Government of Maharashtra

EVALUATION STUDY OF THE MEDIUM & MINOR IRRIGATION PROJECTS IN SUB PLAN AREAS OF MAHARASHTRA STATE & THEIR BENEFITS ACCRUED BY TRIBALS DURING THE YEAR 1985-86

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Tribal Research & Training Institute
Maharashtra State
28, Queen's Garden, Pune - 411 001.

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Preface

The level of development of irrigation in Maharashtra is much below the development of irrigation when compared with other states. This situation may be attributed to the peculiar geographical conditions of the State as the large part of the State falls in the rain shadow zone covered by Western Ghats. This situation necessitates the building up of water storages in the higher rainfall areas for conservation of the water and for the use in the subsequent lean period.

Irrigation thus provides the necessary impetus for enhancing yield rates of some of the major crops with the application of modern techniques of production. This indicates special significance of irrigation development programmes for the rural economy in general and tribal economy in particular.

The Tribal Sub Plan areas in the State consists of mountain terrain and forests. The irrigation develop--ment programmes thus finds little scope. But irrigation development programmes through medium and minor irrigation projects are put through for the development of tribals residing in the far-flunged tribal sub plan areas of State.

The Government of Maharashtra in Tribal Development Department has entrusted the Institute with the work of evaluating an impact of the irrigation projects on the people in tribal sub plan areas.

The evaluation study was entrusted to Shri D.S. Mahajan, Statistical Officer who completed the field enquiries and report writing in conjunction with Shri S.R.Shevkari, Research Assistant . The study was supervised by Shri M.B.Surana, Deputy Director under my guidance.

I hope that the observations and suggestions made in the report will certainly be helpful to the authorities concerned who are interested in the tribal development.

(Dr.G.M.Gare)
Director
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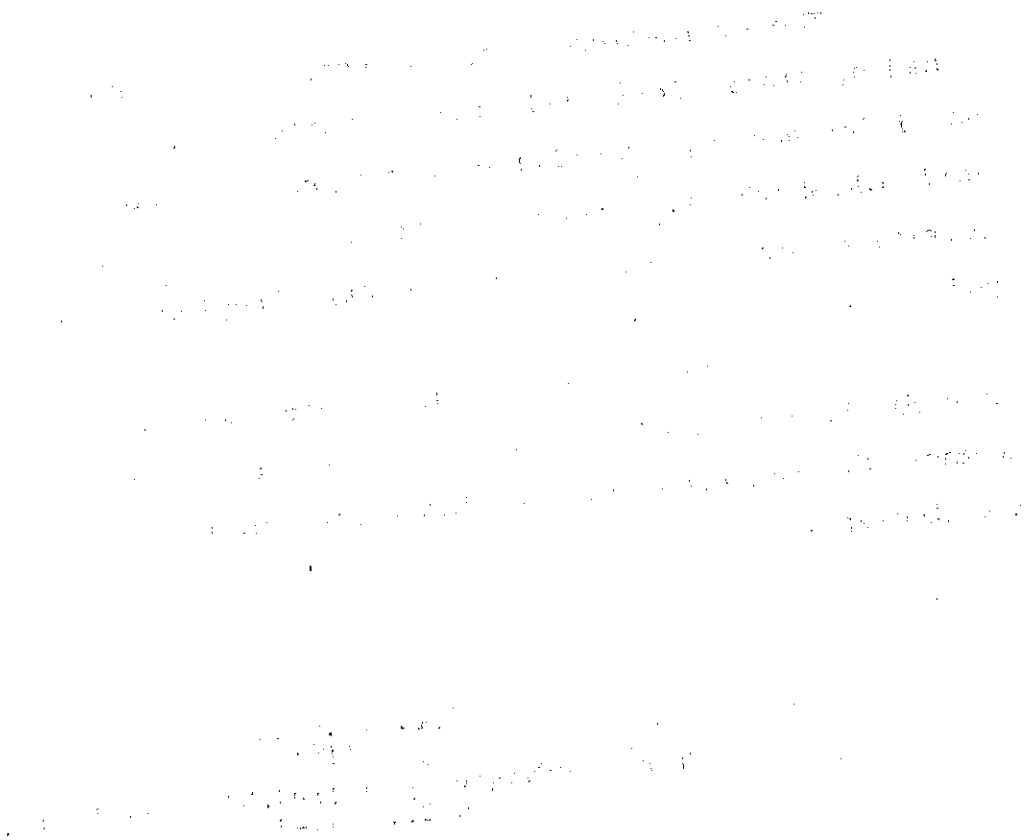

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CHAPTER I

Introduction

Water is the most important single source or requirement for proper and successful growth and yield of the crops. It can be available either from rains or under ground water. The need for applying irrigation for raising crops during non-rainy periods, long breaks and failure of rains is realised sharply.

Irrigation in Maharashtra-over view

1.1 The level of development of irrigation in Maharashtra is much below the normal level of development of irrigation as compared to the other States. It is generally estimated that only 12.5 percent of the net cropped area is covered under irrigation as against 25.5 percent of total potential in the state as a whole. This may be due to peculiar geographical situation of the State. The large part of the Central Maharashtra falls in the rain shadow of Western Ghat.

This natural situation certainly called for the building up of water storage in the higher rainfall areas for conserving the water and making use in the subsequent lean period. This necessitates the long canal system for transfering water to low rainfall areas.

1.2 Types of Projects in general

The irrigation projects are generally categorised as Major, Medium and Minor Projects. The major and medium projects comparatively involve heavy capital investments, and operational expenditure over a long

period of completion. The minor irrigation projects, on the other hand, cost less capital investment and operational expenditure over a short period for their completion.

Tribal Sub Plan Area - Profile

1.3 The Tribal sub plan area of the State covers 15 districts and 75 Panchayat Samitis comprising of 6756 villages and 14 towns although major tribal area in the State receives heavy rainfall and despite its intersection with the rivers and streams, there is practically little scope for major and medium irrigation projects in Tribal sub plan areas. This is due to the fact that beds of rivers/streams in the tribal areas are usually steep in mountain terrain. The analysis of irrigation data under Universal Bench Mark Survey in 1980 reveals that 6.71 percentage of sown area is only irrigated in the Tribal Sub Plan Area.

After visualising the situation in tribal area of the State, the Irrigation Department prepared a Master Plan for irrigation works for developing possible sites on the basis of toposheets.

Potential of irrigation in Maharashtra State

1.4.0 Presently, the potential of irrigation in the State has been estimated at 70.61 lakh hectares. Out of which 52.61 lakh hectares can be irrigated by surface water and the remaining 18.00 lakh hectares by under ground water source.

1.4.1 The projectwise irrigation (estimated) can be studied from the table below :-

Table No.1

Potential of surface water irrigation by type of projects

Sr No.	Type of the Project	Estimated irrigation (Lakh hectares) potential	Percentage to total surface water irrigation potential
1.	Major and Medium Irrigation Projects	40.27	76.00
2.	Minor irrigation Projects	12.34	24.00
	Total surface water irrigation	52.61	100.00

1.4.2 The areas likely to be irrigated under the minor irrigation projects by the sectorwise allocation is summarised in the table below.

Table No.2

Sectorwise potential for minor irrigation projects

Sr No.	Sector	Area likely to be irrigated (in lakh hectares)	Percentage to total area likely to be irrigated
1.	State	8.68	70.34
2.	Local	3.66	29.66
	Total	12.34	100.00

1.4.3 The present evaluation study is restricted to the Medium and Minor Irrigation Projects in the tribal areas with a view to assess the utilisation of irrigation potential by the tribal beneficiaries under the selected projects.

A) High lights of some Medium Irrigation Projects

1.5 The project having irrigation potential between 2000 to 9999 hectares are termed as medium irrigation project. Both the Major and Medium Irrigation Projects are executed under the State Sector only.

