

CHAPTER NO. 4

CAPITAL EXPENDITURE OF LIFT IRRIGATION SCHEMES

4.1 Introduction

In this chapter we discuss the structure of fixed cost that is initial capital expenditure of the different LIS under study. We have classified the capital expenditure into the following groups:

- A) Expenditure on setting of the pump and erection of pumpset.
- B) Expenditure on pipeline, digging of underground channels and expenditure on valves and booth.
- C) Expenditure on power connection.
- D) Incidental expenditure, which mainly comprises minor labour charges.

4.2 Capital Expenditure of Individual LIS

In Table No. 4.1 on the following page we have given data regarding capital expenditure of individual LIS, selected for the study on the basis of which we can make the following observations:

- (1) On the average and irrespective of the differences

TABLE NO. 4.1
Capital expenditure of individual LIS

Sr.No	H.P.	Item	Items of capital expenditure					Total capi- tal expend- iture
			4	5	6	7	8	
			Rs.	Rs.	Rs.	Rs.	Rs.	
1	2	3						
1	10	Shri Dattatraya Sakharam Patil Ghunaki (Area 6 acres)	2,400 (40.00)	2,850 (47.5)	750 (12.5)	-	6,000 (100)	
2	10	Shri Babuso Anandrao Patil Tandulwadi (area 7 acres)	8,700 (10.51)	73,300 (88.56)	810 (0.98)	-	82,810 (100)	
3	20	Shri Bapuso Bandu Patil Kini (area 10 acres)	9,000 (8.17)	95,000 (86.21)	1,200 (1.09)	5,000 (4.54)	1,10,200 (100)	
4	7.5	Shri Tukaram Rama Patil Kakhe (area 2 acres)	10,200 (63.75)	5,000 (31.25)	800 (5.00)	-	16,000 (100)	
5	7.5	Shri Shahajirao Babuso Patil Pargaon (area 9.22 acres)	13,000 (41.60)	17,500 (56.00)	750 (2.4)	-	31,250 (100)	
55	H.P.	Total area 34.22 acres. Total: →→→	43,300 (17.58)	1,93,650 (78.64)	4,310 (1.75)	5,000 (2.03)	2,46,260 (100)	

Note: Figures in brackets indicate percentage.

in Horse-Power and acreage under LIS, the average proportion of capital expenditure on the various items of fixed cost is as under:

- A) Expenditure on setting of the pump and erection of pumpset - 17.58 per cent.
- B) Expenditure on pipeline, digging of underground channels and expenditure on valves and booth 78.64 per cent.
- C) Expenditure on power connection - 1.75 per cent.
- D) Incidental expenditure, which mainly comprises minor labour charges - 2.03 per cent.

(2) However, if we compare the proportions of capital expenditure of the individual LIS with the group proportion given above, we find significant deviations in respect of each item of capital expenditure. These deviations may be explained because of the following factors:

- (1) Different dates of the purchase of equipment.
- (2) Differences in the horse-power of the pumps.
- (3) Initial purchase of secondhand equipment, mainly the pumps.
- (4) The differences in respect of expenditure on the shed for the pump depending on the quality of the construction.

(3) Capital expenditure on power connection seems to be independent of the differences in the horsepower of the pump, the acreage irrigated. The differences, which are marginal can be explained mainly on the basis of the distance between the point of power connection and mainline of power supply.

(4) It is, however, clear that the capital expenditure on the pipeline, digging of underground channels and constructions of valves or booths, constitutes the largest proportion of capital expenditure of the individual LIS under study.

4.3 Capital Expenditure of Partnership LIS

In Table No. 4.2 on the following page we have given schemewise and itemwise information in respect of capital expenditure of the partnership LIS under study. On the basis of this information we can make the following observations:

(1) On the average and irrespective of differences in Horsepower and acreage under LIS, the average proportion of capital expenditure on the various items of fixed cost is as under:

(A) Expenditure on setting of the pump and erection of pumpset - 15.97 per cent.

TABLE NO. 4.2

Capital expenditure of partnership LIS.

