Government of Maharashtra

EVALUATION REPORTS OF THE SCHEME OF ELECTRIC PUMPS TO TRIBAL CULTIVATORS IN NASIK, YAVATMAL, DHULE AND THANE DISTRICTS OF MAHARASHTRA STATE.

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By

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

1984

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GOVERNMENT OF MAHARASHTRA

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REPORT OF EVALUATION STUDY OF THE SCHEME OF SUPPLY OF ELECTRIC PUMPS TO SCHEDULE TRIBE CULTIVATORS IN DHULE DISTRICT

BY

Tribal Research and Training Institute,
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1984

P R E F A C E

Agriculture is the main occupation of the tribal 80% of the tribals in Maharashtra State are dependent on agriculture alone. The major economy, therefore, is cultivation supplemented with marginal hunting, fishing and forestry. The tribals generally grow inferior varieties of crops. The financial condition of the tribal is very poor. In order to enable them to grow more produc by way of taking two or three crops, there was a felt-need of having irrigation facility. Thus, with a view to impro their economic condition it was felt necessary to provide them with electric motor-pumps, enabling them to take wate from wells/rivers/nallahs.

Government has sanctioned the scheme under Government Resolution, Social Welfare, Cultural Affairs, Sports and Tourism Department, No.STW- :6340-K, dated 2nd November, 1973 for supply of Electric Pump Sets to Scheduled Tribes agriculturists on 100% subsidy basis. This scheme is in operation for more than 10 years and hence it was felt necessary to undertake an evaluation of this scheme, with a view to study the impact of the scheme on the tribal agriculturists and to find out operational difficulties and drawbacks in the implementation of the scheme and to suggest ways and means to improve the implementation of the scheme.

Shri J.S. Gaikwad and Shri S.P. Karve, Lecturer of this Institute have done the field work and drafted the report under the supervision of Dr.P.R. Sirsalkar, Chief Research Officer and under my Guidance. The suggestions contained in the report would be of immense use to the officers of the Directorate of Tribal Development and Maharashtra State Cooperative Tribal Development Corporation, for better implementation of the scheme.

October 1984

(Dr. G.M. Gare)
Director,
Tribal Research and Trg. Institute,
Maharashtra State, Pune.

EVALUATION REPORTS OF THE SCHEME OF ELECTRIC PUMPS TO TRIBAL CULTIVATORS

CONTENTS

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GOVERNMENT OF MAHARASHTRA

REPORT OF EVALUATION STUDY OF THE SCHEME OF SUPPLY OF ELECTRIC PUMPS TO SCHEDULED TRIBE CULTIVATORS IN NASHIK DISTRICT

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Maharashtra State, Pune-1.

1984

CHAPTER-I

CONTENTS

Section-III — Other facets of the scheme

Implementation of the Scheme : Pump sets sanctioned, installed, not installed, energised and not energised. Reasons for non energisation. Faults, Repairs and maintenance of the pump sets : mode of faults and score of individual faults. Expenses incurred for repairing.
Period spent for repairing.
Electricity Bill :
Defaulters. Period for which power supply was cut.

Section-IV — Observations and conclusion

Section-V — Suggestions

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Section - I

Introduction

The Evaluation study of the scheme of supply of electric pumps to Schedule tribes cultivators in Nashik district was undertaken as per the suggestion of the Government, with the following objectives :-

1. To assess the extent of benefits availed by the tribal cultivaters by installing electric pumps.
2. To find out the increase in income, if any, due to this scheme.
3. To find out the difficulties in implementation of this scheme.
4. To arrive at suggestions for the better implementation of this scheme.

The area of study was Baglan taluka of Nashik District. The information has been collected through structured schedules. Independent schedules were administered for the beneficiaries and the officials implementing the scheme. Wherever possible the primary data was supplemented by informal discussion as well. The secondary data of the scheme has been collected from the Directorate of Tribal Development, Nashik Road.

Sample Frame

The sample consisted of (30) beneficiaries actually interviewed. These (30) beneficiaries were from (9) different villages. The villages as well as the beneficiaries were randomly selected from varied strata in both the cases. Hence it represents a stratified random sample. The selection of taluka was purposive. The total number of electric pumps at Baglan is 108 and the number of electric pumps included in the sample are 30. Thus 28% of the total pumps were taken for sample study.

Table No.(1) reveals the distribution of electric pumps in Nashik district, talukawise and yearwise from 1973 to 1983-84.

Table No.1

Distribution of Electric pumps in Nashik district talukawise and yearwise from 1973-74 to 1983-84

Sr. No.	Name of Taluka	YEAR										
		1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	Total
1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Dindori	93	46	33	36	20	28	7	4	9	6	262
2.	Peint	31	20	25	8	1	5	5	5	10	3	113
3.	Surgana	17	15	9	3	7	6	7	5	10	4	83
4.	Kalwan	20	16	3	16	20	60	7	4	12	10	168
5.	Igatpuri	1	5	7	17	15	21	5	4	10	4	87
6.	Nashik	25	7	9	2	-	-	7	4	1	6	61
7.	Baglan	61	1	14	5	2	-	6	7	12	-	108
8.	Chandwad	2	29	1	2	-	-	-	-	5	-	39
9.	Malegaon	-	2	3	-	-	-	-	1	3	-	9
10.	Sinnar	-	4	2	1	-	-	-	1	2	2	12
11.	Niphad	7	6	1	-	-	-	-	3	3	-	20
12.	Nandgaon	7	-	2	-	-	-	-	-	1	-	10
	Total	264	149	109	90	65	120	44	38	78	35	992

Characteristics of sample

Table No.2

Table No.2 shows the yearwise distribution of pump sets in the sample from 1973-74 to 1983-84

Year	No.of pumps in the sample
1973-74	6
1974-75	8
1975-76	6
1976-77	-
1977-78	4
1978-79	-
1979-80	3
1980-81	3
Total	30

The distribution of pump sets through 1973-74 to 1980-81 can be seen in the above table.

Table No.3

Distribution of the pump sets by their make

	Make		Total
	Kirloskar	Usha	
No.of sets	6	24	30

In the total sample of 30 pumps sets, 6 pump sets (20%) are from 'Kirloskar'. 24 pump sets (80%) are from 'Usha'.

From the above table it is seen that most of the pumps installed were manufactured by 'Usha'.

Since 1981 installation of electric pumps is done by Tribal Development Corporation. The authorities of Tribal Development Corporation have decided to install Kirloskar Pump sets hereafter inorder to maintain uniformity in quality.

Table No.4

Distribution of pump sets according to the period between installation and energisation of the pump sets

- Energisation of pump sets-

	Immediately (upto 1 month)	In one year or earlier	Between (1-2) years	Between (3-4) years	Total
No.of sets	4	4	13	9	30

Out of the 30 electric pump sets, 4 pump sets (13%) were energised immediately, within a month, 4 pump sets (13%) were energised in one year or earlier; 13 pump sets (44%) were energised between one to two years and 9 pump sets (30%) were energised between three to four years.

Table No.5

Use and Non-use of pump sets

	In use	Not in use	Total
Number of pump sets	29	2	* 31

*(One of these beneficiaries was not interviewed). In this case it was reported that the pump was not at all installed on the well of the concerned beneficiary. The beneficiary was located but he was reluctant to give any information. In the spot verification it was

observed that he was not at all interested in agriculture. The well was completely dry and has become very shallow. The villagers reported that the concerned beneficiary had sold the pump to a non-tribal in a nearby village. It was stated that this matter was brought to light, three years ago when the teachers from Ashram School, Bhilwad, had conducted a survey of the beneficiaries of the scheme. In another case, the motor was fused and also the starter was out of order.

Table No.6

Distribution of beneficiaries according to the adequacy of water

Adequacy of water (months)	No. of beneficiaries	Percentage (%)
5-6	2	7
7-8	16	53
10-12	12	40

All pump sets were invariably installed on wells. One beneficiary utilised canal as an additional source.

2 beneficiaries (7%) have water supply for 5-6 months only. 16 beneficiaries (53%) have a sufficient water supply for 7-8 months and remaining 12 beneficiaries (40%) have a sufficient water supply for 10-12 months.

Table No.7

Tribewise distribution of beneficiaries by literacy level

Literacy level	Tribe			Total
	Kokana	Mahadeo Koli	Bhil	
Illiterate	8	10	2	20
Upto 7th Std.	4	5	1	10
Upto S.S.C.	-	-	-	-
Total	12	15	3	30

Out of total sample of (30), 12 beneficiaries (40%) were belonging to the Kokna tribe, 15 beneficiaries (50%) were Mahadeo Kolis, and 3 beneficiaries (10%) were Bhils.

Out of the total sample, 20 beneficiaries (67%) were illiterate, out of which 8 (40%) were Kokna, 10 (50%) were Mahadeo Kolis and 2 (10%) were Bhils. 10 beneficiaries (33%) had attained literacy level up to 7th Std., out of which 4 (40%) were Kokna, 5 (50%) were Mahadeo Kolis and one beneficiary. (10%) was Bhil. No beneficiary in the sample had attained literacy level upto S.S.C. Out of the 12 beneficiaries (40%) belonging to the Kokna tribe, 8 (67%) were illiterate and 4 (33%) had attained literacy level upto 7th Std. Out of the 15 Mahadeo Koli beneficiaries (50%), 10 beneficiaries (67%) were illiterate, and 5 (33%) had attained literacy level upto 7th Std. Out of 3 Bhil beneficiaries (10%), 2 (67%) were illiterate and one (33%) had attained literacy level upto 7th Std.

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Section-II

Impact of the scheme

Quantitative Analysis of Direct Impact

Table No.8

Distribution of beneficiaries by frequency of crops taken after the installation of pump sets, with reference to the frequency of crops taken before the installation of pump sets.

No. of crops taken before	No. of beneficiaries	No. of crops taken at present	No. of beneficiaries
1	2	3	4
1	8 (27%)	1	-
		2	5 (62%)
		3	3 (38%)
2	20 (66%)	1	1 (5%)
		2	5 (25%)
		3	14 (70%)
3	2 (7%)	1	-
		2	-
		3	2 (100%)

The above table reveals the change in the number of crops taken before and after the installation of electric pumps. Before the installation of electric pumps, out of (30) beneficiaries contacted, (8) beneficiaries (27%) were taking one crop only, (20) beneficiaries (66%) were taking 2 crops only and (2) beneficiaries (7%) were taking 3 crops.

But after the installation of electric pumps, out of (8) beneficiaries (27%) taking one crop earlier, (5) beneficiaries (62%) are taking 2 crops at present, and (3) beneficiaries (38%) are taking 3 crops at present.

Out of (20) beneficiaries (66%) taking 2 crops earlier, (5) beneficiaries (25%) are taking only 2 crops at present, (4) beneficiaries (70%) are taking 3 crops at present and (1) beneficiary (5%) is taking only one crop due to scandy water supply.

(2) beneficiaries (7%) taking 3 crops earlier, continued to take the same number of crops after the installation of electric pumps.

Table No.9

Distribution of beneficiaries by frequency of crops taken before and after the installation of the pump sets.

No. of crops taken	No. of beneficiaries	
	Earlier	At present
1	8 (27%)	1 (3%)
2	20 (66%)	10 (33%)
3	2 (7%)	19 (64%)

The above table reveals the comparative position of crops taken earlier and at present.

It is observed that (8) beneficiaries (27%) were taking one crop formerly, and at present only (1) beneficiary (3%) is taking one crop (due to scandy water supply). (20) beneficiaries (66%) were taking two crops earlier whereas (10) beneficiaries (33%) are taking two crops at present. (2) beneficiaries (7%) were taking three crops formerly, while (19) beneficiaries (64%) are taking three crops at present.

Formerly the number of beneficiaries taking one and two crops was more than those taking three crops. But now this has inversely changed. At present the number of beneficiaries taking two and three crops has increased.

Formerly very few beneficiaries were taking three crops, while at present very few beneficiaries are taking a single crop only.

Among the beneficiaries taking one and two crops earlier, the number of beneficiaries taking two crops was more than the beneficiaries taking one crop only. Whereas, among the beneficiaries taking two and three crops at present, the number of beneficiaries taking three crops is more than the beneficiaries taking two crops only.

Income and Expenditure

Table No. 10

Approximate average income accrual before and after the installation of electric pumps

Income (30 families)		Average (30 families)
Approximate income Earlier	: Rs. 75,850	Rs. 2,231
Approximate income At present	: Rs. 2,31,950	Rs. 6,822
Approximate increase In income	: Rs. 1,56,100	Rs. 4,591

Approximate income of (30) families interviewed was Rs. 75,850 before the installation of electric pumps. Hence the average income of (30) families was Rs. 2,231. Approximate income of (30) families after the installation of electric pumps is Rs. 2,31,950. Hence the average income of (30) families is Rs. 6,822 at present. Approximate increase in income of (30) families is Rs. 1,56,100. Hence the average increase in income is Rs. 4,591.

Table No. 11

Approximate and average expenditure incurred before and after the installation of electric pumps

Expenditure(30 families)		Average(30 families)
Approximate Expenditure Earlier	: Rs. 23,300	Rs. 685
Approximate Expenditure At present	: Rs. 70,300	Rs. 2,068
Approximate Increase In expenditure	: Rs. 47,000	Rs. 1,380

Approximate expenditure of (30) families interviewed was Rs. 23,300 before the installation of electric pumps. Hence the average expenditure of (30) families was Rs. 685 before. Approximate expenditure of (30) families after the installation of electric pumps is Rs. 70,300. Hence the average expenditure of these families is Rs. 2,068 at present. Approximate increase in expenditure of (30) families is Rs. 47,000, hence the average increase in expenditure of these families is Rs. 1,380.

Land irrigated before and after the installation of electric pumps

Out of the (30) beneficiaries interviewed, (9) beneficiaries had no irrigation facility before the installation of electric pump sets, while the remaining (21) beneficiaries had irrigation facility before the installation of electric pump sets. Out of these (21) beneficiaries, 4 had canal irrigation; 7 beneficiaries practiced 'Conventional Appropriate Technology' and 10 beneficiaries had 'Oil Engines' prior to the installation of electric pumps.

Table No. 12

Distribution of beneficiaries (who had no irrigation facility formerly) by frequency of land irrigated at present and thereby total land irrigated (I-9).

Land irrigated at present (in acres)	No. of beneficiaries	Total land irrigated (in acres)
2	1	2
3	3	9
4	3	12
5	1	5
6	1	6
Total	9	34

Before the installation of pumps, no land was irrigated by these (9) beneficiaries. Now the land irrigated by these (9) beneficiaries is 34 acres.