(continued on next page)

The stagewise physical progress of each of the Medium Irrigation Project in the Tribal Sub Plan Area is given below :

Table No.3

Physical progress of the Medium irrigation projects with their cost

(Cost in Rs. lakhs)

Sr No.	Project (District)	Original Estimated Cost	Revised Estimated Cost	% of works completed upto the year (83-84)	Progress of work during (1984-85)	Utilisation of irrigat--ion poten--tial in T.S.P.Area *
1	2	3	4	5	6	7
1.	Haranbar (Nasik)	179.65	718.84	56.00	27.00	10.87
2.	Kelzar(Nasik)	118.52	340.16	90.00	10.00	65.00
3.	Aner (Dhule)	424.26	836.00	98.84	-	21.50
4.	Alandi (NSK)	275.07	612.82	67.10	32.90	44.50
5.	Bhatsa(Thane)	389.75	405.76	25.93	7.15	59.40
6.	Chargaon(CHA)	134.28	434.08	27.00	27.00	100.00
7.	Amahala (CHA)	219.54	576.00	81.00	10.00	100.00
8.	Laban saver(")	139.16	33.00	44.00	56.00	32.60
9.	Chenna Nadi (GAD)	182.55	366.38	20.00	9.00	100.00
10.	Channdai Nala (CHA)	98.89	324.00	44.00	56.00	100.00
11.	Dina Nadi (Chandrapur)	474.97	511.56	99.50	99.50	31.43
12.	Nagzari(Nanded)	81.82	155.87	89.82	6.94	100.00
13.	Loni(Nanded)	111.49	210.55	75.69	24.31	90.00
14.	Dongargaon(")	106.11	177.96	60.67	39.33	22.00
15.	Wandri (Dhule)	327.71	598.98	90.00	10.00	100.00
16.	Rangawali (Dhule)	237.50	448.00	100.00	-	100.00
17.	Pokhadi goda (CHA)	163.37	-	44.00	37.00	100.00
18.	Karbappawala (CHA)	338.72	513.68	-	-	58.23
19.	Dongargaon (CHA)	149.75	-	18.00	19.00	81.11
20.	Antargaon (YAV)	70.36	-	55.90	43.33	66.75
21.	Borgaon Tank (YAV)	103.40	-	13.24	48.35	25.10
22.	Dehali (DHL)	395.00	739.00	19.20	3.23	100.00

* The utilization of irrigation facilities by Tribals in T.S.P.A. is much less than the figures contemplated.

Nasik - NSK; Dhule - DHL, Chandrapur - CHANDA; Yavatmal - YAV; Gadchiroli - GAD.

(B) High lights of some Minor irrigation projects

1.6.1 The minor irrigation programmes in the State is executed under both the sectors viz. State and local. The schemes under local Sector are executed by the Zilla Parishad and Panchayat Samitis. The programme implement--ation is executed with reference to the areas likely to be irrigated under each sector.

1.6.2 The project with the potential of more than 100 hectares are implemented under the State Sector.

1.6.3 The project with less than 100 hectares are left to the control of the local sector i.e. Z.P's. Exceptionally the lift irrigation scheme under crash programme in 1972-73 having the potential of less than 100 hectares were executed under State Sector.

1.6.4 Districtwise Minor Irrigation Works completed and irrigation potential created thereunder in the State Sector is presented in the table given below.

Table No.4

No. of Minor irrigation works/completed in the T.S.P. Area under State Sector with their irrigation potential

(Area in hectares)

Sr No.	District	No.of works completed upto 84-85	Potential created upto 84-85 (In Hectares)	Actual area irrigated in 84-85	% age of irrigation to total created potential
1	2	3	4	5	6
1.	Thane	20	2488	967	39
2.	Raigad	1	80	50	62
3.	Nashik	8	5184	4070	79
4.	Dhule	51	35922	13122	37
5.	Ahmednagar	2	533	91	17
6.	Pune	3	1017	70	7
7.	Nanded	3	1170	104	9
8.	Amravati	8	2328	613	26
9.	Nagpur	2	1249	50	4
10.	Bhandara	18	8957	1600	18
11.	Yavatmal	15	5344	737	14
12.	Gadchiroli	12	3173	1869	59
13.	Chandrapur	34	8350	6759	81
14.	Wardha	4	1661	143	8

Source :- Record of Irrigation Department.

1.6.7 With the establishment of Zilla Parishads, the minor irrigation works in the local sector are transferred to Zilla Parishads under Section No.100 of M.Z. and P.S. Act 1961. The minor irrigation works under local sector consists of(a) lift irrigation, (b) irrigation tanks,

(c) percolation tanks and (d) irrigation Bandharas. The capacity of such works is to create irrigation potential of less than 100 hectares.

1.6.8 The financial provision for the minor irrigation works in 15 Zilla Parishads in T.S.P. Area for the years 1983-84, 1984-85 are Rs.142.50 lakhs and Rs.192.84 lakhs respectively.

CHAPTER II

Objectives and Methodology of the Evaluation Study

Evaluation study of irrigation Projects especially Minor Irrigation works assumes significance, in view of the developmental programme for the tribal area. The Evaluation Study of medium and minor irrigation works in the tribal area in the State was conducted with the following objectives in view.

1) To find out utilization, non-utilization and under utilisation of the irrigation potential created by irrigation projects by the tribal people on the basis of of case study.

2) To take stock of the advantages reaped by the tribals.

3) To locate the bottle-necks and loop-holes in the implementation of developmental projects under irrigation.

4) To suggest the proper planning for implementation of irrigation development programmes.

5) To assess the prospect for extension of irrigation facilities through Minor Irrigation Projects in the backward area/Tribal Area.

2.1.1 Methodology of selection of projects for field enquiry

The list of medium irrigation projects now commissioned was prepared with the help of the Irrigation Department. As many as 22 projects in the tribal areas were listed out. Since the tribal area in the State is divided into two divisions/regions i.e. Nasik and Nagpur.

A representative sample was taken out for the purpose from each region. Accordingly two projects from each region were selected for the field enquiry. The sample was purposive one. The adequate district representation was taken into account while selecting the projects. Thus the sample selection for Medium Irrigation Project was made from Dhule, Nashik, Nanded and Chandrapur districts.

2.1.2 While selecting minor irrigation works, efforts were made to build up the exhaustive list of the different types of projects in the State Sector as well as in the local sector. The minor irrigation works in the tribal areas in both the sectors, State and local were extensively executed. There were many minor irrigation works executed in the State. Hence it is therefore not feasible to prepare list of all the minor irrigation works for the purpose of the Evaluation study.

2.1.3 The selection of the minor irrigation projects under both the sectors was restricted and hence purposive sample was drawn. The minor irrigation works were mainly located in Nashik District. So two minor irrigation projects were selected from Nashik district and the remain--ing two were taken from Chandrapur district.

2.1.4 The questionnaire was designed for the collection of data regarding household size, land possessed, net cropped area, net irrigable area, net irrigated area. The reasons for non-utilisation of irrigation facility were also extracted.

The information in the questionnaire was collected by contacting the selected Households in each project.

CHAPTER III

Salient Features of some selected Medium and Minor Irrigation Projects

The medium and minor irrigation projects selected for the detailed enquiry were based on the purposive sampling method. It will be interesting to know the salient features of each of the projects which are presented below.

I - Medium Irrigation Projects

Rangavali Project

3.1.0 This project is constructed on Rangavali river. River Rangavali is left bank tributory of Tapi river in the Tapi basin. It springs out near village Modalpada in Nawapur tahsil of Dhule district. After flowing a distance of 43 Kms. through Nawapur tahsil it joins the river Tapi near village Borgaon in Gujarath State. The dam site is situated in village Umbardi from Nawapur tahsil. Tahsil Nawapur is in tribal belt/area of Maharashtra State.

3.1.1 Since Nawapur tahsil is in a tribal belt, the adivasis in this area are getting the benefits of the project. The average annual rainfall in the area is about 1227 mms. If adequate and timely water supply is assured, the land in the command area is capable of reaping rich harvest of seasonal crops.

3.1.2 Incidently, there were three bandharas viz. Nagzari, Umbardi and Dhanrat under the project. Because of inadequate flow in the fair weather season and lack of knowledge in adopting modern agriculture practices by Adivasi community, no irrigation was developed under Nagzari and Umbardi bandharas in the area. The irrigation bandhara near village Dhanrat was too small to stabilise under this project.

3.1.3 Rangavali river during its entire course of 43 Kms. upto the confluence with Tapi drains covers an area of 432.52 Sq.Kms. Out of this catchment area upto the dam site is to the tune of 99.20 Sq.Kms. and it is harnessed for the irrigation purpose. It is surrounded by the catch-ment area of Raingan river on the east and Panzara river on the south. The river runs through very hilly terrian from its source for about 17 Kms. upto the dam site. It then emerges out from the hilly terrain and flows through almost a rugged country through out its course in the State of Maharashtra.

3.1.4 The storage dam across the river Rangawali near village Umbardi in Nawapur tahsil was constructed with the gross capacity of reservoir of 15.02 M.Cum. The total area likely to be irrigated was 3134 hectares on both the banks of the river. The special feature of the project is that it is an earthen dam with maximum height of 25.63 metres above the river bed, with the length of 1878 metres. The original estimated cost of the project was Rs.237.50 lakhs. The revised estimated cost finally prepared for the completion of work was Rs.713.32 lakhs.

