. After irrigation, substantial crop of wheat, gram and in some cases, vegetable is taken.

In one scheme, Deojhari Panda, when water was available in summer, the vegetable crop was taken giving significant profit to the farmers. In no other schemes, summer irrigation is possible, hence, no summer crop. Similarly, in above scheme, Sunflower and Castor crops were also tried by the farmers, though they did not earn much because of market conditions. It is however, important to note that on availability of water the tribal farmers are willing to take risk and showing enterprising attitude towards cropping changes.

#### 4.10 Increase in Income :

A noticeable increase in income was reported by all the farmers after irrigation. All the users got additional crop in Rabi and earned good amount on this additional crop of wheat, gram, etc. Almost all farmers who got irrigation in Rabi reported that they got additional income between Rs. 6,000/- to Rs. 9,000/- per acre in Rabi. Due to electricity problem, the command and irrigation was restricted to one acre for each farmer. If such restriction was not there farmers would have earned much more than the above amount. The enterprising farmers opting for vegetable crops earned much more than the above amount. Khumsingbhai of Deojhari reported that on 0.7 acres of irrigated land under vegetable, he earned Rs. 30,000/- in the period of 3-4 months. This is an excellent improvement. This example opens up the potential for the improvement in income on account of irrigation.

**The detailed economics of Khumsingbhai earning on 0.7 acres of land before and after irrigation are given below ;**

##### BEFORE IRRIGATION

Season	Crop	Yeild(Qt.)	Price Rs/Qt.	Income Rs.
a. Kharif	Maize	6.5	500	3250.00
	Soyabean	5	900	4500.00
b.Rabi	Maize	3	500	1500.00
	Gram	2	1300	2600.00
			Total Income	11850.00

## Inputs

Season	Crop	Seeds(kg)	Price/Kg	Total Rs.
a. Kharif	Maize	15	15	225.00
	Soyabean	40	14	560.00
b.Rabi	Maize	10	15	150.00
	Gram	8	15	120.00
			Total	1055.00

Cost of Fertilizer+Pesticides+Labour=700.00

Total Input Cost Rs. =1055.00+700=1755.00

Net Income Rs. = Total Income-Total Input

$$\begin{aligned} &= 11450-1755 \\ &= 9695.00 \end{aligned}$$

## AFTER IRRIGATION

Season	Crop	Yeild(Qt.)	Price Rs/Qt.	Income Rs.
a. Kharif	Maize	6.5	500	3250.00
	Soyabean	5	900	4500.00
b.Rabi	Wheat	10	650	6500.00
c.Summer	Bhindi	43	700	30100.00
	Mung	2	2200	4400.00
			Total Income	48750.00

## Inputs

Season	Crop	Seeds(kg)	Price/Kg	Total Rs.
a. Kharif	Maize	15	15	225.00
	Soyabean	40	14	560.00
b.Rabi	Wheat	40	15	600.00
c.Summer	Bhindi	5	200	1000.00
	Mung	2	35	70.00
			Total	2605.00

Cost of Fertilizer+Pesticides+Labour=2800.00

Total Input Cost Rs. =2605.00+2800=5404.00

Watering free

Net Income Rs. = Total Income-Total Input

$$\begin{aligned} &= 48750-5404 \\ &= 43346.00 \end{aligned}$$

From the discussion with the farmers, it was learnt that the increase in yields and income after irrigation on specific unit of land was about 300% to the situation before irrigation.

It was reported by all the farmers that when irrigation is assured, they put improved seeds and other necessary inputs like organic manure, chemical fertilizers, etc. which result in substantial increase in the yields.

The reported increase in yields by the farmers was as follows during Kharif as well as in Rabi, before and after irrigation, giving a picture before and after irrigation.