Table No. 13

Distribution of beneficiaries (who had canal irrigation formerly) by frequency of land irrigated formerly and at present and percentage increase ir irrigated land thereby. (II-4)

Land irrigate (Acres)		Percentage increase in irrigated land (%)
Formerly	At present	
3	4	33.33
1	2	100
5	5	-
5	5	-
14	16	

Formerly 14 acres of land was irrigated by these 4 beneficiaries, whereas 16 acres of land is irrigated at present by the same 4 beneficiaries. Therefore percentage increase in irrigated land as far as these beneficiaries are concerned is 14%.

Table No. 14

Distribution of beneficiaries (who practiced 'Conventional Appropriate Technology' formerly) by frequency of land irrigated formerly and at present and percentage increase in irrigated land thereby. (III-7)

Land irrigated (Acres)		Percentage increase in land irrigated (%)
Formerly	At present	
5	5	-
2	3	50
3	4	33.33
4	6	50
2	4	100
6	6	-
2	3	50
24	31	

These 7 beneficiaries who practiced 'Conventional Appropriate Technology' before the installation of electric pumps, then irrigated 24 acres of land. After the installation of electric motor pumps these 7 beneficiaries have at present 31 acres of irrigated land.

Therefore percentage increase in irrigated land as far as this group of beneficiaries is concerned is 29%.

Table No. 15

Distribution of beneficiaries (who had oil engines formerly) by frequency of land irrigated formerly and at present and percentage increase in irrigated land thereby. (IV-10).

Land irrigated (Acres) Formerly	At present	Percentage increase in land irrigated (%)
4	4	-
3	3	-
7	7	-
6	6	-
6	6	-
2	2	-
6	6	-
6	6	-
2	2	-
4	6	50
46	48	

Formerly these 10 beneficiaries irrigated 46 acres of land, whereas 48 acres of land is irrigated at present by the same 10 beneficiaries.

Therefore percentage increase in land irrigated by this group is 4%. Considering I, II, III and IV together, overall increase in land irrigated comes into picture.

Table No. 16

Percentage increase in land irrigated by all 30 beneficiaries (I, II, III and IV).

Land irrigated (in acres)	
Before	At present
0	34 (I - 9)
14	16 (II - 4)
24	31 (III - 7)
46	48 (IV -10)
84	129 (30)

Therefore percentage increase in land irrigated by all the 30 beneficiaries is 54 percent.

Table No. 17

Distribution of beneficiaries from group II, III and IV; by frequency of percentage increase in individual land irrigated after the installation of electric pumps.

No. of beneficiaries (groupwise)	Percentage				
	0	33.33	50	100	Total
(II - 4)	2	1	-	1	4
(III - 7)	2	1	3	1	7
(IV - 10)	9	-	1	-	10
Total-21	13	2	4	2	21

Group (II-4) :

In this group, only two beneficiaries have increased their irrigated land by 33.33% and 100% each after the installation of electric pumps. Remaining two beneficiaries have not increased their irrigated land even after the installation of electric pumps.

Group (III-7) :

In this group, five out of seven beneficiaries have increased their irrigated land after the installation of electric pumps. One beneficiary has increased his irrigated land by 33.33%. Three beneficiaries have increased their irrigated land by 50% each and one beneficiary has increased his irrigated land by 100% after the installation of electric pumps. Two beneficiaries have not increased their irrigated land even after the installation of electric pumps.

Group (IV-10) :

In this group only one beneficiary has increased his irrigated land by 50%, after the installation of electric pumps, while nine beneficiaries have not increased their irrigated land even after the installation of electric pumps.

Hence the overall picture reveals the following:-

(a) (13) beneficiaries have not at all increased their irrigated land even after the installation of electric pumps.

(b) (2) beneficiaries have increased their irrigated land by 33.33%.

(c) (4) beneficiaries have increased their irrigated land by 50% and

(d) (2) beneficiaries have increased their irrigated land by 100% after the installation of electric pumps.

It is revealed that the potential of irrigation is not completely utilised by most of the beneficiaries, and the possible reason may be scanty water supply and lack of developments in available agricultural land.

Table No. 18

Distribution of beneficiaries by extent of land irrigated as against the total agricultural land available

Percentage of irrigated land (w.r.t. total agricultural land available (%)	No. of beneficiaries (%)
10-30	5 (16.67%)
30-50	7 (23.33%)
50-70	8 (26.67%)
80-100	10 (33.33%)

This table further magnifics the observations in table No. 17. This table reveals that most of the beneficiaries are not in a position to utilise the irrigation potential to maximum possible extent, the reasons for which may be

(a) scanty supply of water, and/or

(b) available agricultural land is not properly developed.

Change in cropping pattern

Table No. 19

Distribution of beneficiaries according to change in cropping pattern after the installation of electric pumps.

Crop	No. of beneficiaries taking the crop		Percentage increase/decrease in the No. of beneficiaries taking the crop.
	Formerly	At present	
1	2	3	4
Wheat	20	30	+ 50
Bajra	29	30	+ 3.45
Jawar	13	16	+ 23.08
Paddy	-	7	+ -
Barti	3	-	- -
Maize	4	10	+ 150
Nagali	7	7	(0) -
Kulith	23	20	- 13.04
Sugarcane	2	11	+ 450
Groundnut	20	23	+ 15
Cotton	5	5	(0) -
Onion	8	26	+ 225
Chilly	6	17	+ 183.33
Green gram	18	28	+ 55.56
Urid	6	5	- 16.67
Masoor	-	2	+ -
Moong	4	6	+ 50
Chavali	1	-	- -
Math	4	6	+ 50
Til	1	1	(0) -
Vegetables	5	18	+ 260
Fruits	2	5	+ 150

This table shows a positivistic change in the cropping pattern after the installation of electric pumps. It is observed that there is an increase in the number of beneficiaries taking cash crops like Groundnut, Sugarcane, Onion, Chilly, Green gram etc. There is also an increasing trend of crops like Wheat, Jawar, Maize, Math, Moong and also Vegetables and Fruits.

There is percentage decrease in the number of beneficiaries taking crops of inferior variety and which do not render much profit.

Profile of indirect impact after the installation of Electric pump sets

Use of Hybrid varieties, chemical fertilizers, insecticides and fungicides : Before and After.

Table No.20

Distribution of beneficiaries by frequency of use of Hybrid varieties, Chemical fertilizers, Insecticides and fungicides : Before and After.

	- Use of -					
	Hybrid varieties		Chemical fertilizers		Insecticides and fungicides	
	Before	After	Before	After	Before	After
No. of beneficiaries	7	32	9	32	7	25

The above table reveals that utilization of Hybrid varieties, Chemical fertilizers and Insecticides and fungicides has increased after the installation of electric pump sets.

Additions of Assets

Table No.21

Distribution of beneficiaries by frequency of assets added:

		No. of beneficiaries who added to their assets.
		Assets added
I)	Purchase of Domestic animals	
	1. Pair of bullocks	27
	2. Cows	10
	3. Buffaloes	6
	4. Goats	3
II)	Purchase of Agricultural Implements	
	1. Iron plough	17
	2. Wooden plough	2
	3. Kiran	12
	4. Bullock cart	2
III)	Purchase of Agricultural land (one acre each)	3
IV)	Levelling of land and other improvements in agricultural land	3
V)	Installation of Gobar gas plants (through Government scheme)	4

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Section-III

Other Facets of the Scheme

Implementation of the scheme

Table No.22

Pump sets sanctioned, installed, not installed, energised and not energised.
(Position upto 30th July, for the area under the jurisdiction of Tribal Development Officers, Nashik and Kalwan).

	Tribal Development Officer	
	Nashik	Kalwan
Pumps sanctioned	643	453
Pumps installed	634	457
Pumps not installed	9	1
Pumps energised	546	427
Pumps not energised	88	30

Total non-energised pumps - 118

Table No.23

Distribution of the non-energised pump sets yearwise and according to the reasons for non-energisation.

Year	Not energised by M.S.E.B.		Firm quotation not received		Total
	Nashik	Kalwan	Nashik	Kalwan	
1973-74	4	1	-	-	5
1975-76	3	1	-	-	4
1977-78	-	2	-	-	2
1978-79	-	1	-	-	1
1980-81	3	2	-	-	5
1981-82	12	4	5	1	22
1982-83	44	15	17	3	79
Total	66	26	22	4	118

(Source : 'Information on Electric motor pumps' presented by Directorate of Tribal Development, Maharashtra State, Nashik during the follow-up meeting on 2-8-84 held at Tribal Research Institute, Pune).

Table Nos. 22 and 23, reveal that 118 pumps were not energised upto 30th June, 1984. 92 pumps are to be energised by M.S.E.B. as the 'firm quotations' for these 92 pumps (78%) has already been paid. In case of remaining 26 pumps (22%) the 'firm quotation' is yet to be paid and it is the Tribal Development Officer's responsibility to complete this formality as soon as the sanction is obtained. Less than 1% of the pumps are yet to be installed.

It can be seen that the energisation is pending since 1973-74 upto 1982-83. It sounds very strange that M.S.E.B. has not energised 92 pump sets inspite of issuing feasibility certificates. If the location has been declared feasible then why the energisation is delayed ?

It is, therefore, essential to take necessary steps in order to get energised these non-energised sets as soon as possible and also such delayed in energising the pump sets should be as far as possible avoided or minimised to maximum possible extent.

Faults and Repairs

Table No.24

Distribution of pump sets by incidence of pump sets repaired at least once and pump sets not required repairing at all

No.of pump sets repaired at least once.	No.of pump sets not repaired at all (except oiling & cleaning)	Total
20 (67)	10 (33)	30

20 pump sets (67%) were required to be repaired at least once, while 10 pump sets (33%) were not required to be repaired even once.

Table No.25

Distribution of pump sets by mode of fault and score of individual faults

Mode of fault	No. of pump sets	Score of individual faults				Total
		(1-3) times	(4-6) times	(7-10) times	Replacement	
Motor fused	12	10	1	1	-	12
Starter	5	5	-	-	-	5
Shafting bearing	10	-	-	-	10	10
Fan broken	2	-	-	-	2	2

Fusing of motor is very common. The starter may be replaced after repairing for about 5-6 times. Shafting-bearing, wiring and fusing of board are not very common.

Table No.26

Expenses incurred for repairing the set at a single instance of fault as well as for replacement if required

Mode of fault	Amount required for repairing (at a single instance)	Amount required in case of replacement (at a single instance)
Motor fused	Rs. 250-350	-
Starter	Rs. 125-150	Rs. 250-300
Shafting-bearing	-	Rs. 100-150
Fan broken	-	Rs. 100-150

Merely oiling and cleaning of the pump set is done very rarely. This is taken care of by the mechanic when he opens the sets for repairs.

Table No.27

Period spent for repairing the set, for a single instance of fault

Period spend	No.of cases
2-10 days	14
1-3 months	4
upto 12 months	2

Out of (20) cases of repairs, (14) pump sets (70%) were repaired between 2-10 days, (4) pump sets (20%) were repaired between one to 3 months and (2) pump sets (10%) were repaired in a period upto 12 months.

In general the beneficiaries stated that they promptly got the pump sets repaired so as to prevent the loss of the yield.

Most of the cultivators go to Satana for getting their pump sets repaired. Villages like Vaygaon and Brahmangaon also have mechanics who undertake repairing of pump sets, especially for motor rewinding.

Electricity Bill

Table No.28

Defaulters in the payment of electricity bill

No.of cases in the sample - 7
No.of cases in which power supply was cut - 1

In this single case, power supply was cut for 4 months.

Accumulations in arrears of electricity bill results mainly due to poor economic condition or negligence on the part of the beneficiary to pay off the bill in time.

The pump set, hence may be in non-working condition either due to power supply cut due to arrears of electricity bill, or due to extended repairing period due to poor economic condition or negligence, such negligence in turn devoids the cultivator of good yield.

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Section-IV

Observations

This scheme is very important and useful for the economic development of the tribals. If the concerned cultivators utilize the pumps in a proper way, they can benefit by increased income and thereby addition of more new assets. This inturn is likely to lead the cultivator towards the achievement of the goal of economic stability.

Information about the scheme

This scheme of supply of electric pump sets on 100% subsidy was known to the cultivators through various agencies operating at different levels. These include Gramsevak, Talathi, Police Patil, Leaders like Sarpanch, Gram Panchayat, Secretary, Panchayat Samitee Sabhapati, Tribal Development Officer and his staff, News paper and people in the village.

Benefit from the scheme

Informal discussion with the beneficiaries revealed the following facts : 1) Now crops can be taken in all the seasons, 2) They are economically better off than earlier, 3) Now vegetables can be cultivated, 4) Yield has almost doubled and is adequate for an year, 5) Expenditure has increased but it can be met, 6) Now it is not necessary to work as labourers, 7) The loss of time and man power in irrigation by 'Conventional appropriate Technology' is being saved by the electric pumps, 8) Electricity is far more cheaper than diesel.

The data reveals the following facts

1) Table No.(8) and (9) dealing with the frequency of crops taken before and after the installation of the pump sets reveal that : At present only one beneficiary (3%) takes only one crop a year due

to scancty water supply. Most of the beneficiaries (64%) are taking three crops in a year, while (33%) of the beneficiaries are taking two crops.

2) The number of beneficiaries taking (1) and (2) crops formerly was more and this has inversly changed after the installation of electric pumps. At present the number of beneficiaries taking (2) and (3) crops is more. Among these the number of beneficiaries (64%) taking (3) crops is more, while formerly most of the beneficiaries (66%) were taking (2) crops only.

3) Table No. (10) and (11) dealing with approximate income and expenditure, before and after the installation of electric pumps reveal that there is an increase in income as well as expenditure. The beneficiaries themselves have stated that the increase in expenditure is within their reasonable limits.

4) Table No. (12), (13), (14), (15), and (16) reveal the quantitative analysis of the land irrigated before and after the installation of electric pumps. Table No. (12) dealing with the group of cultivators, who had no irrigation facility before the installation of pumps, reveals the present position of land irrigated by individual beneficiary and thereby the total land irrigated which comes to 34 acres.

5) Table No. (13) dealing with the group of cultivators who had canal irrigation formerly, reveals the distribution of beneficiaries by frequency of land irrigated formerly and at present and percentage increase in irrigated land thereby. This works out to 16 acres at present from 14 acres in the past. Percentage increase is 14%.

6) Table No. (14) dealing with the group of cultivators, who practiced 'Conventional Appropriate Technology' formerly for irrigation purpose, reveals the distribution of beneficiaries by frequency of

land irrigated formerly and at present and percentage increase in irrigated land thereby. This works out to 31 acres at present from 24 acres in the past. Percentage increase is 29%.

7) Table No. (15) dealing with the group of cultivators who formerly had oil engines for the purpose of irrigation, reveals the distribution of beneficiaries by frequency of land irrigated formerly and at present and percentage increase in irrigated land thereby. This works out to 48 acres at present, from 46 acres in the past. Percentage increase is 4%. Table No. (16) shows the total land irrigated by all the (30) beneficiaries. This comes to 129 acres at present as against 84 acres in the past. Therefore percentage increase in land irrigated by all the (30) beneficiaries is 54%.