3.1.5 The actual expenditure under the project can be grasped from the table given below.

Table No.5

Yearwise Actual expenditure on Rangawali Project

Sr.No.	Period	(Rs. in lakhs) Actual Amount	Remarks
1.	Upto 1980	76.39	
2.	During 1980-83	249.25	
3.	1983-84	39.75	
4.	1984-85	24.24	
5.	1985-86	31.29	(Provision)

Water Planning

3.1.6 The purpose of the project is to provide irrigation on both the banks of the river Rangavali. The length of canal, gross command area, cultivated command area and irrigated area are indicated below :-

Table No.6

Command area of Rangavali project on left and right banks

Sr No.	Name of the Canal	Length in Kms.	Command area (in hectares) Gross	Cultivable	Irri-gable
1.	Left Bank Canal	15.8	2930	2020	1237
2.	Right Bank Canal	11.2	3406	3110	1897
	Total	27.0	6336	5130	3134

3.1.7 The total length of the left bank canal and right bank canal was 15.8 Kms. and 11.2 Kms. respectively. The gross command area was 6336 hectares while culturable command area was 5130 hectares and irrigable area was 3134 hectares. It is observed that cultivable command area was 81% of the gross command area, while the irrigable command area was to the tune of 60% of the total culturable command area under the project.

3.1.8 The following period are considered for irrigation

Table No.7

Period for watering

Sr.No.	Season	Period	Days
1.	Kharif	15th June to 14th October	122
2.	Rabbi	15th October to 14th March	123
3.	Hot Weather	15th March to 14th June	120

Crops raised

3.1.9 It will be interesting to have to look at the existing and proposed cropping pattern as approved by the Agriculture Department.

The table below will highlight the crops raised and likely to be raised under the Project.

Table No.8

Cropping pattern in command area of Rangavali project

Sr No.	Name of Crop	Cropping pattern (in percentage) Existing	Proposed
		In Kharip	
1.	Cotton	10	10
2.	Chillies	1	5
3.	Groundnut	15	10
4.	Paddy	13	15
5.	Jowar	10	10
6.	Maize	2	5
7.	Pulses and others	47	45
		98	100
		In Rabbi	
8.	Wheat (Rabi)	1	15
9.	Onion	1	10
10.	Rabi Jowar	-	20
11.	Fodder	-	5
		2	50

The cropping pattern suggested by the Agriculture department shows that the crops which are required transplantation i.e. paddy and rabi onion required the same watering in hot season. To improve the economic condition of the tribals some cash crops are also proposed.

(2) Haranbari Medium Project

3.2.0 This project is constructed on Mosam river near Ambapur village in Baglan tahsil of Nashik district. The river Mosam is a branch of the river Girna which is the tributory of the river Tapi. The origin of river is from a branch of Sahyadri hill in Baglan tahsil. It is about 12.8 Kms. upstream of the dam site. The Mosam river mostly runs on a rocky bed and meets the river Girna near Malegaon town. The total length of the river upto its confluence is 80 Kms. The topography of the catchment area is hilly. The annual rainfall in the area varies from 750 to 1300 mms.

3.2.1 There were 18 Bandharas on Mosam river below the dam site upto the village Vadala. Potentiality of irrigation on these bandhara reduced considerably due to shortage of water to the river mostly in the summer. The main crop raised on irrigation of these bandharas is sugarcane. The assured water supply is necessited for the sugarcane crop. The assured irrigation water was constantly demanding storage dam on Mosam river in the upper reaches with a view to make use of old existing bandharas and canal system. It was thought necessary to construct storage dam in the upper reaches for assured water for irrigation. Due to the persistant demand of tribal area of Baglan tahsil,

the Government approved to increase the storage capacity of the dam for extending benefits to Baglan tahsil people.

3.2.2 There were originally 21 bandharas on the river Mosam. After the construction of the new project Haranbari, three bandharas were submerged under the dam. At present there are 8 bandharas from Haranbari to Vadala village. Out of 18 bandharas two bandharas Devathal and Ambapur only serve the tribal area.

3.2.3 The storage dam across the Mosam river near village Ambapur was constructed with the gross capacity of 1228 Mcft. The total area likely to be irrigated is 20320 hectares. The dam is with the maximum height of 34 metres having length of 1419 metres. The original estimated cost of the project was of Rs.210.02 lakhs. However, the actual expenditure was more than Rs.415.14 lakhs. The revised estimate of the project was prepared with the cost of Rs.718.84 lakhs. The execution work of the project was started in the year 1973 and completed in the year 1984.

Water Planning

3.2.4 The project is designed to tap the resources of 1812 M.Cum. water to irrigate 2752 hectares of land under existing Mosam river canal. It has to provide sufficient water to stabilise 648 hectares of sugarcane crop from the irrigation on old bandharas. It has also been proposed to construct direct canal system from Haranbari.

3.2.5 The construction of right and left bank canals with the length of 7 Kms. each was executed for irrigating 980 hectares of land. After the extending the Wagale left bank canal of 8 Kms. Saorapur Right Bank Canal of 8 kms.

It was possible to irrigate 696 and 720 hectare in the Kharif season of land respectively. It was also proposed to stabilise the irrigation of 648 hectares of existing sugarcane area on 18 old bandharas.

Crop raised

3.2.6 The proposed cropping pattern under the project is given in the table below.

Table No.9

Proposed cropping pattern in the command area of Haranbari project

Sr No.	Name of the Crop	Proposed cropping pattern in %age with the cultivable land	Remark
		In Kharif season	
1.	Paddy	5	
2.	Kharif Hy.Bajari	25	
3.	Chilli or Turmaric	10	
4.	Kharif Hy.Jowar	10	
5.	Ground nut	20	
6.	Pulses	10	
7.	Onion and vegetables	10	
8.	Green Manuring	10	
		100	
		In Rabbi season	
9.	Gram (Rabi)	25	
10.	Rabi wheat	15	
11.	Rabi Jowar	15	
		55	

(3) Dongargaon Medium Project

3.3.0 This project is of medium type constructed on the stream (Nala) at village Dongargaon of Kinwat taluka in Nanded district. This Dongargaon nala is locally known as "Nagada" nala and is the tributory of Penganga river in Godawari basin. This nala rises from the hill rock, 12 Kms. upstream of Dongargaon village. It flows in the North ward direction and meets the parent river Penganga near the village Pardi. The total drainage of the stream upto the confluence with the Penganga river is 89 sq.kms.

3.3.1 Almost all the cultivators have to depend on agriculture and alternatively the Mansoon. The average annual rainfall in the area is 42.16". The mansoon, however, are always irregular, with the result the successive seasonal failure of crops creates the situation of draught and famine. The situation, therefore, called for the artificial irrigation facility for the region.

3.3.2 The storage dam across Dongargaon nala near village Dongargaon is constructed to impound a gross storage at 9.60 m.cum. of water and to irrigate 830 hectares of land by only right bank canal with the length of 12.4" kms. This is an earthen dam with the maximum height of 23.60 metres and having the length of 1198.40 metres. The original estimated cost of the project was fixed at Rs.106.11 lakhs. The project was commissioned in the year 1976 and completed in the year 1985 with the revised estimated cost of Rs.294.97 lakhs.

3.3.3 The yearwise actual expenditure is presented in the table given below :

Table No.10

Yearwise Actual expenditure on Dongargaon Project

(Rs. in lakhs)

Sr.No.	Period	Amount (Actual)	Remarks
1.	Upto 1980	13.46	
2.	1980 to 1983	80.26	
3.	1983 to 1984	43.32	
4.	1984 to 1985	36.00	
5.	1985 to 1986	18.78	Upto December 85.

Water Planning

3.3.4 The gross command area under this project is estimated as 1232 hectares while culturable command area and irrigable area is put to 1167 and 875 hectares respectively. The cultivable command area is 94% whereas irrigable area is constituted 71% of the gross command area.

3.3.5 The major portion of the canal is from the forest area. Forest department was reluctant to give permission to construct canal in their area. However, the permission is now sought. But the progress of construction of canal was not upto the mark.

Cropsraise

3.3.6 Since the major part of the basin in general consists of black soil, derived from deccan track, this soil is suitable for Bajari, Jowar, Wheat, Cotton etc.

Table No.11

Cropping pattern in command area of Dongargaon Project

Sr No.	Name of Crop	Cropping pattern in percentage with the cultivable land	
		Existing	Proposed
		In Kharif Season	
1.	Rice	4	5
2.	Jowar	40	25
3.	Bajari	1	-
4.	Wheat	2	-
5.	Pulses	11	15
6.	Ground nut	1	5
7.	Other Oil Seeds	1	-
8.	Cotton	40	16
9.	Sugarcane	-	2
10.	Fruit Trees	-	2
11.	Chillies	-	10
12.	Kh.Hy.Maize	-	5
13.	Green Manure	-	10
14.	Kh.Vegetables	-	5
	Total Kharif	100	100
		In Rabi Season	
15.	Hy.Rabi Jowar	-	15
16.	Gram	-	10
17.	Wheat/Ground nut	-	15
18.	Hy.Rabi Maize	-	5
		-	45

(4) Chargaon Nala Medium Project

3.4.0 The special feature of the project can be depicted in the following lines. The Chargaon nala project envisages the construction of earthen dam near village chargaon Bk. to irrigate 1550 hectares of land on the right bank canal. The dam site is located about 400 ft. down stream of the confluence of Chargaon and Borgaon nala. The combine stream is known as "Chargaon nala". This nala meets Chandai nala at the distance of 3 miles on the down stream of the dam. After this confluence the combine stream is known as "an Erai river. Most of the catchment area of Chargaon nala is cultivable.