Sr. No.	Name of Crops	Yield per Acre / Quintal	
		Before Irrigation	After Irrigation
<b>Kharif Season</b>			
1.	Maize	4 - 5	10
2.	Cotton	3	6
3.	Black Gram	1 - 2	5
<b>Rabi Season</b>			
4.	Wheat	2 - 3	10 - 15
5.	Gram	1 - 2	6

- i. Before situation in Rabi was non-irrigated crop.
- ii. Due to administration of organic manure and fertilizer in Rabi, the impact on fertility was observed in the Kharif crop also as reported by the farmers.
- iii. In Rabi wheat, the yields reported were 10-15 quintals / acre. The variation was due to the variation in the quality of seeds and quantity of fertilizers used by the farmers.

#### **4.11 Change in Migration Pattern:**

The out migration in search of livelihood has been phenomenal in the tribal district like Jhabua. Large numbers of families migrate with all the members for about 8 months in a year. However, after irrigation as reported by the farmers, the period and magnitude got reduced substantially. The farmers with irrigation now migrate for about 4 months instead of 8 months. Also, for this 4 months also, not all the members migrate, but, few youngsters migrate. Ofcourse, the limited irrigation due to limited electricity, has resulted in limited impact on migration. If irrigation was available on about two acres of the land of each farmer, the impact on migration would be much much better.

The phenomenon of migration in tribal region like Jhabua is both intricate and serious and it requires separate in-depth study as to why large numbers of people migrate and how this phenomenon can improve.

#### **4.12 Changes in Social Status:**

On improvement of economic conditions on account of irrigation, the social status of the farmers has gone up greatly. They are now respected families among their society. They also get recognition from the Government and other section due to such development in their villages and improvement in their conditions. The improvement has brought in special feeling among the users. As natural consequences of this development, the housing conditions have improved for the beneficiaries. The boys have better chances for the marriage as people would like to give their daughters to these families.

As the schemes were very small and further affected by electricity problem, the irrigation for each farmer was very limited. Therefore, the benefits were also limited. If the irrigation coverage was more with more electricity available, the benefits in terms of improvement in houses and other aspects would have been possible.

There could be other spill over or trickle down impact of the improvement on account of irrigation, which requires separate study.

#### **4.13 Awareness About Irrigation vis-à-vis Role of Users as Collective Unit / Village Institution:**

It came out clearly, categorically and unanimously that all the respondent farmers were aware of their irrigation system and also aware of the importance of irrigation. With all the difficulties such as inadequate power supply, no water during drought years, they were still very appreciative of the irrigation system of lift irrigation. However, these schemes being very small involving few farmers in each scheme there was nothing like collective decision and collective management. None of the schemes has formal or informal institutional arrangement and yet in their own way they manage the scheme through one or two leading persons and perform their duty in the payment of all dues for irrigation and also part of the capital cost. Excepting the electricity problem, none of the farmers expressed any kind of dissatisfaction or unhappiness for the system or the management of the system.

#### **4.14 Perception Of Farmers On Irrigation System**

On asking their perception for the lift irrigation all the farmers were in favour of such scheme. The reason given for such perception was the benefit that they were getting from the scheme. They felt that this was appropriate system for their topography and situation. They did feel that with adequate power supply

and constant availability of water and improvement in the system, they can get much more benefit.

### **VACHNABHAI PREFERS L. I.**

Village Mindal has one L. I. Scheme of 20 HP. Due to scarcity of water, this L. I. did not function in last two years. Vachnabhai mobilizing his and his two brothers resources to put his own three HP individual motor and irrigated his land. Thus, though the other farmers were affected, Vachnabhai was not affected due to this individual enterprise. When researchers asked him whether he was still interested in L. I. Scheme, he promptly replied affirmatively stating that LIS would be much better as it would benefit more farmers and more land, and therefore, he would opt for L. I. water than his own pump set as and when adequate water would be available. It was a pleasure to know such understanding on the part of a tribal farmer.