8) Table No. (17) reveals the groupwise distribution of beneficiaries by frequency of percentage increase in individual land irrigated after the installation of electric pumps.

9) Table No. (18) reveals the distribution of beneficiaries by extent of land irrigated as against the total agricultural land available. This table reveals that most of the beneficiaries are not in a position to utilise the irrigation potential to maximum possible extent, the reasons for which may be (a) inadequate water supply, (b) available agricultural land is not properly developed.

10) Table No. (19) dealing with the distribution of beneficiaries according to change in cropping pattern before and after and percentage increase/decrease in number of beneficiaries taking the crop, reveals a positivistic change in the cropping pattern after the installation of electric pumps. It is observed that there is an increase in the number of beneficiaries taking cash crops like Groundnut,

chilly, sugarcane, onion etc. Increasing trend of crops like Wheat, Maize, Moong, Green Gram and Vegetables is also noticed. Percentage decrease in the number of beneficiaries, taking crops, which do not render much profit is also observed.

11) Table No. (20) reveals the increased utilization of Hybrid varieties, Chemical fertilizers and Insecticides and fungicides after the installation of electric pump sets.

12) Table No. (21) reveals the number of beneficiaries who have added to their assets, which includes :- 1) purchase of domestic animals like pair of bullocks, cows, buffaloes and goats, 2) purchase of Agricultural implements like wooden plough and an iron plough, kiran, bullock cart, 3) purchase of Agricultural land, 4) Improvement in agricultural land and 5) Installation of Gobar gas plant.

13) Some of the beneficiaries stated that they do not use Hybrid varieties as they are expensive. A few beneficiaries also said that they did not know about Hybrid varieties.

14) Some of the beneficiaries stated that they did not use Chemical fertilizers as they were expensive. While a few of them were ignorant in this matter.

15) Many of the beneficiaries stated that the insecticides and fungicides were expensive. Equipments like spray pumps, dusters were expensive and not easily available. Some beneficiaries stated that they dust the powder with hands or with a piece of cloth. A few beneficiaries were totally ignorant in this matter. Most of the beneficiaries make use of insecticides and fungicides only after the onset of pathalogical symptoms on the standing crop.

16) Regarding purchase of agricultural implements it was observed that the Adivasi cultivators are not ready to switch off easily from the traditional 'wooden plough'. However few of the beneficiaries interviewed had an iron plough.

17) It was observed that many cultivators do not possess knowledge of the improved varieties. It was stated that at some places the Tribal Development Corporation supplies the cultivators with bags of Urea and Suphala. The cultivators use these chemicals for a wide range of crops which may not be always correct.

18) Selling of the crops :

Those who grow cash crops sell away these crops at earliest. Crop like Sugarcane is sold to the Sugar factories. Vegetables are sold mostly in the weekly markets or to the merchants at Tahsil places; Chilly and Onion are sold in the market. Some cereals and pulses are sold to the T.D.C. while others are sold to merchants.

Those who do not take cash crops, sell a part of their yield to fulfil their immediate requirements.

19) Sanction, installation and energisation of pump sets :-

Table No. (22) and (23) reveal that, less than 1% of pumps are yet to be installed. About 118 pump sets (11%) are waiting for energisation. 78% of the pump sets have not been energised by M.S.E.B. inspite of completion of all other formalities. 22% of the sets were not energised by M.S.E.B. as the ' firm quotations ' were not paid.

20) Faults and repairs of the pump sets :-

Along with the acceptance of benefits of advanced technology, the beneficiaries are well prepared to meet the requirements of maintaining the pump sets, whenever such necessity arises. This is revealed from Table Nos. 24, 25, 26 and 27. Wherein this topic has been dealt with.

21) Payment of Electricity bill :-

From Table No. (28) it is observed that only 1 beneficiary (3%) in the sample of 30 was defaulter and his power supply was cut, and he could reinstate the power supply in 4 months.

Remaining beneficiaries are well aware of the consequences of accumulation of arrears of electricity bill, hence they are punctual in this matter so as to avoid the inconvinience and loss thereby.

Conclusion

Thus it is observed that the beneficiaries have certainly benefited from this scheme. Only the extent varies from individual to individual depending upon various other factors. Direct impact is seen from :-

Increased frequency of crops taken after the installation of electric pumps. Increase in approximate income after the installation of electric pumps, increase in the land irrigated after the installation of electric pumps. (However, in this sample of Baglan taluka, it was observed that the irrigation potential was not at all extracted to maximum possible extent), and a positivistic change in the cropping pattern after the installation of electric pumps i.e. percentage of beneficiaries taking cash crops has increased.

Indirect impact is seen from additions of assets such as : purchase of domestic animals, purchase of agricultural implements, purchase of agricultural land, developments in agricultural land, installation of gobar gas plants, and the increasing utilization of hybrid varieties, chemical fertilizers and insecticides and fungicides after the installation of electric pumps.

Thus it can be said that, in the system of plough cultivation, innovations have been incorporated in respect of the use of improved inputs, technology, irrigation etc. Those who get irrigation facility switch on to cash crops like groundnut, onion, chilly, sugarcane etc. thus marching towards the goal of economic stability.

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Section-V

Suggestions

The major striking observation in Baglan taluka of Nashik district is that the irrigation potential is not at all utilised to its maximum extent, mainly due to a) inadequate supply of water, and b) available agricultural land is not properly developed.

Some wells are not having adequate supply of water throughout the year. In order to change this situation, these wells should be dug deeper as it would increase the potential of the wells and hence would lead to adequacy of water.

Also it is of utmost necessity to make improvements in the agricultural land inorder to exploit maximum possible yield from the available potential resources and optimum efforts.

It is observed that the beneficiaries are in need of modern methods of agriculture and technical guidance for getting maximum possible yield from the available resources and optimum efforts. It is felt necessary to have a systematic and a regular follow-up of the beneficiaries.

During such a follow-up the following aspects should be emphasised upon - cropping pattern, irrigated land, technical guidance regarding the maintenance of the pumps and in case the pump sets are not in a working state, to persuade the beneficiaries to get these sets repaired.

In order to understand the difficulties which occur in implementation of this scheme, concerned officers were interviewed and were asked to give suggestions for better implementation of this scheme. These officers included the Project Officer, I.T.D.P. Kalwan, district Nashik, Tribal Welfare Inspector, working in the office of the Tribal Development

Officer, Kalwan; and Sub-Regional Manager, Tribal Development Corporation, Kalwan.

Interviews of all these officers revealed that Maharashtra State Electricity Board is responsible for delay in energisation of electric pumps.

M.S.E.B. generally extends power-supply upto a certain number of poles. Beyond this number, the expenses of additional poles has to be borne by the cultivator. This is impossible for a tribal cultivator due to his poor economic condition. M.S.E.B. should be asked to do this work on priority basis and as early as possible. Further, M.S.E.B. should reserve a certain quota of wires, poles and other material so that energisation will not be delayed for non-availability of this material. M.S.E.B. may be persuaded to clear all the cases (of feasibility and energisation) as a time bound work.

Regarding Ground water survey and Development Agency, it is observed that they are following their criteria very rigidly. Many wells in hilly regions do not have enough supply of water for the whole year. These wells can suffice the purpose of irrigation of a small holding for about six to eight months. For such wells feasibility may be given and at times their technical criteria may be relaxed to a certain extent, as it would help weaker sections to improve their economic condition.

Besides the grievances against these two agencies, it seems that also the budget provision for this scheme is inadequate. Applications coming for electric pumps from the tribals, at present are more than the number of pumps that can be sanctioned. It is therefore necessary to increase the financial provision for this scheme as per the load of requirement.

Last but not least, care should be taken to have an uniformity in technical standards of the pump sets installed on 100% subsidy.

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GOVERNMENT OF MAHARASHTRA

REPORT OF EVALUATION STUDY OF THE SCHEME OF SUPPLY OF ELECTRIC PUMPS TO SCHEDULED TRIBE CULTIVATORS IN YEOTMAL DISTRICT

Tribal Research & Training Institute,
Maharashtra State, Pune.

1984

CHAPTER - II

INTRODUCTION

The Evaluation Study of the scheme of supply of electric pumps to Scheduled Tribe cultivators in Yeotmal District was undertaken as per the suggestion of the Government with the following objectives:-

1. To assess the extent of benefits availed by the Tribal cultivators by installing electric pump.

2. To find out the increase in income, if any, due to this pumps.

3. To find out the difficulties in the implementation of this scheme, and

4. To give suggestions for better implenentation of this scheme.

Area of Study

The area of study was Pandharkawada Taluka in Yeotmal district. The information has been collected through the structured schedules. Secondary data has been collected from the Tribal Development Officer, Yeotmal. The following table No. (1) reveals the talukawise and yearwise supply of Electric pumps in Yeotmal district from 1973-74 to 1982-83 :-

Table No.(1)

Statement showing the electric pump sets sanctioned in Yeotmal district

Tahsil	1973-74			1974-75			1975-76		
	TSP	OT-SP	To-tal	TSP	OT-SP	To-tal	TSP	OT-SP	To-tal
Yavatmal	3	1	4	1	5	6	1	1	2
Babhulgaon	-	8	8	-	2	2	-	4	4
Kalamb	2	-	2	2	-	2	-	1	1
Darvha	-	-	-	-	1	1	-	3	3
Ner	-	2	2	-	1	1	-	-	-
Digras	-	17	17	-	2	2	-	27	27
Pusad	15	2	17	5	3	8	5	3	8
Mahagaon	-	7	7	-	5	5	-	4	4
Umarkhed	-	-	-	-	-	-	-	2	2
Pandharkawada	7	1	8	2	-	2	1	4	5
Ghatanji	3	-	3	-	-	-	-	-	-
Ralegaon	1	2	3	-	-	-	-	1	1
Wani	-	1	1	-	1	1	-	1	1
Maregaon	-	-	-	-	-	-	2	-	2
TOTAL	31	41	72	10	20	30	9	51	60

(Table No.1 continued)

Tahsil	1976-77			1977-78			1978-79		
	TSP	OT-SP	Total	TSP	OT-SP	Total	TSP	OT-SP	Total
Yavatmal	5	2	7	6	-	6	4	3	7
Babhulgaon	-	1	1	-	-	-	-	-	-
Kalamb	3	-	3	3	-	3	2	2	4
Darvha	-	-	-	-	-	-	-	5	5
Ner	-	1	1	-	2	2	-	2	2
Digras	-	9	9	-	1	1	-	10	10
Pusad	19	4	23	6	1	7	18	4	22
Mahagaon	-	-	-	-	1	1	-	3	3
Unarkhed	-	-	-	-	-	-	2	-	2
Pandharkawada	14	-	14	5	-	5	14	-	14
Ghatanji	6	-	6	2	1	3	20	3	23
Ralegaon	1	-	1	-	2	2	-	5	5
Wani	-	-	-	-	-	-	-	2	2
Maregaon	13	-	13	22	-	22	4	1	5
Total	61	17	78	44	7	57	64	40	104

(Table No. 1 continued)

Tahsil	1979-80			1980-81			1981-82		
	TSP	OTSP	To-tal	TSP	OT SP	To-tal	TSP	OT-SP	To-tal
Yavatmal	5	2	7	11	1	12	3	2	5
Babhulgaon	-	3	3	-	1	1	-	2	2
Kalamb	5	-	5	2	-	2	-	-	-
Darvha	-	9	9	-	1	1	-	1	1
Ner	-	2	2	-	1	1	-	2	2
Digras	-	6	6	-	12	12	-	4	4
Pusad	4	2	6	12	3	15	7	3	10
Mahagaon	-	5	5	-	2	2	-	3	3
Umarkhed	1	1	2	8	2	10	-	-	-
Pandharkawada	11	2	13	3	1	4	5	-	5
Ghatanji	11	2	13	7	11	8	1	-	1
Ralegaon	6	9	15	-	2	2	2	1	3
Wani	-	3	3	-	1	1	-	-	-
Maregaon	18	5	23	2	-	2	4	-	4
TOTAL	61	51	112	45	28	73	22	18	40

(Table No. 1 continued)

Tahsil	1982-83			Total
	TSP	OTSP	Total	
Yavatmal	4	6	10	66
Babhulgaon	–	–	–	21
Kalamb	–	–	–	23
Darvha	–	–	–	20
Ner	–	–	–	13
Digras	–	3	3	91
Pusad	2	–	2	118
Mahagaon	1	–	1	31
Umarkhed	5	–	5	21
Pandharkawada	8	–	8	
Ghatanji	2	1	3	60
Ralegaon	2	2	4	35
Wani	–	–	–	9
Maregaon	–	–	–	71
TOTAL	31	6	37	657

Evaluation of the Programme

For the evaluation study, Pandharkawada Tahsil was selected and 56 (66%) of the total beneficiaries were actually interviewed. This study is based on these interviews of the beneficiaries and the concerned officers, who are implementing this scheme.

The following table No.2 reveals the use and non-use of electric pumps by the beneficiaries:-

Table No. 2

Number of pumps in use	Number of pumps not being used	Total
32 (57 %)	24 (43 %)	55 (100 %)

From this table it is seen that out of 56 pumps surveyed, 32 pumps (57%) are being used and 24 pumps (43%) are not in use for various reasons.

The following table No.3 reveals various reasons for which the pumps sets are not being used:-

Table No. 3

Total unused 'Pump-sets'	Under Repair	Sanction-ed but not installed	Install-ed but not ene-rgised	Recently energised no crop taken since then	Stolen	Mort-gaged	Unoffi-cially transf-erred to other persons	Electri-city disconn-ected for overdue bill	Land given to other for cultiva-tion
24	3 (12.50%)	2 (8.33%)	6 (25%)	3 (12.50%)	1 (4.17%)	2 (8.33%)	2 (8.33%)	4 (16.66%)	1 (4.17%)

Out of total (24) non-used pumps (3) are under repair; (2) pumps are sanctioned but not installed; (6) pumps are installed but not energised; (3) pumps have been installed recently but no crop has been taken since installation; (1) pump set has been stolen; (2) pumps have been mortgaged; (2) pumps sets have been unofficially transferred to other persons; (4) pumps are out of use due to non-payment of electricity bill, and (1) beneficiary has given his land to other person for cultivation and hence he is not using the electric pump.

The following table no.4 reveals the period between installation and energisation:-

Table No. 4

Total pump-sets	Not installed till the time of survey	Not energised till the time of survey	Total energised pumps	Energised immediately	Energised in 6 months or earlier	Energised betwen 6 months and 1 year	Engergised between 1 and 2 years
56	3	4	49	22	16	4	2

Out of (56) pump-sets (3) pump-sets were not installed till the time of survey; (4) pumps were installed but not energised till the time of survey.