3.4.1 The Warora tahsil of Chandrapur district has an area of 1282 sq.miles and about 80% of the population of the tahsil is dependant on the agriculture for livelihood. The cultivable area of the tahsil is about 51% of the total geographical area. This fertile land had no irrigation facilities. It was, therefore, decided to construct "Chargaon nala" project on priority basis.

3.4.2 The gross capacity of thereservior is 797.40 M.cft. The total area likely to be irrigated was 1580 hectares on the right bank canal. The original proposal of the construction of canal was to construct 12.77 kms. on the one side taking off directly from the dam to command area. After construction of the main canal upto 7 kms, Maharashtra State Electricity Board had reported that they had proposed to construct a dam across the Erai river at Durgapur. Because of the Durgapur dam command area of Chargaon nala has gone under the submergence of

the Erai project. It is observed that only 1946 hectares culturable command area and 1580 hectares irrigable area remained under the project. The total length of the dam is 2981 meters with the maximum height of 14.80 meters. The original estimated cost of the project was fixed at Rs.134.28 lakhs. However, the revised estimated cost of Rs.438.99 lakhs was prepared for the completion of the project. The actual expenditure upto February 1986, was Rs.360 lakhs.

The execution work of the project was started in the year 1972-73 and completed in the year 1982-83.

Water Planning

3.4.3 There was no irrigation facility in the area except few village tanks scattered here and there which catered to irrigate small patches of land under paddy. The existing irrigation facility could provide only one or two waterings towards the end of September. This project was designed to provide assured irrigation facility to the villages in the command area. The gross command area under this project stood at 2531 hectares, while culturable command area is 1946 hectares and irrigable area is placed at 1580 hectares.

Crop raised

3.4.4 The principal crops in the command area are Paddy, Rabi Jowar, Oil seed and pulses. Before construction of the dam, the cropping pattern was as under. Similarly the proposed cropping pattern can be studied in the light of the table given below :-

Table No.12

Cropping pattern in command area of Chargaon nala project

Sr No.	Name of Crop	Cropping pattern (in percentage) with the total area under cultivation	
		Existing	Proposed
		In Kharif Season	
1.	Cotton	3	10
2.	Paddy	5	34
3.	Kharif Jowar	2	12
4.	Pulses	5	5
5.	Oil seed	27	5
6.	Rabi Jowar	37	-
7.	Wheat	13	-
8.	Other crops	4	-
9.	Fallow land	4	-
10.	Sugarcane	-	10
11.	Chilli	-	8
12.	Turmeric	-	4
13.	Green Manure	-	4
14.	Vegetables	-	8
		100	100
		In Rabi Season	
15.	Paddy on Paddy	-	5
16.	Wheat on Paddy Ground nut	-	25
17.	Rabi Jowar	-	10
18.	Grass on Paddy	-	5
19.	Rabi vegetables	-	4
		-	49

3.4.5. The drastic change in the cropping pattern is expected after the completion of the project. The crops such as paddy, cotton and Kh.Jowar are given more importance. Besides, some new crops such as sugarcane, chilli, turmeric and vegetables are to be introduced. In the proposed cropp--ing pattern the oil seeds is received less priority.

II - Minor Irrigation Projects
Salient feature of minor irrigation projects selected for field enquiry

There were a number of minor irrigation schemes under execution in the tribal area. The comprehensive list of the minor irrigation project could not be made because of the non-availability of uptodate data and for timely completion of the study.

Two projects from each region have been selected for the field enquiry. From Nasik region, Dhavade-Digar and Bordaivat minor irrigation projects are selected. Similarly, two projects namely Borgaon Bhosale and Bhatala from Nagpur region particularly from Chandrapur district are taken up for the study.

The highlights of each of the projects can be described as under :-

(1) Dhavade Digar Minor Irrigation Project

3.5.0 The project is situated at village Dhavade Digar of Kalwan tahsil in Nasik district. This is a minor irrigation tank designed to irrigate an area of 245 hectares from village Dhavade Digar, Mohabari and Pimple. The gross capacity of the reservoir is 33.90 Mcft. The maximum height of the tank is 95.10 metres with the total

length of 352 metres. The length of the canal is 4.5 kms. The average annual rainfall in the area is about 36" to 46".

3.5. The gross command area under the irrigation tank is 308 hectares. The irrigable area is 245 hectares. The estimated cost of the project was put to Rs.12.56 lakhs. However, the actual cost of the project stood at Rs.21.81 lakhs. The project was commissioned in the year 1974-75 and was completed in the year 1981. All the benefits of the project go to the tribal area.

3.5.2 The principal crops raised in the command area are Gram, Bajara and Ground nut and subsidiary crops are Jowar, Wheat and Maize.

(2) Bordaivat Minor Irrigation Tank

3.6.0 This project is situated at village Bordaivat in Kalwan tahsil in Nasik district. The area likely to be irrigated under the project is estimated at 405 hectares from two villages viz. Bordaivat and Otur.

3.6.1 The gross storage capacity of the tank is 69.59 mcft. The maximum height of the storage dam is 18.60 metres with the length of 318 metres. The average annual rainfall in the area is about 38". The canals are provided on both the sides i.e. left bank and right bank. The length of the left and right bank canals is 6 kms. and 2 kms. respectively.

3.6.2 The gross command area under the project is 526 hectares and the irrigable area is 405 hectares. The original estimated cost of the project was placed at

Rs.16.27 lakhs. However, actual cost of the completion of the project stood at Rs.26.25 lakhs.

3.6.3 The execution work of the project was started in the year 1973-74 and completed in the decade i.e. 1983-84. The project gives 100% benefits to the tribal community of the area.

3.6.4 The principal crops grown in the command area of the project are Bajari, Ground nut, Gram and Wheat and subsidiary crops are paddy and maize.

(3) Bhatala Malgujari Irrigation Tank

3.7.0 This malgujari tank is situated at village Bhatala in Warora tahsil of Chandrapur district. This project is expected to irrigate 480 hectares of land covered under command area.

3.7.1 The maximum gross capacity of the reservoir of the project is 27.83 mcft. The maximum height of the dam is 94 ft. and the length of the tank is 4400 ft. The right bank canal and left bank canals are provided with the length of 700 ft. and 3100 ft. respectively. The average annual rainfall in the area is about 44".

3.7.2 The gross command area under the project is 480 hectares while irrigable area is estimated at 140 hectares. **The project costed Rs.0.93 lakhs for its completion.**

The principal crops under the project are paddy and jowar.

(4) Borgaon-Bhosale Minor Irrigation Tank.

3.8.0 This is also minor irrigation tank situated near village Tensbarda of Warora tahsil in Chandrapur district. It is designed to irrigate an area of 100 hectares of land from Borgaon Bhosale village. The maximum height of the project is 79 metres with the total length of 340 metres. The average annual rainfall in the area is about 44".

3.8.1 The gross command area under this project is 140 hectares while irrigable area is 100 hectares. The original estimate of cost of the project is 1.99 lakhs. But the actual expenditure incurred was to the tune of Rs.2.12 lakhs. The project was started in the year 1973-74 and completed in the year 1982-83.

3.8.2 The project was designed to confer 100% benefit to the tribal community of the village; but water is not made available for the cultivation due to the local critical condition of the villagers.

CHAPTER IV

Case Studies of Medium Irrigation Projects

Some case studies under each selected projects were undertaken in order to assess the physical impact of the irrigation facilities provided under the projects. The brief notes on each of the case study undertaken in respect of Medium Irrigation Projects are presented as under :-

(a) Rangawali Medium Irrigation Project

4.1.0 The irrigation facility was extended to 134 Scheduled Tribes beneficiaries from the villages Vadkalambi, Raipur and Chanki. These villages are served by both Right Bank Canal and Left Bank Canal. For the case study, sample was drawn from the above beneficiaries and actual information in respect of 36 households from three villages was collected.

4.1.1 The distribution of the selected households is given in the table below :

Table No.13

Villagewise No. of S.T. beneficiaries and selected beneficiaries

Sr No.	Name of village	No.of S.T. beneficiaries	No.of selected S.T. beneficiaries	Percentage of selected S.T. beneficiaries to total S.T. beneficiaries
1.	Vadkalumbi	67	15	22
2.	Raipur	40	12	30
3.	Chanki	27	9	33
	Total	134	36	27

4.1.2 The personal enquiry of the selected beneficiaries revealed that 36 households possessed 141 hectares of land. The area irrigable during the year 1984-85 was expected to be 98 (70%) hectares., while the actual area irrigation was noticed only 36 (37%) hectares.