The District Officers of Jhabua also corroborated that lift irrigation system was useful to the tribal farmers. Assistant Development Officer, Mr. Hetaval, who has been working in the district for more than ten years, who accompanied the researchers throughout the study said categorically that inspite of the fact that many L. I. Schemes were defunct, those which functioned have benefited the poor farmers.

## **5.0 REFLECTION ON DEFUNCT LIFT IRRIGATION SCHEME**

Along with 5 functioning lift irrigation schemes 1 defunct scheme in the area was also studied. The defunct scheme was Kardawad Badi-2 scheme. One scheme Kardawad has been studied as successful scheme and this defunct scheme is also distinctly 2<sup>nd</sup> part of that scheme with separate pump and pipelines with separate command area, but not functioning since its installation. For this defunct scheme, the farmers were not responsible. On further inquiry it was found from the farmers that water never reached even once at the highest point and therefore it could not be delivered to the earmarked command area. According to the farmers, out of the 12 outlets, water was initially released in only 2 nearest outlets from the water source and never went up beyond those outlets. This obviously disappointed the farmers and they lost interest in the scheme. As if this was not enough, twice in a short span motor was burnt and this also upset the farmers, combined with the fact that water was not reaching to most of the command even when motor was operating. Unfortunately the technical data on the design, machinery and other aspects was not available in any office and therefore the same could not be studied. All the researchers associated with the study being well experienced in the technical design and operation of lift irrigation, it

is concluded without any risk that the design of the scheme was very much sub-standard and possibly workmanship was also not upto the standard. Otherwise there could be no other reason for not reaching of water to all the outlets. One of the twin schemes on the same location has been functioning satisfactorily in the normal years and therefore there is no reason to believe that the community was not interested in operating another scheme.

The process of the implementation of this defunct scheme also cannot be blamed for its non-functioning as the same process which was adopted in other schemes including twin scheme on the same site was followed in this case also. Therefore, it is only the technical aspects that could be blamed for its defunctness.

For the revival of this defunct scheme there have been no serious attempts reported, excepting the recent request made to NGO Sadguru Foundation by the district authorities to study the defunct schemes and suggest measures for the revival of defunct scheme. The NGO is considering this request whether it can undertake such assignment.

The major perceived reason offered by the community as well as the government agency for the non-functioning of the scheme was technical problem, fully corroborating with the opinion of the researchers.

## **6.0 OUTCOME - CONCLUSIONS**

The outcome and conclusions of the study could be briefly summarized as follows;

### **6.1 APPROPRIATENESS OF TECHNOLOGY**

The technology of lift irrigation system used was very much appropriate and relevant for the given topography and situation in Jhabua district. However there was scope for improvisation in design and workmanship in each of the scheme studied.

### **6.2 FACTORS ENSURING THE SUCCESS OF LIFT IRRIGATION PROJECTS**

The major factors attributing to the success were mainly;

- *Need based program*
- *Use of appropriate technology (with no better option for the irrigation)*
- *Tangible benefits to the farmers*
- *Enthusiasm and interest of the farmers in operating the scheme*

### **6.3 INSTITUTIONAL BUILDING**

The schemes being very small involving few farmers, there was no attempt for the institution building, formal or informal around the system. The group of farmers had their own system in operating under one or two leading person. As there was no formal or informal institutional set-up, there were no records, documents, account keeping, meetings etc. in managing the system. These aspects were all together missing in all the schemes. Apparently if there was some formal or informal institution, the functioning of the schemes and impacts could have been better. On further probing on this issue, the farmers did feel the need for institutional arrangements, particularly in the changed situation when they were required to pay electricity charge and were required to keep records, accounts etc. with the consensus on the rules and regulations for the management of the system.