Out of total (49) energised pumps, (22) pumps were energised immediately; (16) pumps were energised in six months or earlier; (4) pumps were energised between 6 months and one year, and (2) pumps were energised between one and two years.

Impact of the Electric pump sets

The following table no. 5 reveals the change in the cropping pattern after installation of electric pumps:-

Table No.5

No. of crops taken before	No. of beneficiaries	No. of crops taken after	No. of beneficia-ries
1	28	1	1
		2	25
		3	2
2	3	1	-
		2	2
		3	1

Out of (31) cultivators, (28) were taking only one Kharif crop before installation of pumps and (3) were taking two crops. After installation of pumps only one beneficiary is taking one crop, due to scarcity of water; (25) beneficiaries are taking two crops and (2) beneficiaries are taking three crops.

The following table no. 6 shows the increase in income due to installation of electric pumps:-

Table No. 6

(in Rupees)

	Approximate income of surveyed cultivators	Average approximate income of cultivator
Before installation	69,400	2,169
After installation	1,56,840	4,901
Increase	87,440	2,733 (126%)

Average income of (56) cultivators was Rs. 2,169 before installation. It increased to Rs. 2,733/-. Thus it is seen that due to installation of electric pumps, the economic condition, to this extent, has been improved and the scheme is beneficial to the tribal agriculturists.

Various difficulties faced by the cultivators

The following table No. 8 reveals frequency of faults:-

Table No. 7

Only once	Twice	Thrice	Four or more times	Total
16	1	3	2	22

Out of (22) pumps having faults, (16) pumps had it only once; (2) pumps sets had it twice; (3) pump-sets had it thrice; and (2) pump sets had it four or more times.

The following table no. 9 shows kind of faults occured in different pump sets:-

Table No.8

Moter burnt	Starter fault	Fan broken	Coil burnt	Others	Total
11	2	1	2	5	21

Out of (21) cases having faults, in (11) cases motor was burnt; in (2) cases there was starter fault; in (1) case fan was broken; and in (5) cases there were other faults.

The following table No. 10 reveals the number of days required for repairing the electric pumps:-

Table No. 9

1 month or less	1 to 2 months	Not repaired till the time of survey	Total
16	1	4	21

Out of (21) pumps having faults, (16) pumps were repaired within one month or less time; (1) pump set took one to two months; and (4) pumps sets were not repaired till the time of survey. All the pumps sets were repaired by private mechanic

The following table no. 11 reveals the amount spent for the repairs of pumps:-

Table No. 10

Rs.250 or less	Rs.251 to 500	Rs.501 to 1000	Rs.1001 to 2000	Rs.2001 and above	Not repaired till the time of survey	Total
6	7	3	1	1	3	21

Out of (21) pumps having different faults, (6) pumps required upto Rs. 250/-; (7) pumps required Rs.251 to 500; (3) pumps required Rs. 501 to 1000; (1) pump required more than Rs.2000/- and (3) pump sets were not repaired till the time of survey.

Suggestions for better implementation of the scheme

In order to understand the difficulties that occur in implementation of this scheme, the following officers were interviewed:-

(1) Regional Manager, Maharashtra State Co-operative Tribal Development Corporation, Yeotmal, and
(2) Tribal Development Inspector, Yeotmal.

Interviews of all these Officers and observations made by the investigating Officer reveal that the system suggested by the Government is not followed rigourously by the implementing authority.

Accompaniment to the Government Resolution, Social Welfare, Cultural Affairs, Sports and Tourism Department No. STW-1073/6340-K, dated 2nd November, 1973 reveal the following facts:-

(b) The time schedule for the above procedure for the current year will be as under:-

i) The task force will scrutinise the applications and send them to the Maharashtra State Electricity Board by 30th November 1983.

ii) The Maharashtra State Electricity Board will check the application from technical point of view and forward to the Director of Tribal Welfare, Maharashtra State, [illegible]

iii) The Director of Tribal Welfare will check up the applications and balance the amount to the concerned Tribal Welfare Officer/Social Welfare Officer, who will fix up agency i.e. rate contact of the repeated agency which is in this line and which is recommended by the Collector/ Chief Executive Officer and makes repayment to them after the pumps are actually fixed and necessary certificate from the Deputy Engineer and Assistant Engineer is given. The Maharashtra State Electricity Board will extend the line to the approved beneficiaries by January 1974 so that the beneficiary will get water during the current Rabi season positively.

Inspite of this system, such a time schedule is not adhered to. The various agencies like the Tribal Development Officer, the Director of Tribal Development, Maharashtra State Electricity Board, Ground Water Survey and Development Agency, Tribal Development Corporation etc. take too-much time in performing their respective tasks.

The procedure of this scheme at present involves the following stages

i) Calling of applications from tribal cultivators by the Tribal Development Officer.

ii) Scrutiny of applications.

iii) Sending the list of applications to the Maharashtra State Electricity Board and the Ground Water Survey and Development Agency for obtaining technical feasibility report.

iv) Sanctioning the pump sets by the Task Force.

v) Sending the list of beneficiaries to the Director of Tribal Development by the Tribal Development Officer.

vi) Fixing up the agency for supplying pump sets by the Director, Tribal Development, Maharashtra State, Nashik.

vii) Supplying the pump sets by the Agency.

viii) Installation of the pump sets by the Tribal Development Corporation.

ix) Energisation of pump sets by the Maharashtra State Electricity Board.

It normally takes more than a year or a year and a half to go through all these stages. This causes delay in installing and energising pumps and therefore the tribal cultivators suffer.

It is, therefore suggested as under:

(1) To avoid this delay and to ensure effective administration of this scheme, it is very necessary that a time schedule must be evolved and adhered to. All concerned agencies will have to agree upon it and will have to adhere to it very strictly. It is also necessary that the two outside agencies namely Maharashtra State Electricity Board and Ground Water Survey and Development Agency should be specially instructed to do this work on priority basis as it is going to help the weaker section of the society. The Tribal Development Officer should be instructed to prepare the list of applicants by 31st July and send it to the Maharashtra State Electricity Board and the Ground Water Survey and Development Agency to obtain technical reports from them by 15-8-1984. Reports should be made available by 31st of October. The Task Force should meet and sanction the pumps in the month of November. List of sanctioned pump sets should be sent to the Director of Tribal Development, Maharashtra State, Nashik by 15th of November. The Director of Tribal Development should sent the list of sanctioned pump sets to the Tribal Development Corporation. The Tribal Development Corporation should install the pump sets before 31st of December of that financial year. If this calender is followed, then only it is possible that the cultivator will get

irrigation facility for his Rabi crop and will accrue the benefit of the pump. The draft time-schedule is proposed as under:-

Time-Schedule

Task of the concerned agency		To be completed by
i)	Calling of applications from cultivators by the Tribal Development Officer and scrutiny of applications.	31st July
ii)	Sending the list of applicants to the Maharashtra State Electricity Board and the Ground Water Survey and Development Agency.	15th August
iii)	To obtain technical reports from these agencies.	31st October
iv)	Meeting of the Task Force and sanctioning the pumps, sending the list of sanctioned pump sets to the Director of Tribal Development, Nashik.	15th November
v)	Sending the list of beneficiaries by the Director of Tribal Development.	30th November
vi)	Fixing up of the agency	31st December
vii)	Installation and energisation of pumps.	31st March

(2) Besides the delay involved in procedure there are other difficulties which deserve serious attention. First of all there is an urgent necessity of checking the quality of pump sets by technical expert. Often the Agency installs ppump sets with sub-standard parts and it causes trouble to the cultivators. It is, necessary, therefore, that payment to the supplier should not be made unless all pumps are checked by technical expert. Secondly, Maharashtra State Electricity Board workers or fitters of the agency unofficially demand money from the tribal cultivators. The Tribal Development Officer should check this practice and bring these facts to the notice of the higher authorities of Maharashtra State Electricity Board and Tribal Development Department.

(3) The tables in the preceding pages reveal that 22 out of 49 energised pumps have had ~~fi~~ different faults. These pump sets had to be repaired. It has been observed that tribal cultivators have no technical knowledge about the repair of pump set, nor there is any facility of repairing the pump set available in the village itself.

They have to carry the electric motor to the nearby town, which involves expenses as well as time. It is essential, therefore, that either the Tribal Development Officer or the Tribal Development Corporation should have technical personnel attached to their office to provide technical help in time on the

spot. It may also be considered that tribal youths should be given Training in repairing electric motor pumps under Nucleus Budget so that technical personnel will be able to attend the pump set in time and it will not remain idle for want of repairs.

(4) There have been some instances wherein pumps-sets are mortgaged sold or un-officially transferred to other persons. At present the cultivator has to sign an undertaking that he will not mortgage or transfer or sale the pump set but there is no provision for statutory action to be taken against such persons. There is a need to include a clause in the undertaking that if a tribal is found guilty, the entire amount of the pumps will be recovered from him as arrears against land.

(5) Further, supply of pump set by itself is not enough for improved farming. Many tribal cultivators are ignorant about modern methods of farming. They are also ignorant about the facilities like improved seeds, fertilizers, etc. which they can get from the Government Departments. It is necessary, therefore, to give them regular guidance through local meetings about these things. In the absence of such guidance they will not get much benefit from irrigation facility.

(6) Some of the pump sets are installed on river or nalla. In such cases, the land near river ~~si~~ is always sloping towards the river. In order to irrigate the higher portion of the land, there is necessity of pipes. Such cultivators should be supplied pipes on loan or subsidy basis. Similarly, financial assistance for deepening of wells may also be given by the Project Officers/Social Welfare Officers.

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CHAPTER - III

CONTENTS

SECTION-III — Other facets of the scheme

Implementation of the scheme:
Pump sets sanctioned, installed, energised and not energised. Reasons for non energisation.
Faults, Repairs and Maintenance of the pump sets:
Made of faults and score of individual faults.
Expenses incurred for repairing.
Period spent for repairing.

Electricity Bill:
Defaulters.
Period for which power supply was out.

SECTION-IV — Observations

SECTION-V — Suggestions

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Section-I

INTRODUCTION

The Evaluation study of the scheme of supply of electric pumps to Scheduled Tribes cultivators in Dhule district was undertaken, as per the suggestion of the Government, with the following objectives :-

1) To assess the extent of benefits availed by the tribal cultivators by installing electric pumps;
2) To find out the increase in income, if any, due to this scheme.
3) To find out the difficulties in implementation of this scheme.
4) To arrive at suggestions for the better implementation of this scheme.

The area of study was Nandurbar taluka in Dhule district. The information has been collected through structured schedules.

Independent schedules were administered for the beneficiaries and the officials implementing the scheme. Wherever possible the primary data was supplemented by informal discussion as well. The secondary data of the scheme has been collected from the Directorate of Tribal Development, Nasik Road.

Sample frame

The sample consisted of (57) beneficiaries actually interviewed. These (57) beneficiaries were from (15) different villages. The villages as well as the beneficiaries were randomly selected, from varied strata

in both the cases. Hence it represents a stratified random sample. The selection of taluka was purposive. The total number of electric pumps at Nandurbar is 241 and number of electric pumps included in sample are 57. Thus 24% of the total pumps were taken for sample study. The Table No. (1) reveals the distribution of electric pumps yearwise from the year 1973 onwards.

Table No.1

Distribution of Electric pumps in Dhule district talukawise and yearwise from 1973-74 to 1983-84.

Taluka / Year	73-74	74-75	75-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	Total
1	2	3	4	5	6	7	8	9	10	11	12	13
Shirpur	-	21	-	-	8	4	5	4	5	-	3	50
Shindkheda	-	-	-	3	2	-	-	9	3	-	11	28
Dhule	-	-	-	2	3	-	-	3	-	3	3	14
Nandurbar	-	13	2	26	13	51	41	41	20	13	21	241
Sakri	-	5	23	14	40	87	34	80	26	51	43	403
Nawapur	-	11	27	24	24	45	52	82	25	63	31	384
Total	-	50	52	69	90	187	132	219	79	130	112	1120
Akkalkuwa	7	17	19	27	6	9	17	14	-	7	-	123
Taloda	15	15	15	20	21	72	32	18	-	13	-	221
Shahada	1	2	2	4	12	14	4	16	-	12	-	67
Akrani	1	-	3	-	2	1	10	3	-	-	-	20
Total	24	34	39	51	41	96	63	51	-	32	-	431
GRAND TOTAL	24	84	91	120	131	283	195	270	79	162	112	1551

Characteristics of sample

Table No.2

The Table No.2 shows the distribution of pump sets in the sample, yearwise from 1973-74 to 1983-84

Year	No.of pumps in the sample
1973-74	10
1974-75	1
1975-76	5
1976-77	-
1977-78	9
1978-79	6
1979-80	10
1980-81	9
1981-82	3
1982-83	2
1983-84	2
Total	57

For the sake of convenience in analysis and interpretation, the entire sample was divided into three groups, as shown in the following Table No. (3).

Table No.3

Groupwise distribution of the sample

Year 1	No.of pump sets 2	Group 3
1973-74 to 1975-76	16	A
1977-78 to 1979-80	25	B
1980-81 to 1983-84	16	C

Table No.4

Table showing the groupwise distribution of the pump sets - by their make :

Group	Make				Total
1	Kirloskar 2	Laxmi 3	Usha 4	Sangam 5	6
A	13	-	1	2	16
B	4	2	1	18	25
C	13	3	-	-	16
Total	30	5	2	20	57

From the above table it is seen that in the period 1973-76 most, of the pumps installed were manufactured by 'Kirloskar'. Very few belonged to Usha and Sangam.

In the second group, i.e. between (1977-80) most of the pumps installed were manufactured by 'Sangam'. Very few belonged to Kirloskar, Laxmi and Usha.

In the third group, i.e. between (1980-84) most of the pumps installed were manufactured by 'Kirloskar'. Some pumps were also installed by Laxmi agency.

Since 1981, installation of electric pumps is done by Tribal Development Corporation. The authorities of Tribal Development Corporation have decided to install Kirloskar pump sets hereafter inorder to maintain uniformity in quality.

In the total sample of 57 pump sets.

30 pump sets (52.63%) are from 'Kirloskar',

5 pump sets (8.77%) are from 'Laxmi',

2 pump sets (3.51%) are from 'Usha',

20 pump sets (35.09%) are from 'Sangan',

All pump sets are invariably of 3 hps.

Table No.5

Distribution of pump sets according to the period between installation and energisation of the pump sets:

Group	Pump sets energised immediately (upto 1 month)	Pump sets energised in (1 year or earlier)	Pump sets energised between (1-2 year)	Total
1	2	3	4	5
A	7	9	-	16
B	-	15	10	25
C	4	12	-	16
Total	11	36	10	57

In group A (7) pump sets were energised immediately within a months time. (9) pump sets were energised in one year or earlier.

In group B no pump was energised immediately. (15) pump sets were energised in one year or earlier, (10) pump sets were energised between one to two years.