Household size-class distribution of 36 benefici--aries is presented in the table given below :

Table No.14

No.of Households according to family-size

Sr No.	Household Size (Members)	No. of beneficiarie's households	Percentage of benefi--ciaries households in the size class to total households
1.	Upto 3	1	3
2.	4 to 5	1	3
3.	6 to 7	7	20
4.	above 8	27	74
	Total	36	100

4.1.3 The data analysied in the above table brings out that the household having more than 8 members constitute 74 percent. The household having 6 to 7 members are 20% and household-size upto 5 members is 6% only.

4.1.4 As already stated that out of 98 hectares irrigable area under the project, the beneficiaries could irrigate only 36 hectares. The irrigation facility could not be used in full becuase of the following reasons.

The reasons given by the beneficiaries can be enumerated as under :

1) Small patches of land

2) Lack of land levelling

3) Want of field channels

4.1.5 The distribution of the beneficiaries for non-use of irrigation facility is presented in the following table.

Table No.15

No. of households with reasons for non-using of irrigation facility

Total No. of House--holds selected	Reasons			
	No.of Households Need channel	No. of Households need land levelling	No. of Households need field channel and levelling	No.of Households needs other matters
36	-	13	14	9
(100%)		(36%)	(39%)	(25%)

4.1.6 The analysis of the data in the table points out that 36% of the beneficiaries press hard for land levelling. Small patches of land of the beneficiaries need levelling. Unless the land levelling is carried out it cannot be suitable for irrigation. The demand for land levelling in order to avail of the irrigation facility appears to be just and realistic. As such as 39% of the beneficiaries also required land levelling and field channels for provid--ing irrigation facility to their land. Besides 25% of the beneficiaries are not in position to make use of irrigation facility due to the reasons put forth as under :-

(a) Not getting water due to natural barriers such as nala, bandh etc. (b) Not interested in the modern agriculture techniques.

Table No.16

No. of households with reference to irrigable and irrigated area

Size-class Area of (Range)	No. of Households			
	Irrigable		Irrigated	
	No.of House-holds.	Percentage of Households in the range with total house-holds.	No.of House-holds	Percentage of Households in the range with total house-holds
1) 1.00-2.00	6	17	23	64
2) 2.01-3.00	4	11	6	16
3) 3.01-5.00	7	20	4	11
4) 5.01-7.50	8	22	1	3
5) 7.51 and above	11	30	2	6
Total	36	100	36	100

4.1.8 It is observed from the discussion with the officials that no proper distribution policy is worked out, With the result, some of the cultivators are getting more water than their requirement whereas others are not getting sufficient water. The upward cultivators do not allow the easy flow of water to the tail and cultivators. Sometimes the water gates are damaged, the canal water courses are disrupted. The tail-end cultivators suffer because of the distriction policy of the upward cultivators. Uneven distribution of water and wastage of water to the maximum extent are the real causes of non-use

of irrigation facility. The remedial measures by Irrigation Department are not taken for the preventing the wastage of water.

4.1.9 It is observed that no adequate staff is maintained by the Irrigation Department for the management and smooth distribution of water to the cultivators.

4.1.10 It is further observed that the cropping pattern proposed by the Agriculture Department with the irrigation facility is not adopted. The reasons for not practising the proposed cropping pattern seems to be traditional out look of the cultivators.

4.1.11 Tribal cultivators are observed to be not using modern techniques of the cultivation. They find interest in the age-old fashion of raising crops.

4.1.12 It is seen that as per requirement of the Irrigation Department the demand for water is to be made before hand in each season. The tribal cultivators are not aware of the fact. Natural conditions also do not offer to make advance demand for water in each season. For rabi season, unless the crops of Kharip season are harvested no such demand is possible. The water schedule of the Irrigation Depart--ment does not seem to be practicable and programatic. The out-dated water schedule for distribution of water is practised by the Irrigation Department. The seasonal changes are seems to be over-looked.

(b) Haranbari Medium Irrigation Project

4.2.0 There are about 66 S.T. households covered under the command area of the project from three villages viz. Maliwada, Jaitapur and Ambapur. For the case study, sample was drawn from the above beneficiaries and actual informa--tion in respect of 44 beneficiaries from these villages was collected.

4.2.1 The distribution of beneficiaries and selected beneficiaries is presented in table given below :

Table No.17

Villagewise no. of S.T. beneficiaries and selected beneficiaries

Sr No.	Name of village	No.of S.T. benefi--ciaries	No. of S.T. selected benefici--aries	Percentage of selected S.T. beneficiaries to total S.T.benefi--ciaries in the village
1)	Malwadi	49	31	62
2)	Jaitapur	7	7	100
3)	Ambapur	10	6	60
	Total	66	44	67

4.2.2 From the analysis it is observed that for 66 households total irrigable area was 138 hectares and they had irrigated only 45 hectares. The distribution of Households according to the household-size is given in the table below :

Table No.18

Table showing the no. of households according to family size.

Sr No.	Family size	No. of households	Percentage Households in the range of family size to total house-holds
1)	Upto 3	3	7
2)	4 to 5	4	9
3)	6 to 7	9	20
4)	Above 8	28	64
	Total	44	100

4.2.3 The above table shows that the households having more than 8 members constitute 64%. The households having more than 4 members are 29% and upto 3 members are only 7%.

4.2.4 As already stated that out of 86 hectares irrigable area the beneficiaries could irrigate only 45 hectares. The irrigation facility could not use in full becuase of the reasons given by the beneficiaries are as under :-

1) Lack of canal system
2) Lack of land levelling
3) Need of field channels
4) Others, such as poor economic condition etc.

4.2.5 The reasonwise distribution of the beneficiaries for non use of irrigation facility is given in the table below :

Table No.19

No.of households with reasons for not using irrigation facility

Total No. of House-holds	No. of Households				
	Need irrigation in Kharif	Need channel	Need land levell-ing	Need field channel and levell-ing	Others
44 (100%)	1 (2%)	1 (2%)	13 (30%)	12 (27%)	17 (39%)

4.2.6 The analysis of the data given in the above table shows that 30% of the beneficiaries demanded for land levelling and 27% beneficiaries needed both field channels and land levelling for providing irrigation. Besides 39% of the beneficiaries are not in position to use irrigation facility due to their poor economic condition, lack of knowledge, non-availability of agricultural inputs such as seed at the proper time. The poor economic condition of the tribal cultivators puts a bar for using irrigation facility as contemplated.

Table No.20

Table showing the rangewise no. of Households with the irrigable and irrigated area.

	Range in (hectares)	No. of households			
		Irrigable		Irrigated	
		No.of House-holds	Percentage of households in the range to total households	No.of House-holds	Percentage of households in the range to total households
1.	0.01 to 2.00	28	64	42	96
2.	2.01 to 3.00	12	27	1	2
3.	3.01 to 5.00	4	9	1	2
4.	5.01 to 7.50	-	-	-	-
5.	7.51 and above	-	-	-	-
	Total	44	100	44	100

4.2.7 The data given in table revealed that 96% irrigated households were from 0.01 to 2.00 hectares. The comparision between irrigable and irrigated households shows that 64% irrigable households and 96.% irrigated households are

range
in the of 0.01 to 2.00 hectares. The reasons for less irrigation are given in para 4.2.6.

4.2.8 The case study of 44 beneficiaries points out that the command area and irrigable area required levelling for making fuller use of the irrigation facility. The land levelling is urgent problem require immediate solution. It is further observed that some beneficiaries demand that they should be allowed to lift water through canals by installing pumpset or oil engine. It is also seen that poor economic condition is also hinderance in the utilisation of irrigation facility. The timely operations and purchase of agriculture inputs pose a problem to the tribal cultivators.

(c) Dongargaon Nala Medium Project

4.3.0 The Project-caters irrigation need of both the communities tribal and non-tribal. However, the major share of the benefit goes to non-tribal. There are 69 Scheduled Tribe beneficiaries taking the advantage of irrigation facility for one reason or the other. So the sample of 24 was drawn for the study. 24 beneficiaries possessed 52 hectares of irrigable land but they could irrigate 27 hectares of land.

4.3.1 The distribution of beneficiary households according to family-size is given below :

Table No.21

No. of households according to family-size

Sr No.	Household size with members	No.of beneficiaries households	Percentage of beneficiary households in the range to total households
1	Upto 3	1	4
2.	4 to 5	5	20
3.	6 to 7	10	42
4.	above 8	8	34
	Total	24	100

4.3.2 The data analysed in the above table brings out that the households having more than 8 members Constitute 34 per--cent and those with 6 to 7 members are 42 percent, while households upto 5 members are 24 percent.

4.3.3 As already stated above the beneficiaries could irrigate only 27 hectares out of 52 hectares irrigable land. The remaining area was not brought under irrigation for the reasons mentioned below :-

Table No.22

No. of Households with reasons for not using irrigation facility

Total No. of House--holds	Reasons: No. of Households			
	Need field channel	Need land levelling	Field Channel and land levelling	Others
24 (100%)	1 (4%)	1 (4%)	9 (38%)	13 (54%)

The figures in paranthesis indicate percentage to total households.