### **6.4 ROLE OF GOVERNMENT IN PROMOTION OF LIFT IRRIGATION PROGRAMME**

The government and district authorities, particularly the DRDA, Jhabua, have played major and exclusive role in the promotion of lift irrigation programme in the district. The fact that the DRDA installed as many as 1,046 lift irrigation systems from 1989 to 1999 indicate the government policy thrust and promotional efforts put up by the DRDA. The then District Collector in 1989 initiated this programme which was followed with varying degree of commitment and enthusiasm by subsequent collectors. The data that the 83% of these 1,046 lift irrigation schemes were installed during the span of 5 years from 1991-92 to 1995-96 speak profusely on the immense efforts put in by the district under different Collectors during above short period. This achievement of the installation of 1,046 lift irrigation schemes in the district has been well propagated at different levels including at the national level and often at the national level people talk that this massive expansion of lift irrigation has revolutionized the irrigation coverage in the district and transformed the district into prosperous district on account of lift irrigation programme. Couple of years back, one senior officer of Madhya Pradesh told one of the present Researchers that Jhabua had reached saturation in irrigation on account of L. I. programme. While appreciating enormous efforts put in by the Government in the form of massive movement, one has to remember that all these 1,046 lift irrigation schemes being very small, they have not made massive impact in the development of irrigation in the district. Altogether these 1,046 schemes are designed to provide irrigation in about 34,000 acres of IRD beneficiaries and another 6,000 acres of NON - IRD beneficiaries, bringing the total designed irrigation command area to 40,000 acres. This is less than 6 % of the cultivable land of the district. Taking into account the adverse impact of inadequate power supply, the actual coverage

based on our study and also reported by various people would be little less than 35 % of the above designed command. Using this data and if we generalize that all the 1,046 schemes were functioning at 35 % of the designed command, the actual coverage comes to only 2 % of the total cultivable land of the district. The Annexure - 4 reflects the data on designed and achieved command of five schemes as well as the working of total command of all the L. I. schemes and the realistic assumptions of achieved command. If we consider the situation of defunct schemes which are in large numbers, the overall picture of achievement under all schemes put together would be still less. This realistic picture would be helpful to all those who are interested in the water resources development in the district and who have illusion on the development of irrigation through L. I. Programme in the district. Such illusion need to be removed at the earliest in the interest of development of the district.

While giving above observation substantiated with the bare facts, it must be emphasized that the district has much more potential awaiting to be harnessed in the field of water resources. Little more care in design and workmanship and also in improving the size of the schemes, commensurating with the availability of water the expansion could be much more and the impact could be far better.

## **6.5 REPLICABILITY**

It could be well established that the lift irrigation technology is very much appropriate for the similar tribal regions and other similar regions, and therefore, the technology has a great scope for replication wherever such situation of undulating uplands exist in our country. Particularly, in all the tribal regions, the topography being similar to Jhabua, there is great scope for replication. Even in Jhabua itself there is scope for both replicability and improvisation of the system for the better and wider impact.

## **7.0 SUGGESTIONS**

The suggestions given below, based on the study and knowledge of lift irrigation systems are applicable to Jhabua as well as to all the tribal regions in general ;

- i. Even when appropriate and relevant technology is used, it requires proper and perfect knowledge of such technology, with sound implementation, so that better systems are offered for the better results.

- ii. Utmost care need to be taken in the design of the schemes to serve larger area and larger households in a village or hamlet, so that the equity aspect is addressed to the extent feasible and workable at the given location. Also, if source and location permits, more than one schemes could be taken up to serve more area and more people.
- iii. Irrigated cultivation need to be integrated with horticulture and more profitable cropping pattern to get better impact and more profit on small size of the land. Particularly the lift irrigation being relatively costlier in operation, this aspect needs to be addressed seriously through constant training and inputs to the farmers.
- iv. Lift irrigation technology is a proven technology, very much appropriate for the tribal regions, and therefore, the Government and other funding agencies should give top priority for its replication in the similar regions.
- v. The national planners and the state planners need to give top priority to water resources development for the tribal regions.
- vi. If the potentials of water resources development is not capitalized at the earliest, the tribal people / regions will be exposed to irreversible damage to their ecology and economics.
- vii. Institutional arrangements are imperative for such schemes, not only for the proper governance and management, but, even for effectively dealing with the Government departments, electricity boards, banks and other institutions, on various important issues.
- viii. Technically sophisticated system like Lift Irrigation requires constant support services from the support organization(s). Such support organizations could be farmers own apex body like federation, or any Government agency or NGO. The tribal farmers will require periodical trainings to upgrade their skill and improve their agriculture practices. This could be ensured by apex organization or support organization.
- ix. The Government policies, particularly, that of the electricity boards, should be conducive and helpful to the poor tribal farmers opting for lift irrigation schemes.
- x. Under the system of charging flat annual and monthly power tariff, it is criminal and exploitative to charge the farmers for the non-use period. It is irrational and exploitative to charge during the drought years when there was no water and also to charge minimum tariff without giving minimum power supply, is something irrational and untenable legally.