Sr.No	H.No	Name	Items of capital expenditure					Total capital expenditure
			4	5	6	7	8	
			Pump setting & pump shed expenditure	Pipeline, valve and booth expenditure	Power connection	Incidental		
			Rs.	Rs.	Rs.	Rs.	Rs.	
	2	3						
1	10	Shri Mahipati Aba Patil Kakhe (Area 5.50 acres)	12,200 (51.48)	10,500 (44.33)	1,000 (4.22)	-	23,700 (100)	
2	5	Shri Namdeo Krishna Nerlekar Pargaon (Area 15 acres)	6,500 (11.82)	47,500 (86.36)	950 (1.36)	250 (0.45)	55,000 (100)	
3	25	Shri Laxmi Pani Puravatha Mandal, Kini (Area 55 acres)	10,000 (10)	87,000 (87)	3,000 (3)	-	1,00,000 (100)	
4	15	Shri Bhau Hari Mohite Tandulwadi (Area 40 acres)	16,500 (15)	91,260 (82.96)	2,000 (1.81)	240 (0.22)	1,10,000 (100)	
5	7.5	Jay Bajrang Pani Puravatha Sanstha, Ghunaki (Area 21 acres)	16,500 (16.91)	80,000 (82.01)	1,053 (1.08)	-	97,553 (100)	
	62.5	(Total area 136.50 acres)	61,700 (15.97)	3,16,260 (81.88)	5,103 (1.32)	490 (0.33)	3,86,253 (100)	
		Total:						

Note: Figures in parentheses indicate percentage.

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- (B) Expenditure on pipeline, digging of underground channels and expenditure on valves or booth - 81.88 per cent.
- (C) Expenditure on power connection - 1.32 per cent.
- (D) Incidental expenditure, which mainly comprises minor labour charges - 0.13 per cent.

(2) Compared with individual LIS the composition of capital expenditure of partnership LIS seems to exhibit a more uniform nature, though in the case of first unit the deviations are much larger.

(3) As in the case of individual LIS, the capital expenditure on power connection seems to be independent of the differences in the Horsepower of the pump and the acreage irrigated. The differences, which are marginal, can be explained mainly on the basis of the distance between the point of power connection and mainline of power supply.

(4) As in the case of individual LIS, here also, it is seen that capital expenditure on the pipeline, digging of underground channels and construction of valves or booths constitutes the largest proportion of capital expenditure of the partnership LIS under study.

4.4 Capital Expenditure of Cooperative LIS

In Table No. 4.3 on the next page we have given data

TABLE NO. 4.3

Capital expenditure of co-operative LIS.

Sr.No	H.P.	Name of the scheme	Items of capital expenditure					Total capital expenditure
			4	5	6	7	8	
			Pump setting & pumped expenditure	Pipe line, valve and booth expenditure	Power connection	Incidental	Rs.	
1	2	3	Rs.	Rs.	Rs.	Rs.	Rs.	
1	40	Shri Marana Sahakari Pani-Puravatha Seva Sanstha, Ghunaki (Area 120 acres)	25,660.65 (28.90)	56,697.23 (63.86)	2,528.65 (2.85)	3,894.77 (4.39)	88,781.30 (100)	
2	150	Shri Anand Pani Puravatha Seva Sanstha, Pargaon Kodoli (Area 255 acres)	1,40,644.30 (52.64)	1,22,555.70 (45.87)	4,000 (1.50)	-	2,67,200.00 (100)	
3	5	Balbhim Matang Samaj Pani-Puravatha Sahakari Sanstha Kini (Area 11 acres)	5,500.00 (23.91)	13,500.00 (58.70)	1,000.00 (4.35)	3,000.00 (13.04)	23,000.00 (100)	
4	5	Dr. Babasaheb Ambedkar Pani Puravatha Sanstha, Tandulwadi (Area 6 acres)	5,400.00 (21.06)	17,400.00 (69.6)	200.00 (0.8)	2,000.00 (8.00)	25,000.00 (100)	
5	5	Samaj Kalyan Siddhartha Sahakari Pani Puravatha Sanstha, Kakhe (Area-8 acres)	8,808.25 (23.53)	26,034.20 (69.56)	585.00 (1.56)	2,000.50 (5.34)	37,427.95 (100)	
	205	Area 400 acres. Total:	1,86,013.20 (42.14)	2,36,187.13 (53.51)	8,313.65 (1.88)	10,895.27 (2.47)	4,41,409.25 (100)	