In group C (4) pump sets were energised immediately within a months time. (12) pump sets were energised in one year or earlier.

In the total sample of (57) pump sets, (11) pump sets (19%) were energised immediately within a month, (36) pump sets (63%) were energised in one year or earlier, (10) pumps sets (18%) were energised between one to two years.

Table No.6

Use and non-use of electric pump sets

No.of Electricpumps in use	No.of Electric pumps not in use
57	1

In this single case of pump not in use, it was observed that the beneficiary was not at all interested in agriculture. It was told that he was staying at Nandurbar. In the spot verification it was observed that the well was very shallow and was completely dry.

Table No.7

Distribution of beneficiaries according to the source of water

	Well	Nala	River
No.of beneficiaries	53	2	2

Thus most of the pumps have been installed on wells.

Table No.8

Distribution of beneficiaries according to the adequacy of water

Adequacy of water (Months) 1	No.of beneficiaries 2	Percentage 3
5-6	2	3.51
7-8	8	14.4
8-10	9	15.79
10-12	38	66.67

Most of the beneficiary (67%) have a sufficient water supply for 10-12 months. 3% of the beneficiaries have water supply for 5-6 months 30% of the beneficiaries have water supply for 7-10 months.

Table No.9

Table showing the distribution of beneficiaries by literacy level and by tribe

Literacy level	Tribe			Total
	Bhil	Kokana	Nayaka	
1	2	3	4	5
Illiterate	15	8	-	23
Upto 7th std.	21	7	1	29
Upto S.S.C.	5	-	-	5
Total	41	15	1	57

Out of the total sample, (41) beneficiaries (71.93%) were Bhils, (15) beneficiaries (26.32%) were Kokana, and (1) beneficiary (1.75%) was Nayaka.

Out of the total sample, (23) beneficiaries (40.35%) were illiterate, out of which (15) (65.22%) were Bhil, and (8) (34.78%) were Kokana. (29) beneficiaries (50.88%) had attained literacy level upto 7th std. out of which 21 (72.41%) were Bhil, 7 (24.14%) were Kokana, and 1 (3.45%) was Nayaka, (5) beneficiaries (8.77%) had attained literacy level upto S.S.C. and all 5 of them were Bhil.

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Section-II

IMPACT OF THE SCHEME

Quantitative Analysis of Direct Impact

Table No.10

Distribution of beneficiaries by frequency of crops taken after the installation of pump sets, with reference to frequency of crops taken before the installation of pump sets.

No.of crops taken before	No.of beneficiaries	No.of crops taken at present.	No.of beneficiaries
1	2	3	4
1	5 (8.77%)	1	-
		2	4(80.00%)
		3	1(20.00%)
2	46 (80.70%)	1	-
		2	15(82.61%)
		3	31(67.39%)
3	6 (10.53%)	1	-
		2	-
		3	6(100.00%)

The above table reveals the change in number of crops taken before and after the installation of electric pumps. Before the installation of electric pumps, out of (57) beneficiaries contacted, (5)

beneficiaries (8.77%) were taking one crop only, (46) beneficiaries (80.70%) were taking (2) crops, and (6) beneficiaries (10.53%) were taking (3) crops.

But after the installation of electric pumps, out of (5) beneficiaries taking one crop earlier, (4) beneficiaries (80%) are taking two crops, at present, and one beneficiary (20%) is taking 3 crops at present.

Out of (46) beneficiaries taking 2 crops earlier, (15) beneficiaries (32.61%) are taking 2 crops at present, and (31) beneficiaries (67.39%) are taking 3 crops at present. (6) beneficiaries, who were taking 3 crops before continued to take the same number of crops even after the installation of electric pumps.

Table No. 11

Distribution of beneficiaries by frequency of crops taken before and after the installation of the pump sets

No. of crops taken	No. of beneficiaries	
	Earlier	At present
1	2	3
1	5 (8.77%)	-
2	46 (80.70%)	19 (33.33%)
3	6 (10.53%)	38 (66.67%)

The above table reveals the comparative position of number of crops taken earlier and at present.

It is observed that (5) beneficiaries (8.77%) were taking one crop formerly, but no beneficiary is taking one crop at present. (46) beneficiaries (80.70%) were taking two crops earlier whereas (19) beneficiaries (33.33%) are taking two crops at present. (6) beneficiaries (10.53%) were taking 3 crops earlier whereas (38) beneficiaries (66.67%) are taking 3 crops at present. Formerly the number of beneficiaries taking (2) crops was more than the number of beneficiaries taking (3) crops. But at present, this has inversely changed. At present the number of beneficiaries taking 3 crops is more than the number of beneficiaries taking 2 crops.

Income and Expenditure

Table No.12

Approximate average income accrual before and after the installation by size-class groups

	Group A (16)	B (25)	C (16)	(A+B+C) (57)
Approximate income earlier : Rs.	79,250	1,49,300	96,500	3,25,050
Average approximate income earlier : Rs.	4,953	5,972	6,031	5,703
Approximate income at present : Rs.	1,88,500	2,75,500	1,71,750	6,35,750
Average approximate income at present: Rs.	11,781	11,020	10,734	11,154
Approximate increase in income : Rs.	1,09,250	1,26,200	75,250	3,10,700
Increase in the average approximate income : Rs.	6,828	5,048	4,703	5,451

Table No. 12 shows the approximate income earlier and at present and the corresponding average approximate income of (57) families interviewed. In order to avoid the 'levelling' effect for the entire sample, the results are considered in Groups - A, B and C and then in - aggregate.

Group A :- (16) families

Approximate income of these (16) families was Rs. 79,250 before the installation of electric pumps. Hence the average income of these (16) families was Rs. 4,953 before.

Approximate income of (16) families is Rs. 1,88,500 at present. Hence the average income of (16) families is Rs. 11,781 at present.

Approximate increase in income of (16) families is Rs. 1,09,250. Hence the average increase in income is Rs. 6,828.

Group B :- (25) families

Approximate income of these (25) families was Rs. 1,49,300 earlier. Hence the average income of (25) families was Rs. 5,972 before the installation of pumps.

Approximate income of (25) families is Rs. 2,75,500 at present. Hence the average income of (25) families is Rs. 11,020 at present.

Approximate increase in income of (25) families is Rs. 1,26,200 and the average increase in income is Rs. 5,048.

Group C :- (16) families

Approximate income of these (16) families was Rs. 96,500 before the installation of pumps. Hence the average income of these (16) families was Rs. 6,031 before the installation of pumps. Approximate income of (16) families is Rs. 1,71,750 at present. Hence average income of (16) families is Rs. 10,734 at present. Approximate increase in income of (16) families is Rs. 75,250. Hence the average increase in income is Rs. 4,703.

A+B+C :- (57) families together

Approximate income of (57) families interviewed was Rs. 3,25,050 before the installation of electric pumps. Hence the average income of (57) families was Rs. 5,703 before. Approximate income of (57) families after the installation of electric pumps is - Rs. 6,35,750. Hence the average income of (57) families is Rs. 11,154 at present. Approximate increase in income of (57) families is Rs. 3,10,700. Hence the average increase in income is 5,451.

Group C :- (16) families

Approximate income of these (16) families was Rs. 96,500 before the installation of pumps. Hence the average income of these (16) families was Rs. 6,031 before the installation of pumps. Approximate income of (16) families is Rs. 1,71,750 at present. Hence average income of (16) families is Rs. 10,734 at present. Approximate increase in income of (16) families is Rs. 75,250. Hence the average increase in income is Rs. 4,703.

A+B+C :- (57) families together

Approximate income of (57) families interviewed was Rs. 3,25,050 before the installation of electric pumps. Hence the average income of (57) families was Rs. 5,703 before. Approximate income of (57) families after the installation of electric pumps is - Rs. 6,35,750. Hence the average income of (57) families is Rs. 11,154 at present. Approximate increase in income of (57) families is Rs. 3,10,700. Hence the average increase in income is 5,451.

Table No.13

Approximate and average expenditure incurred before and after the installation by size-class group

	Group			
	A(16)	B(25)	C(16)	(A+B+C)(57)
Approximate expenditure earlier (Rs)	27,400	29,800	21,800	79,000
Average approximate expenditure earlier (Rs)	1,713	1,192	1,363	1,386
Approximate expenditure at present (Rs)	48,800	70,300	38,500	1,57,600
Average approximate expenditure at present(Rs)	3,050	2,812	2,406	2,765
Approximate increase in expenditure (Rs)	21,400	40,500	16,700	78,600
Increase in the average approximate expenditure(Rs)	1,338	1,620	1,044	1,379

Table No. (13) shows the approximate expenditure earlier and at present and the corresponding average approximate income of 57 families interviewed. In order to avoid the 'levelling' effect for the entire sample, the results are considered in Groups - A, B and C and then together.

Group A :- (16) families

Approximate expenditure of these (16) families was Rs. 27,400 earlier. Hence the average expenditure of (16) families was Rs. 1,713 the installation of electric pumps. Approximate expenditure of (16) families is Rs. 48,800 at present. Hence the average expenditure of (16) families is Rs. 3,050 at present. Approximate increase in expenditure of 16 families is Rs. 21,400. Hence the average increase in expenditure is Rs. 1,338.

Group B :- (25) families

Approximate expenditure of (25) families was Rs. 29,800 earlier. Hence the average expenditure of (25) families was Rs. 1,192 before the installation of electric pumps. Approximate expenditure of (25) families is Rs. 70,300 at present. Hence the average expenditure of (25) families is Rs.2,812 at present. Approximate increase in expenditure of (25) families is Rs. 40,500. Hence the average increase in expenditure of (25) families is Rs. 1,620.

Group C :- (16) families

Approximate expenditure of (16) families before the installation of electric pumps was Rs. 21,800. Hence the average expenditure of these families was Rs. 1,363 before. Approximate expenditure of (16) families after the installation of electric pumps is Rs. 38,500. Hence the average expenditure of these families is Rs. 2,406 at present. Approximate increase in expenditure of (16) families is Rs. 16,700. Hence the average increase in expenditure is Rs. 1,044.

A+B+C :- (57) families together

Approximate expenditure of (57) families interviewed was Rs. 79,000 before the installation of electric pumps. Hence the average expenditure of (57) families was Rs. 1,386 before. Approximate expenditure of (57) families after the installation of electric pumps is Rs. 1,57,600. Hence the average expenditure of these families is Rs. 2,765 at present. Approximate increase in expenditure of (57) families is Rs. 78,600. Hence the average increase in expenditure is Rs. 1,379.

Land irrigated before and after the installation of electric pumps

Out of the (57) beneficiaries interviewed. 13 beneficiaries had no irrigation facility before the installation of electric pump sets, while 44 beneficiaries had irrigation facility before the installation of electric pump sets.

Table No. 14

Distribution of beneficiaries who had no irrigation facility formerly by frequency of land irrigated at present and thereby total land irrigated (I-13)

Land irrigated at present (in acres) 1	No. of beneficiaries 2	Total land irrigated (in acres) 3
2	3	6
3	2	6
4	1	4
5	2	10
6	1	6
7	1	7
8	3	24
Total	13	63

Before installation no land was irrigated by these 13 beneficiaries. Now the land irrigated by these (13) beneficiaries is 63 acres.

The rest of (44) beneficiaries had irrigation facility even before the installation of electric pumps. Out of these (44) beneficiaries (16) beneficiaries practiced 'Conventional Appropriate Technology' for the purpose of irrigation and (28) beneficiaries had oil engines for the purpose of irrigation.

Table No. 15

Distribution of beneficiaries who practiced Conventional Appropriate Technology Formerly by frequency of land irrigated formerly and at present and percentage increase in irrigated land thereby (II-16)

(in Acres)

Land irrigated		% increase in irrigated land (%)
Formerly	At present	
1	2	3
2	3	50
1	2	100
2	4	100
2	5	150
2	4	100
3	6	100
2	5	150
2	2	-
3	9	200
2	8	300
3	5	66.66
1	3	200
2	4	100
2	3	50
1	2	100
2	4	100
Total 32	69	

Formerly 32 acres of land was irrigated by 16 beneficiaries, whereas 69 acres of land is irrigated at present by the same (16) beneficiaries. Therefore percentage increase in land irrigated in general is 115%.

Table No. 16

Distribution of beneficiaries who had oil engines formerly by frequency of land irrigated formerly & at present and percentage increase in irrigated land thereby (III-28)

Land irrigated (acres)		% increase in irrigated land (%)
Formerly	At present	
1	2	3
3	3	-
6	9	50
11	11	-
10	10	-
2	6	200
9	9	-
15	15	-
5	5	-
6	8	33.33
4	4	-
2	5	150
2	3	50
3	6	100
5	5	-
9	9	-
2	2	-
6	6	-
2	4	100
6	9	50
5	10	100
6	6	-
6	11	83.3
4	4	-
6	6	-
6	6	-
3	3	-
3	9	200
5	5	-
152	189	

Formerly 152 acres of land was irrigated by 28 beneficiaries, whereas 189 acres of land is irrigated at present by the same 28 beneficiaries. Therefore percentage increase in land irrigated in general is 24%.

Considering I, II and III together, overall increase in land irrigated comes into picture.

Table No.17

Percentage increase in land irrigated by all 57 beneficiaries (I, II and III)

Land irrigated (in acres)	
Before	At present
0	63 I
36	69 II
152	189 III
Total 188	321

Therefore percentage increase in land irrigated by all the (57) beneficiaries is 70 percent.

Table No. 15(a)

Distribution of beneficiaries (II-16) by frequency of percentage increase in individual land irrigated after the installation of electric pumps.

Percentage increase in land irrigated	0	50	66.6	100	150	200	300	
Number of beneficiaries.	1	2	1	7	2	2	1	=16

In this case (7) is the median. In this group, it seems that, the potential of irrigation is not completely utilized by some beneficiaries.

Table No.16(a)

Distribution of beneficiaries (III-28) by frequency of percentage increase in individual land irrigated after the installation of electric pumps.

Percentage increase in land irrigated.	0	33.3	50	83.3	100	150	200	
Number of beneficiaries	17	1	3	1	3	1	2	=28

17 beneficiaries have not increased the irrigated land even after the installation of electric pumps. This indicates that they have been utilizing the potential of irrigation exhaustively since the time they were using oil engines.