Someone has to knock the doors of the Supreme Court against such irrational and exploitative policies and practices. Infact, the Government which always claims doing its best for the tribals needs to take note of this and adopt rational policies in this respect. The best system would be the unit based metered tariff without resorting to minimum or flat tariff in such cases of seasonally operated schemes. For drought years, when government is offering so much assistance and relief to the people, a small change for not billing the poor tribals during the drought year will not be a big obligation by the Government. It would be an act of justice.

**TERMS OF REFERENCE (ToR) FOR THE STUDY OF  
GOVERNMENT INSTALLED LIFT IRRIGATION SCHEMES  
IN DISTRICT JHABUA, MADHYA PRADESH**

**BACKGROUND**

During the later half of eighties and in the first half of nineties, large numbers of lift irrigation schemes were installed in district Jhabua under a massive programme, mainly by DRDA. It is reported that about 1,200 lift irrigation schemes were installed during above period in district Jhabua and barring few, all were installed by the Government department. This physical achievement by itself is very impressive, showing interest and commitment by the Government in the development of irrigation in such a backward district.

The Government on one side has invested huge amount in the installation of such L. I. Schemes which created a picture of massive irrigation developed in above district through these L. I. Schemes. The second dimension was the hope raised among the tribal community for the improvement in their living conditions on account of such massive programme.

It is therefore, pertinent to study the success of such L. I. Schemes installed by the Government.

**STUDY TITLE**

A study of the Government installed lift irrigation schemes in Jhabua, Madhya Pradesh, with reference to the impact and replicability.

**BROAD OBJECTIVES**

The study aims to find out the factors responsible for the success of lift irrigation schemes in Jhabua and highlight the potential for the replicability.

To achieve this, the following aspects of the L. I. Schemes would be looked at;

- a. Background of the scheme such as who initiated the project, community, NGO Government Department or any other agency ?
- b. Which agency designed and executed the individual project including the year of design, period taken for completion and the completion of the project, etc ?
- c. The process of implementation including the involvement of the community.
- d. Technical aspects of the project, such as the suitability of site, soundness of design, workmanship, quality of material used, etc.
- e. Cost of the project, cost benefit details of the project, sources of funds, community contribution, if any, etc.
- f. The post project management of the scheme - Who was entrusted the management of the scheme - individuals, group, formal, informal village institutions.
- g. The period or years of operation.
- h. Benefit of the scheme in terms of the area irrigated against the design command, the cropping pattern, and additional gross and net earnings on account of availability of

- irrigation, numbers of households benefited, quantifying the benefits to such households or group of households.
- i. The perceived factors for the success of the scheme by the farmers and the Government officials.

For the comparison, one defunct L. I. Scheme will be studied focusing on following aspects.

- a. Since when defunct.
- b. The prima-facie reasons for the non-functioning of L. I. Schemes - technical, social or any other.
- c. Any attempt made for the revival - if yes, by whom; Community, Government Department or any other agency.
- d. Perceived reasons by the community for the non-functioning of L. I. Schemes.
- e. Perceived reasons by the concerned Government Department for non-functioning of L. I. Schemes.