Note: Figures in parentheses indicate percentage.

regarding the composition of capital expenditure on 5 co-operative LIS under study, schemewise and in aggregate. On the basis of this data we can make the following observations:

- (1) Group as a whole, the cooperative LIS shows the following structure of capital expenditure:
 - (A) Expenditure on setting of the pump and erection of pumpset - 42.14 per cent.
 - (B) Expenditure on pipeline, digging of underground channels and expenditure on valves or booth 53.51 per cent.
 - (C) Expenditure on power connection - 1.88 per cent.
 - (D) Incidental expenditure, which mainly comprises minor labour charges - 2.47 per cent.

On the whole, it can be observed that the proportion of expenditure on pumpsetting and pumpset is considerably larger than in the case of individual LIS and partnership LIS. Similarly, it can be said that larger cooperative LIS show a large proportion of such expenditure. However, as in the case of individual and partnership LISs the proportion of expenditure on pipeline, digging of underground channels and valves or booths is the highest in the case of cooperative LIS also. Similarly, the proportion of capital expendi-

ture on power connection as in the case of other schemes does not seem to be related with the size of the scheme in any specific manner. In the case of cooperative LIS the proportion of incidental expenditure seems to be slightly more than in the case of individual and partnership LIS.

4,5 Capital Expenditure of Factory-sponsored or Managed LIS

In Table No. 4.4 on the next page we have given data regarding the composition of capital expenditure of factory-sponsored or managed LIS. On the basis of the data given in Table No. 4.4 we can make the following observations:

- (1) Group as a whole the composition of capital expenditure of the factory-sponsored or managed LIS is as under:
 - (A) Expenditure on setting of the pump and erection pumpset - 38.37 per cent.
 - (B) Expenditure on pipeline, digging of underground channels and expenditure on valves or booth - 59.65 per cent.
 - (C) Expenditure on power connection - 1.49 per cent.
 - (D) Incidental expenditure, which mainly comprises minor labour charges - 0.49 per cent.
- (2) It is clearly seen that in comparison with individual and partnership LIS the proportion of capital expend-

TABLE NO. 4.4
Capital expenditure of factory-sponsored or managed LIS.

Sr.	H.P.	Name of scheme	Items of capital expenditure					Total capital expenditure
			Pump setting & pump shed expenditure	Pipe line, volve & booth expenditure	Power connection	Incidental		
1	2	3	4	5	6	7	8	
			Rs.	Rs.	Rs.	Rs./	Rs.	
1	120	Shri Ishwar Parwati Warana Sahakari Pani Puravatha Seva Sanstha, Pargaon (Area 328.32 acres)	1,48,495.35 (38.17)	2,29,171.20 (58.91)	7,700.00 (1.98)	3,662.55 (0.94)	3,89,029.10 (100)	
2	158	Shri Datta Panipuravatha Seva Sahakari Sanstha, Kodoli-Kakhe (Area 202.87 acres)	1,23,626.55 (42.73)	1,48,432.45 (51.31)	11,000.00 (3.80)	6,241.00 (2.16)	2,89,300.00 (100)	
3	20	Shri Warana Sahakari Pani Puravatha Sanstha Kakhe (Area 60 acres)	37,861.23 (40.42)	54,288.58 (57.96)	513.95 (0.55)	996.00 (1.06)	93,659.76 (100)	
4	40	Jay Jawan Jay Kisan Warana Sahakari Pani Puravatha Seva Sanstha, Tandulwadi (Area 50 120 acres)	1,52,274.10 (32.28)	3,13,140.48 (66.38)	6,305.00 (1.34)	-	4,71,719.58 (100)	
5	80	Kisan Warana Sahakari Pani Puravatha Seva Sanstha, Kini (Area 120 50 acres)	1,88,329.08 (38.52)	2,96,360.67 (60.62)	4,210.00 (0.86)	-	4,88,899.75 (100)	
6	40	Shri Mangesh Warana Sahakari Pani Puravatha Seva Sanstha, Ghunaki (Area 120 acres)	2,01,783.59 (41.27)	2,83,749.12 (58.03)	3,400.00 (0.70)	-	4,88,932.71 (100)	
	458	Area 881.19 acres	8523,699.90 (38.37)	13,25,142.50 (59.65)	33,128.95 (1.49)	10,899.55 (0.49)	22,21,540.90 (100)	