Table No. 18

Distribution of beneficiaries according to change in cropping pattern after the installation of electric pumps

Crop	No. of beneficiaries taking the crop		Percentage increase/decrease in the No. of beneficiaries taking the crop.
	Formerly	At present	
1	2	3	4
Paddy	51	49	- 3.92
Jowar	46	42	- 8.70
Wheat	46	55	+ 19.57
Maize	6	11	+ 83.33
Bajra	3	1	- 66.67
Tur	27	18	- 33.33
Moong	25	31	+ 24.00
Urid	11	9	- 18.18
Green Gram	14	23	+ 64.29
Ground nut	23	39	+ 69.57
Chilly	15	28	+ 86.67
Vegetables	4	11	+ 175.00
Chavali	3	6	+ 100.00
Sugarcane	1	3	+ 200.00
Ajma	1	2	+ 100.00
Sunflower	-	1	+ -
Onion	2	8	+ 300.00
Garlic	-	1	+ -
Kulith	5	3	- 40.00
Banana	1	1	(0) -
Bhadla	1	-	- -
Cotton	3	1	- 66.67

This table shows a positivistic change in the cropping pattern after the installation of electric pumps. It is observed that there is percentage increase

in the number of beneficiaries taking cash crops like Ground nut, Chilly, Sugarcane, Ajma etc. There is also an increasing trend of crops like Wheat, Maize, Moong, Green gram, Onion and Vegetables.

They are experimenting with crops like Sunflower and Garlic. There is percentage decrease in the number of beneficiaries taking crops, which do not render much profit.

Profile of Impact (indirect) after the installation of Electric pump sets

Use of Hybrid varieties, Chemical fertilizers, Insecticides and fungicides : Before and After -

Table No. 19

Distribution of beneficiaries by frequency of use of Hybrid varieties, Chemical fertilizers, Insecticides and fungicides : Before and After-

	Use of					
	Hybrid varieties		Chemical fertilizers		Insecticides and fungicides	
1	Before 2	After 3	Before 4	After 5	Before 6	After 7
No. of beneficiaries	16	50	16	54	16	44

The above table reveals that utilization of Hybrid varieties, Chemical fertilizers and Insecticides and fungicides has increased after the installation of electric pump sets.

Additions of Assets

Table No.20

Distribution of beneficiaries by frequency of assets added

	No. of beneficiaries who added to their assets.
I. Purchase of Domestic animals :	
1. Pair of bullocks	- 28
2. Cows	- 3
3. Buffaloes	- 3

It is observed that one beneficiary had purchased eight pairs of bullocks, 4 beneficiaries have purchased 4 pairs of bullocks, 1 beneficiary has purchased 2 cows, and 1 beneficiary has purchased 2 buffaloes. In other cases 1 pair of bullock, 1 cow and 1 buffaloe is purchased respectively.

II. Purchase of Agricultural implements :

It is observed that one Wooden plough has been purchased by (1) person and one Iron plough by an other person.

III. Purchase of Agricultural land :

It is observed that one beneficiary has purchased one and a half acres of land for Rs.5000/-and the other beneficiary has purchased six acres for Rs. 10,000/-.

IV. Share-cropping in others' land :

Two persons are share cropping in others' fields.

V. Installation of Gobar-gas plants :

Two persons have installed Gobar-gas plants.

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Section-III

OTHER FACETS OF THE SCHEME

Implementation of the scheme

Table No.21

Pump sets sanctioned installed, not installed, energised and not energised. (Position upto 30th June 1984 for the area under the jurisdiction of Tribal Development Office, Nandurbar)

Pumps sanctioned	-	1122
Pumps installed	-	1122
Pumps not installed	-	-
Pumps energised	-	1022
Pumps not energised	-	100

Table No.22

Distribution of non-energised pump sets yearwise and according to reason for non energisation.

Year 1	Firm quotations not received 2	Not energised by M.S.E.B. 3	Total 4
1978-79	2	3	5
1979-80	4	5	9
1981-82	9	5	14
1982-83	-	72	72
Total	15	85	100

(Source: 'Information on Electric motor pumps' presented by Directorate of Tribal Development, M.S.Nashik, during the follow-up meeting on 2-8-84 held at Tribal Research Institute, Pune.)

Table Nos. 21 and 22 reveal that 100 pumps were not energised upto 30th June, 1984. 85 pumps are to be energised by M.S.E.B. as the 'firm quotations' for these 85 pumps has already been paid. In case of remaining 15 pumps, the 'firm quotation' is yet to be paid and it is Tribal Development Officer's responsibility to complete this formality as soon as the final sanction is obtained.

It can be seen that the energisation is pending since 1978-79 upto 1982-83. It sounds very strange that M.S.E.B. has not energised 85 pump sets inspite of issuing feasibility certificates. If the location has been declared feasible then why the energisation is delayed ?

It is, therefore essential to take necessary steps in order to get energised these non-energised sets as soon as possible and also such delay in energising the pump sets should be as far as possible avoided or minimised to maximum possible extent.

Faults and Repairs

Table No.23

Distribution of pump sets by incidence of pump sets repaired at least once and pump sets not required repairing at all

No.of pump sets repaired at least once. 1	No.of pump sets not repaired at all(except oiling & cleaning) 2	Total 3
37 (64.91%)	20 (35.09%)	57

Table No.24

Distribution of pump sets by mode of fault, and score of individual faults.

Mode of fault	No. of pump sets	Score of individual faults				Total
		(1-3) times	(4-6) times	(7-10) times	repl-ace-ment	
1	2	3	4	5	6	7
Motor fused	33	25	7	1	-	33
Starter	15	9	2	-	4	15
Shafting bearing	9	8	-	-	1	9
Wiring	2	2	-	-	-	2
Board fused	1	1	-	-	-	1

Fusing of motor is very common. It depends mainly upon the material used for winding of the motors and voltage fluctuations. The starter may be replaced after repairing for about 5-6 times. Shafting-bearing, Wiring and fusing of board are not very common.

Table No.25

Expenses incurred for repairing the set at a single instance of fault.

Mode of fault	Amount required for repairing (at a single instance)	Amount required in case of replace-ment at a single instance.
1	2	3
Motor fused	Rs. 250-300	-
Starter	Rs. 125-150	Rs. 250-300
Shafting bearing	-	Rs. 75-125
Board fused	Rs. 125-150	-
Wiring	-	Rs. 100-150

Maintenance of the pump-set :

a) Cleaning and oiling requires upto Rs. 50/- at a time.

b) Proper management of the accessories.

The accessories include the board, starter, fuse system, wiring etc. It was observed that these accessories are mismanaged in most of the cases. Similarly the motor is not properly covered. The electric pump sets from 'Kirloskar' have been provided with a tin cover for the electric motor, whereas the pump sets, from 'Usha' 'Laxmi' and 'Sangam' have not been provided with tin covers. Hence many of these pumps remain un-protected. Rewinding of motor requires about Rs. 250-300 and in most cases the cultivators can afford to get the motor repaired once in a year or so. Repairing of other items like starter, shafting-bearing, wiring, board is very minor and occurs rarely. Merely oiling and cleaning of the pump set is done very rarely. This is taken care of by the mechanic when he opens the set for repairs.

Table No.26

Period spent for repairing the set, for a single instance of fault :

Period spent	*No.of cases*
2 to 15 days	*(35)*
one year to 2 years	*(2)*

Out of (37) cases of repairs, (35) pump-sets were repaired between 2 to 15 days, while in 2 cases

the pump sets were repaired in the period of one to 2 years. These 2 pump sets required period upto 2 years as the economic condition of the beneficiaries concerned was not satisfactory. Other beneficiaries stated that they promptly got the pump sets repaired so as to prevent the loss of the yield.

Cultivators from all villages are not required to go to Nandurbar always for getting the pump sets repaired. Villages like Dhanora, Gujarbhavali, Natawad, Pimplod and Kothli have mechanics, who undertake motor rewinding. For other faults like starter, shafting-bearing, the repairing is done by private wireman from Nandurbar. For faults in wiring, fuse and Board the repairing has to be done with the help of M.S.E.B. wireman, but the material required for replacement is to be brought from Nandurbar.

Electricity Bill :

Table No.27

Defaulters in payment of Electricity bill

No.of cases in the sample.	-	10	(17.54%)
No.of cases in which power supply was cut.	-	9	(15.79%)

One of the defaulters paid off the arrears within the notice period, hence action was not taken against him.

Table No.28

Distribution of defaulters according to frequency of period for which power supply was cut :

Period 1	No. of cases 2	Percentage 3
10 to 15 days	3	33.3
6 months to one year	4	44.5
4 to 5 years	2	22.2

Accumulations in arrears of electricity bill result mainly due to poor economic condition or negligence on the part of the beneficiaries to pay off the bill in time.

The pump-set, hence may be in non-working condition either due to power supply cut due to arrears of electricity bill, or due to extended repairing period due to poor economic condition or negligence. Such negligence in turn devoids the cultivator of good yield.

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Section-IV

OBSERVATIONS

This scheme is very important and useful for the economic development of the tribals. If the concerned cultivators utilize the pumps in a proper way, they can benefit by increased income and thereby addition of more new assets. This inturn is likely to lead the cultivator towards the achievement of the goal of economic stability.

Information about the scheme :

This scheme of supply of electric pump sets on 100% subsidy was known to the cultivators through various agencies operating at different levels. These include Gram-sevak, Talathi, Police Patil, leaders like Sarpanch, Gram Panchayat Secretary, Panchayat Samitee Sabhapati. Tribal Development Officer and his staff, Ground Water Survey Department Officers, Agriculture Department Officers, Teachers, Newspapers, people in the village. Shetki Vikas Shibir at Dhule etc.

Benefit from the scheme :

Informal discussion with the beneficiaries revealed the following facts : 1) Now crops can be taken in all the seasons, 2) They are economically better off than earlier, 3) Now vegetables can be cultivated, 4) Yield has almost doubled and is adequate for an year, 5) Expenditure has increased but it can be met, 6) Now it is not necessary to work as labourers, 7) The loss of time and man power in irrigation by 'Conventional

appropriate technology' is being saved by the electric pumps.

The data reveals the following facts :

1) Table No. (10) and (11) dealing with the frequency of crops taken before and after the installation of the pump sets reveal that : No beneficiary continues to take only one crop a year.

2) The position of beneficiaries taking (2) and (3) crops formerly has inversly changed after the installation of electric pumps. At present the number of beneficiaries taking (3) crops is more than the number of beneficiaries taking (2) crops. 67% of the beneficiaries are taking 3 crops, while 33% are taking 2 crops.

3) Table No. (12) and (13) dealing with approximate income and expenditure, before and after the installation of electric pumps reveal that there is an increase in income as well as expenditure. The beneficiaries themselves have stated that the increase in expenditure is within reasonable limits.

4) Table Nos. (14),(15),(16) and (17) reveal the quantitative analysis of the land irrigated before and after the installation of electric pumps. Table No. (14) dealing with the group of cultivators, who had no irrigation facility before the installation of pumps, reveals the present position of land irrigated by individual beneficiary and thereby the total land irrigated, which comes to 63 acres.

5) Table No. (15) dealing with the group of cultivators, who practiced 'Conventional Appropriate Technology' formerly for irrigation purpose, reveals the distribution of beneficiaries by frequency of land irrigated formerly and at present and percentage increase in irrigated land thereby. This works out to 69 acres at present from 32 acres in the past. Percentage increase is 115.

6) Table No. (16) dealing with the group of cultivators who formerly had oil engines for the purpose of irrigation, reveals the distribution of beneficiaries by frequency of land irrigated formerly and at present and percentage increase in irrigated land thereby. This works out to 189 acres at present, from 152 acres in the past. Percentage increase is 24. All together the land irrigated by all the (57) beneficiaries, at present comes to 321 acres against 188 acres in the past. Therefore percentage increase in land irrigated by all the (57) beneficiaries is 70.

7) Table No. (15-a) and (16-a) reveal the distribution of beneficiaries by frequency of percentage increase in individual land irrigated after the installation of electric pumps.

8) Table No. (18) dealing with the distribution of beneficiaries according to the cropping pattern before and after and percentage increase/decrease in number of beneficiaries taking the crop, reveals a positivistic change in the cropping pattern after the installation of electric pumps. It is observed that

there is increase in the number of beneficiaries taking cash crops like Groundnut, chilly, sugarcane, Ajma etc. Increasing trend of crops taken like Wheat, Maize, Moong, Green Gram, Onion and Vegetables is also noticed. Trends of experimenting with crops like sun-flower and garlic are also revealed. Percentage decrease in the number of beneficiaries, taking crops, which do not render much profit is also observed.

9) Table No. (19) reveals the increased utilization of Hybrid varieties, Chemical fertilizers and Insecticides and fungicides after the installation of electric pump sets.

10) Table No. (20) reveals the number of beneficiaries who have added to their assets, which includes :-

1) purchase of domestic animals like pair of bullocks, cows and buffaloes, 2) purchase of Agricultural implements like wooden plough and an iron plough, 3)Purchase of Agricultural land, 4) share cropping in others' land, and 5) Gobar gas plant installed,

11) Some of the beneficiaries stated that they do not use Hybrid varieties as they are expensive. While some beneficiaries had a belief that other crops are 'at risk' due to use of Hybrid varieties. A few beneficiaries also said that they did not know about hybrid varieties.

12) Some of the beneficiaries stated that they did not use Chemical fertilizers as they were expensive. While a few of them were ignorant in this matter.

There were some beneficiaries, who were not ready to take the risk of taking the chemical fertilizers either on credit or loan, as they believed that there was no gurantee of the crop.

13) Many of the beneficiaries stated that the insecticides and fungicides were expensive. Equipments like spray pumps, dustrers were expensive and not easily available. Some beneficiaries stated that they dust the powder with hands or with a piece of cloth. A few beneficiaries were totally ignorant in this matter. Most of the beneficiaries make use of insecticides and fungicides only after the onset of pathalogical symptoms on the standing crop. Only one beneficiary stated that he took such prophylactic measures far before the onset of such pathalogical symptoms on the standing crop.

14) Regarding purchase of agricultural implements it was observed that the Adivasi cultivators are not ready to switch off easily from the traditional 'wooden plough'. However few of the beneficiaries interviewed had an iron plough.

15) It was observed that many cultivators do not possess knowledge of the improved varieties. It was stated that at some places the Tribal Development Corporation supplied the cultivators with bags of Urea and Suphala. The cultivators use these chemicals for a wide range of crops. Scientifically 'Diammonium phosphate' is advocated for Ground nut, but this is

not supplied by the Tribal Development Corporation and the beneficiaries blindly use Urea and Suphala for Ground nut.

16) In some cases it was observed that for adequate supply of water, it was necessary to dig the wells deeper; only one beneficiary reported that he had got his well dug deeper and since then the water supply has been adequate. This same beneficiary has purchased (6) Acres of agricultural land for Rs. 10,000. It should be noted here, that this beneficiary could achieve this, because he had two electric pumps. First he took a pump on his own name for a piece of land with a well. This piece of land was in his own name. After few years his wife applied for the pump set for another piece of land, which was in her name.

Selling of the crops :

Those who grow cash crops sell away these crops at earliest. Crop like Sugarcane is sold to the sugar factories. Vegetables are sold mostly in the weekly markets or to the merchants at Tahsil places; Chilly, Ajma, Sunflower seeds, Garlic, Banana, Cotton and Onion are sold in the market. Some cereals and pulses are sold to the Tribal Development Corporation while others are sold to merchants. Many beneficiaries are not satisfied with the rate given by the Tribal Development Corporation and hence the produce is sold to merchants.