### **METHODOLOGY**

- Five L. I. Schemes from the list of ten functional schemes suggested by the district authorities would be studied.
- One non-functional lift irrigation will also be looked at on a broader aspect to understand the reasons / factors leading to failure of schemes.
- The researchers would study the record and background of the scheme available with the Department and / or with the village, including plans and estimates.
- Intensive field visits will be taken to see the physical condition of the schemes along with the quality of material used and the present conditions of the structure, equipments, etc.
- Interview with the beneficiaries / farmers and group discussions - questionnaire guide will be prepared for this.
- Existing data and information's maintained by the village institution will be analyzed.
- Discussion with the concerned Department and Government Officers.

### **OUTCOME**

Conclusions and lessons learnt from the approach used in the government irrigation initiative in Jhabua in terms of ;

- Appropriateness of technology.
- Factors ensuring the success of LI projects.
- Institutional building around the project and its functioning and impact.
- Role of Government institutions and policies to enhance and promote such schemes.
- The replicability of such institutions and approach in such schemes in the region.
- Suggestions for better impact and sustainability.

### **TIME FRAME**

If no unforeseen difficulties take place, the researchers will complete the study and produce first draft report by 7<sup>th</sup> September, 2002.

### **RESEARCHERS**

1. Mr. Kanhaiya Choudhary
2. Mr. Harnath Jagawat

**QUESTIONNAIRE GUIDE**

**A. FOR FARMERS**

1. General:

Name

Village

Block

District

Caste

2. Source of Income :

Agriculture  
Labour  
Business  
Service

3. Land Holding :

Big (> 5 acres)  
Marginal (2-3 acres)  
Small (< 2 acres)

4. Family size :

No. of persons  
Adult Male  
Adult Female  
Children

5. Area under irrigation / Total area:

6. Cropping pattern:

Irrigated;

Kharif -  
Rabi -  
Summer -

Unirrigated;

Kharif ----  
Rabi ----  
Summer---

7. Yield per acre:

Irrigated;      Wheat maize gram              kapas      mung

Unirrigated; Wheat      maize gram              kapas      mung

8. Total production and Consumption pattern:

9. Cost of input per acre:	Irrigated	Unirrigated
Field preparation-		
Seed	-	
Fertilizer	-	
Harvesting	-	
Irrigation	-	

10. Cattle possession :	
Bullock	-
Cow	-
Goat	-
Others	-

11. Source of fodder:

12. Trees / plants possession:

13. Migration:

- How many members go out?
- Where ?
- For how many months?
- What kind of works offered?
- What is the daily wage?
- Idle days?

14. Loan for L.I.

- How much?
- How much repaid?
- How?
- Mode of repayment?

15. Changes experienced due to L.I.

16. Drinking water availability / Change in status due to L.I.:  
(women to be preferred to answer)

## B. For Group

(About L.I. scheme and functioning)

1. When scheme was installed ?
2. When started functioning ?
3. How much command area ?
4. How many beneficiaries families ?
5. About motors, pipes, chambers etc ?
6. Do all get water?
7. If yes, in which season and how many times ?
8. If not why ?
9. Crops under different season

After L.I.			
Kharif	Rabi	Summer	
Before L.I.			
Kharif	Rabi	Summer	
10. Yield per acre: (As per yield/acre, yield per kg. of seed sown.)
11. Use of produce (yield) Consumption /sell out :
12. How scheme is operated?
13. How the water price is fixed?
14. How and when it is collected?
15. Who does the maintenance ?
16. How maintenance is done ?
17. Who pays for it?
18. How chairperson / other functionaries are chosen ?