4.3.4 The above table shows that as much as 54% of the beneficiaries were not in position to avail the irrigation facility for want of seed fertilisers etc. in time. They assigned the reasons as the poor economic condition, 38% beneficiaries called for field channels and land levelling. It is observed that unless the land levelling and construction of field channels are carried out the land cannot be suitable for irrigation purposes.

Table No.23

Rangewise No. of Households with the irrigable and irrigated area

Range Area range (in hect.)	No. of Households			
	Irrigable		Irrigated	
	No. of House-holds	Percentage of house-holds in the range to total households	No.of House-holds	Percentage of house-holds in the range to total households
1. 0.01 to 2.00	12	50	23	96
2. 2.01 to 3.00	10	42	1	4
3. 3.01 to 5.00	2	8	-	-
4. 5.01 to 7.50	-	-	-	-
5. 7.51 and above	-	-	-	-
Total	24	100	24	100

4.3.5 The above table shows that 96% irrigated households were from the size-class of area between 0.01 to 2.00 hectares. The comparison between irrigable and irrigated households in the similar range of hectares 0.01 to 2.00 shows that 50% irrigable households were against 96% irrigated households. The reasons for less irrigated household are given in para 4.3.4 above.

4.3.6 It is further observed that the water schedule for distribution of water is not adhered to properly. Untimely distribution of water cannot be availed of by cultivators. The uncertainty of getting water for their crops always caused hardships to the beneficiaries. The registering of the demand of water in advance is not done by the beneficiaries because they are not aware of the rules and regulations made in that beneficiaries.

4.3.7 It is generally observed that the cultivators are not taking interest in modern techniques of cultivation by using irrigation. The tribal cultivators are not rather reluctant to take irrigated crops.

(d) A Chargaon Nala Medium Irrigation Project

+ The command area of the project covers 285 Scheduled Tribe households out of which 50 households are selected for the collection of the information.

4.4.0 The total irrigable area of the 50 beneficiaries was 91 hectares out of which 36 hectares received irrigation facility. The rest of the area i.e. 55 hectares was not irrigated.

4.4.1 The distribution of the selected household according to household size-class is presented in the table given below :

Table No.24

No. of households according to family size-class

Sr No.	Household size	No. of beneficiaries households	Percentage of households in the range to total households
1.	Upto 3	8	16
2.	4 to 5	26	52
3.	6 to 7	11	22
4.	above 8	5	10
	Total	50	100

4.4.2 The analysed data shows that as much as 84% of the beneficiaries households have more than 4 members or more members. The households having upto 3 members are 16 per--cent only.

4.4.3 As already pointed out the total irrigable area of 50 beneficiaries was 91 hectares out of which 36 hectares received irrigation. The remaining area of 55 hectares was not brought under irrigation due to following reasons given by the beneficiaries.

1) Land levelling.

2) Lack of field channels

3) Poor economic condition.

4.4.4 The percentage distribution of the households based on the various reasons for non-utilising irrigation facility is put as under :

Table No.25

No. of households with reasons for not using irrigation facility

Total No. of households (selected)	No. of Households			
	Need field channels	Need land levelling	Need field channel and land levell--ing	Others
50 (100%)	2 (4%)	5 (10%)	25 (50%)	18 (36%)

The figures in paranthesis indicate percentage to total Households.

4.4.5 The table brings out that 50% of the beneficiaries were unable to use the irrigation facility for want of field channels and land levelling. The majority of the beneficiaries (36%) were not in position to get water due to poor economic condition.

4.4.6 It is generally observed that the common problem faced by the majority of the cultivators is the field channel and land levelling. The poor economic condition of the cultivators also puts severe restrictions on his ability to make use of irrigation facility.

4.4.7 The Irrigation Department does not attend the maintenance of Canal, with the result, water is wasted in ample measures. Proper canal system does not seem to have been evolved. Water logging in certain places puts a bar to smooth flow of water. The beneficiaries at the tail end find it difficult to take the advantage of irrigation facility. The technical faults in the canal system need urgent repairs.

CHAPTER V

Case Studies of Minor Irrigation Projects

Introduction

The observations in case studies undertaken for assessing the actual impact of the minor irrigation facilities on the beneficiaries under the selected projects are presented in this chapter.

The projectwise observations based on the field enquiry are stated in the following lines :-

(1) Dhavade Digar Minor Irrigation Tank

5.1.0 The command area of the project covers 87 S.T. cultivators. Out of which 41 S.T. cultivators, who are not in position to utilise water for their irrigable area have been selected for the field enquiry.

5.1.1 The households in the command area possess total irrigable land to the extent of 208 hectares, out of which only 132 hectares was found to be irrigated during 1984-85. The selected 41 beneficiaries possessed irrigable area of 131 hectares but they could irrigate only 70 hectares.

5.1.2 The household-size distribution of the beneficiaries will be interesting immediately for the study. The distri--bution of 41 selected beneficiaries presented in the table given below.

TABLE NO.26

No. of Households according to family size.

Sr No.	Household size (No.of members)	No. of beneficiaries households	Percentage of households in the range to total households
1.	1 to 3	1	2
2.	4 to 5	3	7
3.	6 to 7	4	10
4.	above 8	33	81
	Total	41	100

5.1.3 The analysis of the data in the table shows that above 81% of the households are having more than 8 members in the family. The family size between 1 to 3 and 4 to 5 members comprise 2% and 7% members respectively. It is evident that the household size of the tribal family seems to be bigger one.

As already stated that out of 131 hectares irrigable area only 70 hectares are irrigated by 41 selected beneficiaries. The under utilisation of water was traced and the beneficiaries have given the following reasons for non-utilisation of irrigation facility. The reasons can be tabulated in the following manners :-

TABLE No.27

No. of Households with reasons for not-using irrigation facility

Total No. of House--holds	No. of Households			
	Need field channel	Need Land levelling	Need field channel and land levell--ing	Others
1	2	3	4	5
41	1	27	11	2
(100%)	(2%)	(66%)	(27%)	(5%)

(The figures in the bracket indicate percentage of house--holds to total households).

5.1.4 The percentage distribution of households according to the reasons of non utilising as prescribed in the above table brings out that 66% of the beneficiaries called for Land levelling. The uneven patches of their land was the main obstruction for availing the facility. Further 27% of the beneficiaries needed field channels and land levelling for their land.

5.1.5 The cultivators even though they possessed the irrigable land more than 3 to 5 hectares however they could irrigate only 1 to 2 hectares. The rangewise percentage distribution of households of irrigable and irrigated area of the selected households will highlight the situation in the proper prospective. The table is given below :-

TABLE No.28

No. of Households with reference to irrigable and irrigated area

Sr No.	Range (in hectare)	Irrigable Area		Irrigated Area	
		No.of House-holds	%age of Households in the range to total Households	No.of House-holds	Percentage of Households in the range to total households
1	2	3	4	5	6
1.	0 - 1.00	2	5	17	42
2.	1.01 to 2.00	11	27	10	24
3.	2.01 to 3.00	12	29	8	20
4.	3.01 to 5.00	9	22	5	12
5.	5.01 to 7.50	6	15	1	2
6.	7.51 and above	1	2	-	-
	Total	41	100	41	100

5.1.6 The data analysed in the table reveals that 42% of the irrigated households were from 0-1 hectare range followed by 24% between 1 to 2 hectares. The ratio of comparison between irrigable and irrigated households of the range between 0/1 to 1 to 2 hectares when considered shows that 32% were irrigable households and 66% were irrigated house-holds. The less irrigation by the cultivator has been traced for the reasons given above.

5.1.7 It is generally observed that the canals under the project are not maintained in good conditions. The cross-drain works are also not completed. The uneven patches of land causes the wastage of water and the cultivators are required to prepare field channels along the distance.

Further the channels are crossed by forest roads and the heavy traffic hampered the water flow. The poor condition of the canal system was traced to be due to the inadequate of provision of funds for the maintenance of the canal.

(2) Bordaiwat Minor Irrigation Tank

5.2.0 The command area of the tank covers 51 S.T. house-holds, out of which 15 households who are not in position to utilise water for their irrigable area are selected for the field enquiry.

5.2.1 The S.T. cultivators in the command area possessed total irrigable land of 30 hectares, out of which 17 hectares was found to be irrigated during the reference period. The selected 15 households have 16 hectares irrigable land and they could irrigate only 6 hectares of land.

5.2.2 The sample of 15 S.T. households was drawn for the field enquiry. The household size of the selected cultivators can be studied with the help of the table given below :-

TABLE No. 29

No. of households according to family size

Sr No.	Household size	No.of beneficiary household	Percentage of households in the size group to total house-holds
1	2	3	4
1.	1 to 3 members	1	7
2.	4 to 5 members	-	-
3.	6 to 7 members	5	33
4.	above 8 members	9	60
	Total	15	100

5.2.3 The above table shows that 60 percentage of the households are having more than 8 members. The households with members between 6 to 7 comprise of 33%.