Those who do not take cash crops, sell a part of their yield to fulfil their immediate requirements.

Sanction, installation and energisation of pump sets:

Table No. (21) and (22) reveal that, among the non energised pump sets 85% of the sets were not energised by M.S.E.B. inspite of completion of all other formalities. 15% of the sets were not energised by M.S.E.B. as 'firm quotations' were not paid.

Faults and repairs of the pump sets :

Along with the acceptance of benefits of advanced technology, the beneficiaries are well prepared to meet the requirements of maintaining the pump sets, whenever such necessity arises. This is revealed from Table Nos. 23, 24, 25 and 26, wherein this topic has been dealt with.

Payment of Electricity bill :

From Table Nos. 27 and 28, it is observed that about 16% of the total beneficiaries interviewed, were defaulters and their power supply was cut. 78% of these beneficiaries could reinstate the power supply within one year, while 22% of the defaulters took 4 to 5 years for reinstating the power supply.

Remaining beneficiaries are well aware of the consequences of accumulation of arrears of electricity bill, hence they are punctual in this matter so as to avoid the inconvinience and loss thereby.

Thus it is observed that the beneficiaries have certainly benefited from this scheme. Only the extent varies from individual to individual depending upon various other factors. Direct impact is seen in :-

Increased frequency of crops taken after the installation of electric pumps. Increase in approximate income after the installation of electric pumps, increase in the land irrigated after the installation of electric pumps, and a positivistic change in the cropping pattern after the installation of electric pumps i.e. percentage of beneficiaries taking cash crops increased.

Indirect impact is seen from additions of assets such as : purchase of domestic animals, purchase of agricultural implements, purchase of agricultural land, share cropping in others' land, installation of gobar gas plants, and the increasing utilization of hybrid varieties, chemical fertilizers and insecticides and fungicides after the installation of electric pumps.

Thus it can be said that, in the system of plough cultivation, innovations have been incorporated in respect of the use of improved inputs, technology, irrigation etc. Those who got irrigation facility switch on to cash crops like ground-nut, cotton, chilly, sugarcane, Ajma, thus marching towards the goal of economic stability.

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Section-V

SUGGESTIONS

1. Follow up of the beneficiaries :

At present, no systematic follow up of the beneficiaries is done. The follow up should be systematic and on a regular basis. Each and every beneficiary should be contacted twice a year. A printed card may be kept with the beneficiary. During every follow-up visit, the concerned official should make entries in the card.

2. Measures against illegal use of pump :

Such cases are very very rare. There are no directives regarding the action to be taken against those who have mortgaged or sold away the electric pumps.

3. Only providing the tribal cultivators with electric motors is not enough. It is observed that the beneficiaries are in need of practicing modern methods of agriculture and technical guidance for getting maximum possible yield from the available resources and optimum efforts. 'Visit and Training' programme and 'Shetki Vikas Shibirs' should be organised and tribal agriculturists with electric pumps may be given orientation training in modern methods of agriculture. Such programmes may be organised with the co-ordination of the Agricultural Department by the Block Development Officers with the assistance of the Project Officers of I.T.D.Ps.

4. In case the electric pump is installed on the well, a shed may be constructed on it to protect it from rain. If the pump is fitted in the well, a tin cover should be used for protecting the pump. Some part of this expense may be incurred through the scheme of Nucleus Budget.

5. In the Government Resolution it is stated that 'The certificate regarding proper use of the pump during the season of the year for growing more crops shall be given by the Tribal Welfare Officer.....' However, there are no specific instructions, as to how this is to be followed by the Tribal Welfare Officer.

Time Schedule

It is observed that, at present no fixed time schedule is observed as such. However, it is necessary to follow a time schedule inorder to facilitate a better implementation of the scheme. Hence the following time schedule is suggested.

1. Calling and receipt of applications from cultivators by : 30th June.
2. Scrutiny of applications received by the office of Tribal Development Office by - 31st July.
3. Applications to be sent to M.S.E.B. and G.S.D.A. for technical feasibility by - 14th August.
4. Applications to be received with feasibility certificates from M.S.E.B. and G.S.D.A.by - 31st October.
5. Meeting of the task force committee and sanction of the applications by-15th November.

6. Final sanction to be obtained from the Director, Tribal Development by - 30th November.
7. Fixing of agency by the Director, Tribal Development by - 31st December.
8. Supply of electric pumps,
9. Installation of electric pumps and
10. Energisation of electric pumps

} by - 31st March.

It is observed that feasibility certificates are issued by M.S.E.B. according to the number of electric pumps to be sanctioned in that particular year. Also the applications remain pending with G.S.D.A. for a considerable period.

Therefore, it is suggested that M.S.E.B. and G.S.D.A. should scrutinize all the applications received from Tribal Development Officer and send all the applications with or without feasibility certificates to Tribal Development Officer. They should not keep a single application pending at their level. All the applications should be returned to the Tribal Development Officer in the same year within a reasonable period.

Following this would streamline the implementation of the scheme with an increase in efficiency and output.

ssb/5984

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GOVERNMENT OF MAHARASHTRA

EVALUATION OF THE SCHEME OF SUPPLY OF ELECTRIC PUMPS TO TRIBAL CULTIVATORS IN THANE DISTRICT

By

Tribal Research & Training Institute,
Maharashtra State, Pune-1

1983-84

CHAPTER - IV

EVALUATION OF THE SCHEME OF SUPPLY OF ELECTRIC PUMPS TO TRIBAL CULTIVATORS IN THANE DISTRICT

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The Evaluation Study of the scheme of supply of Electric motor pumps to the Scheduled Tribes cultivators in Thane district was undertaken along-with the study of I.T.D.P. Jawhar, Thane District. The main objectives of this study was to assess the impact of this scheme in improving the economic conditions of the tribal people. Besides this the study was undertaken with a view to assess the present position of the supplied pumps.

Supply of Electric Motor Pumps

Agriculture is the main economic activity of the tribals. About 80% of the tribal population is dependent on agriculture. Majority of the tribals grow crops only in rainy season. The crops are millets of inferior quality. In order to enable them to grow more food by way of taking two or three crops in a year there is a need of more Irrigation facilities. With this background, it was felt necessary to provide them with electric motor pumps for taking water from wells/rivers/nalas in other than rainy seasons for their agricultural development by increasing yield from their fields. The Government has introduced a scheme in 1973 in order to supply electric motor pumps-sets to Scheduled Tribe agriculturists on 100% subsidy basis. At present the scheme is implemented by the Directorate of Tribal Welfare, Nashik with the help of Maharashtra State Co-operative Tribal Development Corporation Ltd., Nashik.

Eligibility Criteria

The selection of beneficiary under this scheme is subject to the following conditions :-

(i) Adivasi Farmers should have 2½ to 16 acres of own land with sufficient quantity of water throughout the year either in the well or river nearby.

(ii) The benefits of this scheme are granted to Scheduled Tribe farmers residing in that area.

(iii) The Electric motor pump so installed should not be transferred or sold.

(iv) The beneficiaries are granted electric motor pumps on 100% subsidy basis with the benefit of free installation of pump sets and payment of fitting charges who fulfil the above conditions.

Documents to be submitted

Alongwith the application to the Tribal Welfare Officer, the following documents are required from the Revenue authorities :-

(i) Caste certificate,
(ii) Records of right in respect of land,
(iii) Certificate regarding sufficiency of water from the Ground Water and Survey Department,
(iv) Feasibility certificate from the Maharashtra State Electricity Board.

Financial Provisions under Tribal Sub Plan

The yearwise provisions against the scheme of supply of Electric Motor Pumps on 100% subsidy and the corresponding expenditure incurred is shown in Table No. 1

Table No. 1

Budget Provision and Expenditure under the scheme of supply of Electric Motor Pumps in Thane District

(Rs. in lakhs)

Sr. No.	Year	Budget			Expenditure			Percentage		
		District	I.T.D.P.		District	I.T.D.P.		District	I.T.D.P.	
			I	II		I	II		I	II
1	2	3	4	5	6	7	8	9	10	11
1.	1976-77	4.25	-	-	4.25	-	-	100	-	-
2.	1977-78	1.80	-	-	1.79	-	-	99	-	-
3.	1978-79	4.25	3.08	1.17	3.85	2.38	1.45	90	-	-
4.	1979-80	4.75	3.25	1.50	3.80	3.25	0.55	80	100	37
5.	1980-81	5.00	-	-	5.05	-	-	101	-	-
6.	1981-82	7.00	-	-	3.00	-	-	43	-	-

Table No. 1 reveals that except the year 1981-82, the percentage of actual expenditure to the corresponding Budgetary provisions were maximum. During the year 1981-82, it was 45% only.

Number of Pumps distributed

The tahsilwise/yearwise details of pumps distributed are given in Table No.2.

Table No.2

No.of Electric Pumps distributed on 100% subsidy in I.T.D.P.Thane-I,Jawhar

Sr. No.	Tahsil	Yearwise number of pumps distributed								Percentage with I.T.D.P. Total
		Up to 76-77	76-77	77-78	78-79	79-80	80-81	81-82	Total	
1	2	3	4	5	6	7	8	9	10	11
1.	Dahanu	56	32	25	29	20	9	4	175	43
2.	Talasari	18	24	7	12	-	9	--	70	18
3.	Mokhada	1	4	-	2	4	8	-	19	5
4.	Jawhar	20	29	--	16	5	12	10	92	23
5.	Wada	11	11	2	5	5	5	4	43	11
	Total	106	100	34	64	34	43	18	399	100

The above table indicates that out of 399 pumps, 175 (43%) pumps were distributed only in one tahsil viz. Dahanu. As compared to this the percentage in Mokhada tahsil was very low.

Physical verification

The records maintained by the Tribal Welfare Office show that out of 506 pumps distributed in Thane District 493 were surveyed for physical verification purposes and the position as on 31-12-1981 revealed that only 229 (46%) pumps were in working condition. While 264 (54%) pumps were out of order

due to various reasons. The following table shows number of pumps which were not in order due to various reasons :

Pumps out of order for various reasons in Thane district

Sr. No.	Reason for pumps being out of order	No. of pumps	Percentage
1.	Burnt ...	11	4
2.	Wiring and other repairs ...	32	12
3.	Disconnection due to non-payment of electricity bill. ...	32	12
4.	No water source ...	14	5
5.	Collapse of incomplete well. ...	12	5
6.	Death of beneficiary ...	8	3
7.	Stolen ...	2	0.8
8.	No proper person to handle the pumps. ...	4	1.5
9.	Not interested ...	5	1.9
10.	Long distance ...	1	0.4
11.	Land dispute ...	2	0.8
12.	Land under Dam/Project ...	2	0.8
13.	Not installed ...	37	14
14.	Not energised ...	91	34
15.	Others ...	11	5
	Total pumps out of order	264	54%
	Total pumps in order	229	46%
	Total pumps surveyed	493	100%

The above table reveals that out of 264 pumps which were not in use 128 pump sets 48% (91 not energised + 37 not installed) were not under operation due to the following main reasons :-

a) Foundation was yet to be completed;

b) Formalities for electricity connection were under process.

Case study

In order to have the physical verification and to assess the impact of the scheme, 25 beneficiaries were selected at random and information collected by paying personal visits to these beneficiaries. The following table shows number of beneficiaries visited from each tahsil :-

Table No. 3

Number of beneficiaries visited for case-study

Sr. No.	Tahsil	No. of beneficiaries visited
1.	Dahanu	6
2.	Talasari	5
3.	Mokhada	4
4.	Jawhar	4
5.	Wada	6

By paying personal visits, the information regarding the landholding, source of water, use of motor pumps, irrigation repairs, crops, income, agricultural improvement etc. were collected.

Tribewise distribution

The following table gives distribution of tribal beneficiaries :-

Table No. 4

Tribewise distribution of beneficiaries surveyed

Sr. No.	Name of the tribe	No. of beneficiaries
1.	Warli	14
2.	Mahadeo Koli	2
3.	Malhar Koli	3
4.	Kokana	5
5.	Ka-Thakur	1
	Total	25

Pumps in use

Out of 25 pumps verified, 14 were found to be in working condition. Of these 14 beneficiaries, 8 were Warlis, 2 were Malhar Kolis and 4 were Kokanas. Households according to their land and use.

Table No. 5

Classification of Households according to size of land holdings/area cultivated, irrigable/irrigated

Sr. No.	Land holding size (acres)	No. of house-holds	No. of members	Area			
				Holdings	Cultivated	Irrigable	Irrigated
1	2	3	4	5	6	7	8
1.	$2\frac{1}{2}$ to 5	5	67 (13)	21 (4.2)	13 (2.6)	14 (2.8)	9.5 (1.90)
2.	5 to 12	6	56 (9)	50 (6.3)	27 (4.5)	15 (2.5)	9.5 (1.6)
3.	12 to 16	3	54 (18)	68 (23)	45 (15)	17 (5.66)	14 (4.66)
	Total	14	177 (13)	139 (10)	8.5 (6.1)	46 (3.29)	33 (2.25)

(The figures in the brackets show per household land under various categories.)

The table on the preceding page reveals that 14 pumps were irrigating only 33 acres land. The total irrigable land was 46 acres. The remaining 13 acres of land could not be irrigated due to various reasons :-

(1) Generally the pumps were not under use only during the summer when summer crops required enough water.

(2) The holdings were fragmented.

(3) So also uneven topography had led them to keep certain parts of land without cultivation.

(4) The tribals were always financially handicapped therefore they did not afford improvement towards irrigation development. They could not afford to purchase even a piece of rubber pipe to cover up additional irrigable area under irrigation.

This table also reveals that total holdings were 139 acres whereas land actually cultivated was 85 acres and 54 acres of land was "warkas" land.

Fragmentation of land

With the view of 6 families it was given to understand that nobody was possessing land for more than 3 acres at one place. The land was below 3 acres and was scattered at different places in the piecemeal. The table below will give an idea of the families and of the fragmentation of land.

Families having fragmentation of lond

Sr. No.	Number of beneficiaries			No. of parcels
1.	4	..	..	2
2.	1	..	..	3
3.	1	..	..	5
Total	6	..	..	10

The fragmentation of lands was one of the bottlenecks in agriculture in project area. A quite substantial land had remain uncultivated due to fragmentation. It was, therefore, impossible for a tribal cultivator to look after agricultural operations to more than two pieces of land at one and the same time.

Source of water and its sufficiency

Out of 14 beneficiaries whose pumps were in working condition, 12 had the well irrigation while 2 had river irrigation. The well source for irrigation was insufficient in summer season.

Usage of modern agricultural facilities

All the 14 beneficiaries had reported that they used improved seeds, fertilizers like Urea, Sufala, etc. The seeds were distributed through Panchayat Samiti.