**ANNEXURE - 3**

Time Frame : Considering 7<sup>th</sup> Sept as date of 1<sup>st</sup> draft Activity chart is planned as following :

**Activity Chart**

	Up to 31 <sup>st</sup> July	Up to 7 <sup>th</sup> Aug	Up to 15 <sup>th</sup> Aug	Up to 22 <sup>nd</sup> Aug	Up to 29 <sup>th</sup> Aug	Up to 7 <sup>th</sup> Sept
Identification of case	—————					
Exploration/Feasibility	—————					
Obtaining consent	—————					
Testing Questionnaire	—————	—————				
Collection of data/duration of field visit		—————	—————	—————		
Obtaining secondary data/document		—————	—————	—————		
Collecting data/check for consistency, correlation				—————	—————	
Identification and filling up information gaps and inconsistencies				—————	—————	
Discussion and writing						—————

## ANNEXURE - 4

### Details of five functional lift irrigation schemes in Jhabua district under study.

Sr. No.	Name of Lift Irrigation Scheme	Year	Estimated Cost(Rs.)	H.P	Head in Rmt.	I.C.A* in Acre	Maximum irrigation achieved in a year		No. Of Beneficiaries
							Area (Acre)	%**	
1	Deojhari	1992	119000.00	10.00	20.00	44.00	15.81	34.50	19
2	Mindal	1995	465345.00	20.00	31.00	52.50	16.80	32.00	21
3	Kardabad – Badi	1995	650000.00	30.00	34.00	84.00	27.97	33.33	35
4	Umaria – Bajantri	1995	375354.00	15.00	34.00	50.00	16.00	32.00	20
5	Dhekal Badi	1995	145000.00	05.00	22.00	18.00	5.40	30.00	06

\*I.C.A-Irrigable Command Area

\*\* % - Shows the % of actual irrigation coverage to the designed irrigation command area (ICA)

### Total Cultivable area and area under Lift irrigation scenario in Jhabua district

Total Cultivable Area in Jhabua district = 762867.00 Acres

Total Area under irrigation by 1046 L.I.S = 40273.00 Acres

%age of area under irrigation by L.I.S to Total cultivable area = 5.27%

%age of area under irrigation by L.I.S to Total cultivable area considering maximum Of 35% Irrigation achievement = 1.85%



To  
Mr. Sanjiv J. Phansalkar,  
Anmol Management Consultants,  
4, East High Court road,  
Ramdaspath,  
**NAGPUR - 440 010**

September 9, 2002

Email: [sanjiv@nagpur.dot.net.in](mailto:sanjiv@nagpur.dot.net.in)

Dear Sanjiv Phansalkar,

RE : Jhabua study

Many thanks for your comments on the draft of above study. First of all myself and my two colleagues are thankful to you for your compliments for the study.

Your comments have been good and practical and we have tried to address them in the revised draft of the study submitted herewith.

The village profile and project profiles are converted into tables as suggested by you.

Most of other comments are also attended to the extent possible and to the extent information was available with us. For example, a brief process of implementation of one scheme is narrated in block. Similarly, economic benefit to one farmer is also highlighted in this second draft. The difference in process of successful schemes and defunct schemes is also addressed stating the fact that there was no difference in processes in both the cases, but the difference was technical flaws in defunct scheme. The argument for bigger schemes wherever feasible is also explained briefly at an appropriate place. However, we could not elicit more on social aspect of the benefits as the schemes being very small, each farmer getting water on small patch of land, compounded with the water and electricity shortage, the social benefits were not very much expressed by the farmers nor the researchers could see much. For example, hardly new houses have come up. Ofcourse, given all the favourable conditions like adequate water and adequate power supply, the impact both on economic benefits and social benefits would be much more. We have stated this in our study and its conclusion.

Inspite of our intentions if any of your comments are not addressed or if they are not properly addressed, please condon such omission on the fact that we were severely handicapped in absence of recorded informations both at the village level as well as the Government office level.

I have no idea whether this revised draft should be treated as final study or there would be some inputs on the part of IWMI team to modify this version ?

With regards,

Yours sincerely,

HARNATH JAGAWAT  
DIRECTOR

Encl.: As above.

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