5.2.4 As already stated that out of 16 hectares of irrigable land only 6 hectares are irrigated by 15 households. The under utilisation of irrigation facility was traced and the beneficiaries have given reasons for not utilising the water. The reasons can be tabulated in the following table.

TABLE No.30

No. of Households with reasons for not-utilising irrigation facility

Total No. of House-holds	No. of Households			
	Need field channel	Need and Land Levelling	Need field channel and land levelling	Others
1	2	3	4	5
15 (100%)	1 (7%)	12 (79%)	1 (7%)	1 (7%)

5.2.5 The analytical review of the data given in the above table brings out that as much as 79% of the beneficiaries were in need of land levelling and besides 7% beneficiaries needed field channel and 7% beneficiaries required both field channels and land levelling.

5.2.6 Even though the beneficiaries possessed irrigable area in the range of 2.01 to 3.00 hectares, they could irrigate only 0.1 to 1.00 hectares. The rangewise percentage distribution of households with irrigable and irrigated area of the selected households will highlight the situation. The Rangewise No. of Households with

reference to the area irrigated and irrigable is presented in the table given below :-

TABLE No. 31

Table showing the rangewise No. of Households with reference to irrigable and irrigated area

Sr No.	Range (in hectare)	No. of Households with Irrigable Area: No. of House-holds	Irrigable Area: Percentage of House-holds in the range to total Households	Irrigated Area: No. of House-holds	Irrigated Area: Percentage of House-holds in the range t to total Households
1	2	3	4	5	6
1.	0.01 to 2.00	13	86	15	100
2.	2.01 to 3.00	2	14	--	--
3.	3.01 to 5.00	--	--	--	--
4.	5.01 to 7.50	--	--	--	--
5.	7.51 and above	--	--	--	--
	Total	15	100	15	100

5.2.7 The data analysed in the table reveals that 100% of irrigated households were from 0.01 to 2.00 hectares. The ratio of comparision between irrigable and irrigated house-holds between the range 2.01 to 3.00 hectares shows that 14% are irrigable households and zero percent are irrigated households. The reasons for less irrigation are already given in para 5.2.5.

5.2.8 It is observed that the 100% utilisation of the irrigation facility was not reached due to lack of field

channels, land levelling and poor working condition of canal system. Only 2 Kms. canals are in working condition and the rest 4 Km. length canals required major repairs. The canals are to be strengthened with broadening and deep--ening. The major repairs to canal could not be executed for want of adequate funds. The Irrigation Department is not in a position to provide adequate funds for the same. The target of achieveing of 100% irrigation cannot be fulfilled without adequate funds.

5.2.9 The tribal cultivators in the command area are also not in a position to repair the canal due to their poor economic condition.

(3) Bhatala Malguqari Tank

5.3.0 The command area of the tank covers 130 S.T. house--holds, out of which 14 households who are not in a position to utilize water for their irrigable area have been selected for field enquiry.

5.3.1 The households in the command area possess total irrigable land to the extent of 141 hectares, out of which 89 hectares was found to be irrigated during the reference period. The selected 14 beneficiaries have irrigable area of 23 hectares and they could irrigate only 13 hectares.

5.3.2 The household-size distribution of the beneficiary will be interesting for the study. The distribution of 14 selected beneficiaries is presented in the following table.

TABLE NO.32

No. of households according to family size

Sr No.	Household size	No. of beneficiary households	Percentage of Households in the size group to total households
1	2	3	4
1.	1 to 3 members	-	-
2.	4 to 5 members	6	43
3.	6 to 7 members	6	43
4.	above 8 members	2	14
	Total	14	100

5.3.3 The analysis of the data in the table shows that about 86% of the households are having family members between 4 to 7 in the family. Only 14% of the house holds have more than 8 members in the family.

5.3.4 As already pointed out that out of 23 hectares irrigable area only 13 hectares are irrigated by 14 bene--ficiaries. The under utilisation of water was traced out and the beneficiaries have given the following reasons for not utilisation of irrigation facility. The reasons are presented in the following tabular form.

TABLE No.33

No.of households with reason for not-using irrigation facility

	No. of Households			
Total No. of Households	Need sufficient water	Need Land Levelling	Need Proper distribution	Others
14 (100%)	4 (29%)	2 (14%)	6 (43%)	2 (14%)

(The figures in the bracket indicate percentage to total households).

5.3.5 The percentage distribution of households according to the reasons of non-utilisation as presented in the table shows that 43% households could not irrigate their irrigable land because upward cultivators are getting more water than their requirement. The upward cultivators do not allow smooth water flow to the tail end cultivators. As much as 29% household have not irrigated irrigable land because of lack of sufficient water. Due to wastage of water and no proper distribution of water they could not irrigate their land.

TABLE No.34

Rangewise No. of Households with reference to irrigable and irrigated area

Sr No.	Range in hect.	No. of Households with Irrigable Area		Irrigated Area	
		No. of house-holds	Percentage of House-holds to total Households	No. of house-holds	Percentage of House-holds in the range to total households
1	2	3	4	5	6
1.	0 to 1.00	1	7	4	29
2.	1.01 to 2.00	1	7	5	36
3.	2.01 to 3.00	2	14	2	14
4.	3.01 to 5.00	5	36	2	14
5.	5.01 to 7.50	2	14	-	-
6.	7.51 and above	3	22	1	7
	Total	14	100	14	100

5.3.6 The above table reveals that 65% of the irrigated households were from 0.00 to 2.00 hectares range.

The ratio comparison between irrigable and irrigated house--holds of the range upto 2.00 hectares shows that 14% are irrigable households and 65% are irrigated households. The less irrigation by the beneficiaries has been pointed out in para 5.3.5.

5.3.7 It is observed that the storage capacity of the tank is reduced day by day due to mud. The desilting of the tank is urgently needed. If the height of the waste_weir is increased by 3 to 4 feet the storage capacity can be increased

and water can be made available for rabi season and the tail-end cultivators.

(4) Borgaon Bhosale Minor Irrigation Tank

5.4.0 This project has been completed in the year 1982-83. The irrigable area under the project was estimated to the tune of 100 hectares. The actual investment was of Rs.2.12 lakhs. But the project could not extend irrigation facility to the agriculturists due to the pressure of local social peculiar circumstances.

5.4.1 During the field enquiry it was reported that the villagers were mostly fisherman and they had more inclination towards fishing than agril. operations. They obstructed the main gate flow of water with powering the cement concrete and closed the same for good. The implementing authorities, however, could not take any action in this regard with a view to extending water facility for irrigation purposes. This has failed the ultimate object of commissioning the project for the area to the advantage of the agriculturists.

CHAPTER VI

Field Profiles

6.0 At the instance of the State Government a evaluation study was taken in the year 1985-86 to assess the reasons for non-utilising the irrigation facilities by tribal community at the tribal Sub Plan area. The information was collected for 4 medium and 4 minor irrigation projects in the tribal Sub Plan area. The evaluation study revealed the following facts.

6.1 It was observed that the land holding of the tribal household was found to be meagre which did not offer him an opportunity to avail the irrigation facility for maximiz-ing his agriculture output.

6.2 It was also observed that in case of some of the projects water distribution policy for optimum irrigation was not worked out properly.

6.3 The upward cultivators do not allow the smooth water flow to the tail ender cultivators. The practice of availing of water by other than lawful means and ways was rampant. The water gates and water courses are damaged and distrupted.

6.4 It was observed that in some projects, potential of irrigation can be created by water lifting from canals. Some cultivators demanded for lift irrigation from canal by pumpsets or oil engine. The policy of distributing water through canal is vogue only. At present the water lifting with the help of pump sets is not allowed.

6.5 It was observed that the cultivators are not in position to take benefits of irrigation facility due to

lack of proper field channels and the absence of land levelling. However, it is learnt that Ayacut Development Programme is undertaken in the command area of major irrigation project. But in the tribal areas there is little scope for the construction of major project. The medium and minor irrigation projects are generally constructed in the tribal areas. The problem is not properly guaged. All the execution of the project rest on the land development. But it is not properly attended to be by the authorities.

6.6 The water schedule for each and every season for the distribution of water is not practicable and pragmatic The out-dated water schedule is practised by the Irrigation Department for years together.

6.7 On completion of the projects they are to be transferred to the maintenance division. But the procedure is not properly followed. The paucity of funds with the maintenance division is the main cause of delay.

6.8 In some project it was also observed that no adequate staff seem to have been maintained by Irrigation Department for the proper management of the projects.

6.9 In some projects canals and cross drains works are not maintained properly. It was observed that some cultivators grow crops in the water courses itself, with the result the flow of water is disrupted and the water is allowed to run wastage.

6.10 It was observed that canal work was delayed even after completion of head-work due to lack of funds

resulting in delay in creation of ultimate potential. The projects are not completed as per time schedule worked out for its completion.