Crops taken after Irrigation

All the beneficiaries had reported that the crops taken after irrigation were wheat and vegetables like Brinjal, Onion, Tommatto, etc. In majority of cases, it was reported that they had used it for their own consumption and had sold the balance in the nearby market.

Change in income level and standard of living

These beneficiaries had realised a change in their income and improvement in standard of living. The distribution of surveyed beneficiaries according to the change in income is given in the following table :-

Change in Income level

Sr. No.	Annual increase in income (Rs)	Number of beneficiaries
1.	Upto 500	3
2.	501 to 1000	4
3.	1001 to 2000	5
4.	2001 to 3000	2
	Total	14

The above table shows that majority of beneficiaries fall in the category who had realised increase in their annual income between Rs. 1001 to Rs. 2000.

These beneficiaries had also improved their standard of living.

Repairs facility and maintenance

All these pumps were handled by the responsible members of the family. Cabins were built up for safety of engines. In case of 8 pumps, the repairs facilities were available beyond 15 kms. distance while remaining 6 beneficiaries had such facility within 6 kms. reach. For repairs they had to depend upon private mechanics.

Electricity supply and billing

All the beneficiaries had expressed their dis-satisfaction towards the electricity supply. As regards billing they had reported that the bills were not received at regular interval. With the result it was difficult for them to clear off the arrears of bills at any one time and ultimately it led to disconnection of electricity supply by the M.S.E.B.

Pumps not in use

Out of 25 pumps verified, 11 pumps were not in use. Of these 11 beneficiaries, six were Warlis, 2 Mahadeo Kolis, 1 Kokana, 1 Katkari and 1 was Malhar Koli. The reasons for non-usage of pumps are given below:-

Reasons for non-usage of pumps in respect of visited beneficiaries

S.No.	Reason for non-usage of pump	No. of pumps
1.	Disconnection by M.S.E.B. due to non-payment of electricity charges.	3
2.	Death of beneficiary ...	2
3.	Pump not working properly ...	2
4.	No electricity connection ...	1
5.	Shortage of manpower ...	2
6.	Insufficient water ...	1
	Total	11

The period in which pumps were not kept in use varies from 1 year to 7 years.

Distribution of pump sets not in use according to period

Sr. No.	Period of pump holding out of order.			No. of pumps
1.	1 to 2 years	..	..	7
2.	2 to 3 years	..	..	2
3.	5 to 7 years	..	..	2
	Total	..	..	11

It was noticed in one place that the electric pump was seen lying idle since the time it was received by the farmer. The pump was given because the beneficiary was having well under construction at that time. But ultimately he could not get water to the well. Therefore, he could not make use of the pump. Had there been proper follow-up to the scheme the same pump could have been given to some other needy farmer for proper use.

The existing schemes of free distribution of electric motor pump or engine-sets to the tribals has not shown the desirable impact in increasing irrigated areas in the tribal areas. The non-involvement of the beneficiaries in installing these pumps or engines had led to a number of these sets becoming inoperative. The scheme needs a drastic change so that in the first place only small holders should receive the advantage of substantial subsidy and further the advantage of the scheme could also be offered to digging of wells by a small holders among the tribals.

Recommendations

On the basis of observations made in the study, the following recommendations are made :-

(a) Efforts be made towards levelling and bunding of land on wider scale. "Bhinar" type of bunding may be preferred. Also the soil conservation by 'Keni' method which uses local manual and bullock power also needs to be taken up on a much larger scale wherever possible. It is a tragedy of the project area that inspite of heavy precipitation, there is scarcity of water during major parts of the year and water harvesting programme is neglected.

(b) More than 50% pumps were found out of order. The Tribal cultivators were not keen for repairs. The necessary follow up machinery should be created in the Directorate of Tribal Welfare. Such administrative set-up should carry out a survey after/every six month's period as to see the working of these pumps.

(c) It was observed that though pumps were installed they were yet to be energised. A list of such pumps should be prepared and M.S.E.B. authorities should be informed for taking immediate action. Unless the pumps were not put to operation the earlier efforts would be futile.

(d) The extension coordinating services of Agcirulture Department should be made available to all beneficiaries under this scheme. A list of such beneficiaries should be supplied to the agriculture branch of the concerned Panchayat Samiti which would subsequently process the matter at their end and will guide these beneficiaries in modern agricultural practices. All the schemes under agriculture sector must be brought to the notice of cultivators at the grass root level.

(e) In order to procure adequate water supply, wells were to be deepened for which bores or drilling had to be done. For this purpose, the guidance of the Ground Water Survey Department was not sought. Therefore, the Tribal Development authorities should contact the Ground Water Survey Department on priority.

(f) The percentage of irrigated land is comparatively very low in project area. However, efforts are needed to protect irrigated crops particularly in summer from all sides. Stray cattle's problem was seen to be a nuisance to the tribals. This was because there had been no proper fencing around the crop. It is, therefore, recommended that in order to protect the irrigated crop financial assistance on loan-cum-subsidy basis should be provided for fencing.

(g) Rural electrification has played an important role for irrigation. The programme of electrification to rural area although had accelerated still this scheme has not covered the entire project area as yet.

The M.S.E.B. should propose and implement a detailed plan of electrification treating Pada/Hamlet as a unit. After the electrification work is over it should be followed by providing of electric pumps to genuine tribal cultivators.

(h) The State Electricity Board should charge the bills at regular intervals of short period so that tribals will not face any financial burden.

(i) Due to irregular electricity supply the electric pumps cannot be utilised fully. In order to avoid this situation, the M.S.E.B. should make maximum efforts to provide a regular electricity supply.

(j) In order to provide water to a fragmented piece of land necessary rubber or steel pipes to these beneficiaries may be supplied on loan and subsidy basis.

(k) The arrangements for repairs of electric motor pumps and oil engines should be made either by the implementing agency or by Maharashtra State Tribal Development Corporation. For this purpose, districtwise mobile units should be established by Director of Tribal Welfare, Nashik or by Maharashtra State Co-operative Tribal Development Corporation under Nucleus Budget. It is therefore suggested that a Reporting Unit may be established either at the Project Officers' level or at the level of Regional Manager of Maharashtra State Co-operative Tribal Development Corporation, Nashik. The repairing services should be made available to the beneficiaries, as early as possible. The necessary accessories, required for repairs, may also be kept at the disposal of the repairing unit.

(l) Supply of covers to electric motor pumps is also necessary as these covers will protect the pumps from water and the possibility of burning of motors will be minimised. It is, therefore, suggested that the supply of covers to motor pumps may be considered.

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CHAPTER - V

OBSERVATIONS AND SUGGESTIONS

1. Non adherance to a Time Schedule

First and the foremost thing observed in the implementation of the scheme is that no fixed time schedule is observed as such. However, it is necessary to follow a Systematic Time Schedule, to avoid the unnecessary delay and to facilitate better implementation of the scheme. Hence the following Time Schedule is suggested.

Time Schedule

1. Calling and receipt of applications from cultivators.
   - by 30th June.
2. Scrutiny of applications received by the office of the Tribal Development Officer.
   - up to 31st July.
3. Applications to be sent by Tribal Development Officer to M.S.E.B. and G.S.D.A. for technical feasibility.
   - up to 14th August.
4. M.S.E.B. and G.S.D.A. should sent all the applications with their technical recommendations (+/-) to the concerned Tribal Development Officer.
   - by 31st October.
5. Meeting of Task Force Committee and sanction of the applications.
   - by 15th November.
6. Final sanction and approval for drawing of draft for the required amount from the Director, Tribal Development.
   - by 15th December.
7. Fixing of the agency by the Director, Tribal Development or Managing Director, M.S.C.T.D.C., and completion of related formalities.
   - up to 31st December.

8. 'Firm Quotations' to be paid to M.S.E.B. by Tribal Development Officer.
- up to 31st December

9. Supply and Installation of the electric pumps by the concerned agency. Test reports to be submitted by the concerned agency to M.S.F.B., and

10. Energisation of electric pumps by M.S.E.B.
- up to 31st March

2. Feasibility certificates, Energisation and Power supply

(a) It is observed that feasibility certificates are issued by M.S.E.B. according to the number of electric pumps to be sanctioned in that particular year. The applications are bound to remain pending with M.S.E.B. and G.S.D.A. for a considerable period.

Therefore, it is suggested that M.S.E.B. and G.S.D.A. should scrutinize all the applications received from the Tribal Development Officer and send all the applications with their recommendations (positive/negative) to the concerned Tribal Development Officer. They should not keep a single application pending at their level. All the applications should be returned to the concerned Tribal Development Officers in the same year within a reasonable period.

(b) Also during the study it was revealed that M.S.E.B. was solely responsible for the delay in the energisation of the electric pumps. It is, therefore essential to take necessary steps in order to get energised the non-energised sets as soon as possible and also such delay in energising the pump sets should be as far as possible avoided or minimised to maximum possible extent. The M.S.E.B. may be persuaded to clear all the cases of non-energisation as a time bound programme.

(c) The M.S.E.B. grants feasibility upto a certain number of poles, taking into consideration the total load upon these poles. The M.S.E.B. should propose and implement a detailed plan of accelerated rural electrification treating a Pada/Hamlet as an unit. This would thereby enable few more genuine tribal cultivators to become eligible for availing the benefit of this scheme.

(d) The M.S.E.B. should charge the bills at regular intervals of a short period, so that the tribals will not face any financial burden as such.

(e) Last but not least M.S.E.B. should make maximum efforts to provide a regular electric supply in order to ensure maximum utilization of the pumps for agricultural purpose.

3. Pendancy of applications

At present the position is such that the applications received for electric pumps from elegible cultivators are in large quantity as compared to the number of pumps that can be sanctioned. This leads to a situation in which there is an accumulation of a large number of applications with: i) Tribal Development Officer, ii) M.S.E.B. and iii) G.S.D.A. Many of the applications remain pending and there is an overall delay.

In addition to adhering to the Time Schedule, also there should be an alignment of all the received applications on first-come-first-serve basis. From the scrutinized applications, the elegible names should be sent to M.S.E.B. and G.S.D.A. for obtaining feasibility certificates. While accepting the time bound schedule the names sent to M.S.E.B. and G.S.D.A. should be restricted to number of electric pumps to be sanctioned + 10% - according to the list prepared on first-come-first-serve basis. If this system is followed then no application would remain pending with M.S.E.B. and G.S.D.A. The applications would

remain pending only at the Tribal Development Officers' office and that is inevitable.

4. Follow up

(a) At present, no systematic follow-up of the beneficiaries is done. The follow-up should be systematic and on a regular basis. In order to fulfil this, a follow-up machinery needs to be set in the Directorate of Tribal Development and Maharashtra State Co-operative Tribal Development Corporation. Each and every beneficiary should be visited twice a year. A printed card may be kept with the beneficiary. During every follow-up visit, the concerned official should make entries in the card. Also a follow-up register should be maintained by the visiting officials, in their offices. Such a follow-up should emphasise upon the cropping pattern, land irrigated, technical guidance regarding maintenance and repairs of the pump sets, adequacy of water, and developments in agricultural land.

In the Government resolution it is stated that 'The certificate regarding proper use of the pump during the season of the year for growing more crops shall be given by the Tribal Welfare Officer, _____'. However, there are no specific instructions, as to how this is to be followed by the Tribal Development Officer. This would come to reality if the follow-up becomes a systematic and a regular feature.

(b) Cases of electric pumps being transferred, mortgaged or sold away are very rare but there are no directives regarding the action to be taken against such beneficiaries. At present the cultivator has to sign an undertaking that he will not mortgage or transfer or sell the pump set. Further it should be necessarily included in the clause, that 'if a beneficiary is found guilty, he will

have to repay the amount fixed by the implementing authority concerned'. The Director, Tribal Development should decide as to what action is to be taken, in cases where the electric pump has been transferred, mortgaged or sold away.

5. Technical standard of the pumps

It is very essential to look into the technical standards of the motor pumps given on subsidy and which are installed on mass scale through some agency. It is likely possible that the beneficiary may suffer if the material used in the sets is of substandard quality.

6. Maintainance

(a) In Thane district it was observed that many beneficiaries, whose pumps were out of order, were not at all keen regarding repairing of the sets. In other districts surveyed this was very rarely observed. In such matters the beneficiaries may be persuded, advised and given a proper technical guidance from time to time through a systematic, regular and a close follow-up. It is, therefore suggested that a Maintainance Unit may be established either at the Project Officers level or at the level of Regional Managers of Tribal Development Corporation.

(b) Except a few villages, the facility of repairing the pump sets is not available in the viscinity nearby. It may therefore be considered that the tribal youths should be given the training of repairing of the electric motor pumps. For such training preference should be given to persons having a set with their family or nearby relatives and this can be done through the Nucleus Budget.

(c) It has been observed that most of the pumps remain uncovered and hence are unprotected. It should be binding upon the installing agency to provide tin

covers for the electric motors at the time of installation itself.

In case the electric pump is installed on the well, preferably a shed may be constructed on it to protect it from rain. If the pump is fitted in the well, a tin cover should be used for protecting the pump. Some part of this expense may be incurred through the Nucleus Budget.

7. Visit and Training Programmes

Only providing the tribal cultivators with electric motors is not enough. It is observed that the beneficiaries are in need of modern methods of agriculture and technical guidance for getting maximum possible yield from the available resources and optimum efforts. 'Visit and Training' Programmes and 'Shetki Vikas Shibir(s)' should be organised and tribal agriculturists with electric pumps may be given orientation training in modern methods of agriculture. Such programmes may be organised with the co-ordination of the extention services of the Agricultural Department by the Block Development Officers and agricultural branch of the concerned Panchayat Samiti and with the assistance of the Project Officers of I.T.D.Ps. All the schemes under the agriculture sector and the modern improved, beneficial methods should be brought to the notice of the cultivators at the grass root level.

8. Other suggestions

Last but not least, the following improvements are essential to ensure a good yield from the available resources and optimum efforts.

i) Some wells are not having sufficient water throughout the year. It is, therefore necessary to dug such wells deeper with the technical guidance of G.S.D.A.

ii) Water harvesting programme should be emphasised upon.

iii) Soil conservation, using local methods, needs to be taken up.

iv) Levelling, bunding, fencing and other improvements in the agricultural land are essential on a wider scale.

v) Beneficiaries having fragmented pieces of lands should be provided with PVC pipes on loan and subsidy basis in order to ensure irrigation facility to such fragmented pieces of lands.

The above programme of various essential improvements should be taken up on loan cum subsidy basis under the guidance of the Project Officers and it would involve co-ordination with various departments and agencies.

Such overall improvements would ultimately result in percentage increase of irrigated land by the tribal cultivators. Thus extracting the maximum of irrigation potential, would ultimately lead them to the goal of economic stability.

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