Note: Figures in brackets indicate percentage.

iture on pumpsetting and pumpset is considerably larger in the case of factory-sponsored or managed LIS. Compared with cooperative LIS, the proportion of capital expenditure on pumpsetting and pumpset in the case of factory-sponsored or managed LIS is almost similar.

(3) As in the case of other types of LIS the proportion of capital expenditure on pipeline, underground channels, valves and booths is the highest in the case of factory-sponsored or managed LIS.

(4) The proportion of capital expenditure on power connection in the case of factory-sponsored or managed LIS also seems to be independent of the acreage under irrigation and Horsepower capacity of the pumps.

(5) The proportion of capital expenditure of incidental nature, in the case of factory-sponsored or managed LIS is more or less similar to that in the case of other types of LIS.

4.4 The Per H.P. Per Acre Capital Expenditure Structure of LIS

In Table No. 4.5 on the next page we have given data for different types of LIS, on the basis of the standard unit, i.e., per Horsepower, per acre capital expenditure

TABLE NO. 4.5
Per H.P./acre capital expenditure - A comparative picture.

Type of LIS Item	Individual LIS		Partnership LIS		Cooperative LIS		Factory-sponsored LIS	
	Amount Rs. 2	% 3	Amount Rs. 4	% 5	Amount Rs. 6	% 7	Amount Rs. 8	% 9
Pump-setting and shed	23.01	17.58	7.23	16.08	2.26	42.08	2.11	38.36
Pipe-line, channels, valves, booth	102.89	78.64	37.07	82.45	2.88	53.63	3.28	59.36
Power connection	2.28	1.74	0.60	1.33	0.10	1.86	0.08	1.45
Incidental	2.65	2.02	0.06	0.13	0.13	2.42	0.03	0.54
Total:	130.83	100.00	44.96	100.00	5.37	100.00	5.50	100.00

for different types of capital expenditure. By adopting this standard measure we bring the data on a strictly comparable basis. On the basis of this data we can make the following observations:

- (1) It is seen that the relative percentage composition of per H.P. per acre capital expenditure of individual LIS is almost similar.
- (2) Similarly, the per H.P. per acre percentage composition of capital expenditure of cooperative LIS and factory-sponsored or managed LIS are almost similar.
- (3) However, there is a distinct difference between 1 and 2 above. It is seen that the percentage share of capital expenditure on pumpsetting and pumpset is considerably larger in the case of cooperative LIS and factory-sponsored LIS, whereas the relative share of capital expenditure on pipeline and related items is considerably larger in the case of individual LIS and partnership LIS.
- (4) It is interesting to note that percentage share of capital expenditure on power connection is almost the same for all the types of LIS.

If we consider absolute figures of total capital expenditure per Horsepower per acre, we can make the following

observations:

- (1) The per H.P. per acre capital expenditure of cooperative LIS and factory-sponsored LIS is roughly the same, the average being Rs. 5.43.
- (2) If we compare the per H.P. per acre capital expenditure of partnership LIS it is 828 per cent larger than cooperative or factory-sponsored LIS.
- (3) If we compare the per H.P. per acre capital expenditure of the individual LIS it turns out to be 2,409 per cent larger than the similar expenditure in the case of cooperative LIS and factory-sponsored LIS.

On the whole, it can be concluded that the per H.P. per acre capital expenditure of Lift Irrigation schemes with large area under irrigation and with very high H.P. pumps turns out to be many times lower than that of the individual LIS and partnership LIS. To be more precise, large LIS schemes with high H.P. pumps and large area under irrigation seems to be most profitable for the farming community so far as investment cost of LIS is concerned.