6.11 The Agriculture Department generally prepare the ideal cropping pattern under each projects of irrigation. The cropping pattern proposed by the Agriculture Department with the assumption of the irrigation potential is not adopted by the cultivators.

6.12 Poor economic condition of the tribals hinderance to fuller use of irrigation facility by the tribal community. They cannot purchase improved seed, fertilisers pesticides etc. at proper time. Hence they adopt age-old cultivation technique without using irrigation. They are also not conversant with the modern techniques of cultivation.

6.13 It was observed that some of the tribal cultivators are not taking interest in modern technique of cultivation, which is helpful in enhancing the agriculture production.

6.14 It was noticed that the average household size for the selected scheduled tribe households utilising the irrigation facilities was slightly higher than that of the size of the normal Scheduled Tribes household. The house--hold size consisted of more than 8 members on an average in the study area.

6.15 The data analysis in respect of the total S.T. families and benefitted families in command area under both the projects (Medium and Minor Irrigation Projects) during the review period i.e. 1984-85 shows that 29 % and 30% S.T. families are benefitted by the Medium and Minor Irrigation Projects respectively.

CHAPTER VII

Conclusions and Suggestions

The following conclusions and suggestions are based on the information or data collected from the beneficiaries and the views expressed by the implementing authorities.

7.1 It is reported that due to uncertainty of the rain, the seasonal crops are not harvested according to season but they require some watering. Sometime kharip crops are harvested in late rabi i.e. after 15th of October, and according to age-old rules kharip crops are not irrigated in rabi season. It is, therefore, suggested that the demand schedule of irrigation should be such that kharip crops which need watering must get irrigation. The water demand calender should not be too rigid to follow for the practical use of the cultivators.

7.2 The Irrigation Department may take care of the preventing wastage of water. Distribution of water should be such that the tail-end cultivators should get water on canal priority as thoseof the upward cultivators. Cultivators should not take more water than what is required for the crops. The Irrigation Department should devise a solution for the proper irrigation utilisation by the cultivators.

7.3 Some cultivators are eager to take water from the canal but due to distant site of their fields, water is not available unless it is lifted either by pumpset or oil engines. Such type of Adiwasi cultivators may be allowed to avail water by lifting considering feasibility.

7.4 The delay in the construction of canal or repairs to canal was reported due to non-availability of funds.

In the case of acute shortage of funds, it may be advisable to start work on optimum number of projects and complete them quickly rather than starting too many works simultaneously to avoid delay in execution of works.

7.5 It was reported that due to non availability of funds with the Maintenance Division, the project are not transferred to it. In other words, the Maintenance Division is not equipped with adequate funds for further works at their end. It is, therefore, suggested that the maintenance grants should be adequate enough so that the completed works can be managed and maintained properly.

7.6 It was observed that out of 224 beneficiaries 151 beneficiaries (i.e. 66%) demanded field channels of land levelling. It is, therefore, suggested that in order to execute this work some schemes may be incorporated in the Nucleus Budget or Under Employment Guarantee Scheme. So that the poor cultivators can get employment. Local people will be benefitted and the work of Land Levelling and Construction of field channels can be completed. In this way the demand will be fulfilled and ultimate target of maximum use of irrigation facility can be achieved. Besides, a special funds should be earmarked for the purpose with the Maintenance Division.

7.7 It is learnt that Ayacut Development Programme is undertaken in the command area of the Major Irrigation Projects only. But in the tribal area there is a little scope for the construction of Major Irrigation Projects. The Medium and Minor Irrigation Projects are generally undertaken in the tribal areas. The command area develop--ment programme may also be introduced in the command areas of Medium and Minor Irrigation Projects undertaken in the tribal areas.

7.8 The efforts should be made to maintain the cross drain works and water courses with the help of local people or by appointing sufficient staff under the projects.

7.9 Adequate staff should be posted by Irrigation Department for management and smooth distribution of water of canal.

7.10 There seems to be considerable deviation from the cropping pattern given in the preliminary investigation report by the Irrigation Department. The Agriculture Department may, therefore, re-examine the cropping pattern prescribed for the projects in the light of the irrigation potential created under the project.

7.11 The Irrigation Department and Agriculture Department should take step to co-ordinate their programmes to educate the cultivators. They should give guidance for the proper utilisation of water. The efforts of water on crops by using more watering may be highlighted through field demonstrations; so that the cultivators can change their attitude of using more water than what is required for the crops. Villagewise Irrigation Committee may be appointed to control the misuse of water by the beneficiaries.

7.12 The schemes for supply of improved seeds, fertili--sers, and agricultural improved implements may be implemented on subsidy basis or free of cost to some deserving tribal beneficiaries. This material must be ready well in advance for the use by the cultivators at the village level. This scheme may be implemented through the farmer's union or village level organisation so that poor people can get more benefit than the others. They may be consulted but it should not implemented by them.

7.13 Intensive propoganda may be made by conducting village level meetings of the cultivators for giving guidance for irrigation practices. Step may be taken to motivate tribal cultivators by strengthening or reorienting to induce the cultivators to utilise the maximum available irrigation potential. There should be proper coordination between Irrigation Department and Agriculture Department. Advance programming of irrigation should not be on the basis of traditional agricultural methods, but it should be in the light of the requirement of the modern farming. Similarly, it is important to determine suitable crop rotations and cultivating practices to ensure the optimum use of both land and water.

7.14 Krishi Samitis of the Zilla Parishads are already entrusted with the activity of boosting agriculture production through distribution of seeds, fertilisers etc. and providing credits for the same. These Committees may be activised to develop fuller utilisation of

irrigation facility provided. It is suggested that Government may, therefore, take necessary steps to activise the Krishi Samiti under Zilla Parishad which is at present only engaged in the distribution of agriculture imputs.

7.15 In conclusion, it can be stated that the major problem of under-utilisation in respect of Medium and Minor Irrigation Projects in the tribal areas is created because of lack of land levelling and field channels. Since large investments are made in the irrigation projects it is necessary to ensure that full potential created is used in the most productive and economic manner. As the National Commission on Agriculture has emphasised that the irrigation projects should not be looked upon merely as a means of providing water for irrigation. In fact it offers an opportunity to change over from uncertain rainfed and other precarious cropping with low yields, to Scientific irrigated cropping. It provides an occasion for reorganising the entire farming structure of the area for maximum benefit to the farmers. A good deal of steps to bring about have to be devised in a systematic and well organised manner. The concept of the command area develop--ment is now accepted and is introduced for major projects in the State. Since medium and minor irrigation projects are small in size and spread all over the State; no such area authority for this programme can be contemplated. But in any irrigation project involving public investment, howsoever small it may be some important steps for better utilisation have to be considered.

ANNEXURE NO. I

Tribal Research and Training Institute, Pune

Medium and Minor Irrigation Survey 1985-86

Salient feature of the Project

Sr No.	Item	Particulars
1.	Name of Project	
2.	Type of Project	
3.	Location of Project	
	A) Village	
	B) Taluka	
	C) District	
4.	Latitude	
5.	Longitude	
6.	Rainfall	
7.	Gross Capacity of Dam	
8.	Maximum flood level	
9.	Maximum height of Dam	
10.	Length of Dam.	
11.	Length of Canal	
12.	No. of Villages Benefitted	
13.	Gross Command Area	
14.	Irrigable Area	
15.	Estimated Cost.	
16.	Revised Estimated Cost	
17.	Actual Expenditure	

1	2	3	
18.	Year of Starting of Project		
19.	Year of Completion of Project.		
20.	Percentage of Adivasi Beneficiaries		
21.	Actual Irrigation		
22.	Percentage of utilisation		
23.	Reasons for under utilisation		
	A)		
	B)		
	C)		
	D)		
24.	No. of S.T. cultivators Benefitted during 84-85		
25.	No. of S.T.cultivators who irrigated 100% irrigable area (1984-85)		
26.	No. of S.T. Cultivators under utilisation		
27.	Crops under Project	Existing	Proposed
	1)		
	2)		
	3)		
	4)		
	5)		

ANNEXURE NO.II

Tribal Research and Training Institute
28 Queen's Garden, Pune - 411001

LIST OF HOUSEHOLDS FOR IRRIGATION SURVEY 1985-86

1) Name of Project _____

2) District _____, Taluka _____

3) Village _____

Sr No.	House No.	Name of Head of Household	Household Size	Household Type ST/SC/O	Total land possessed in Hect.	Net cropped area Hect.	Net irrigable area Hect.	Net Irrigated area Hect	Difference Col.(9-8) Hect.	Reasons for non utilisation irrigation facility and their potential in full
1	2	3	4	5	6	7	8	9	10	11

Col.11 :- odes used
1)Not necessary due to adequate rain; 2)Need field channels, 3)Needs land levelling;
4)Needs field channels and land levelling; 5) Others