

CHAPTER - II

PROFILES OF BHIMA (UJJANI) DAM



C H A P T E R - I I

PROFILES OF BHIMA (UJJANI) DAM

The Government of Maharashtra has undertaken five major irrigation projects named Kukadi (Pune), Bhima (Solapur) Krishna (Sangli, Kolhapur), Varana (Sangli, Kolhapur) and Dudhanganga (Kolhapur) since 1975. The Bhima (Ujjani) Major irrigation project is a boon for the agricultural development of Solapur district. The Bhima (Ujjani) dam has been constructed on the river Bhima at the Ujjani Village and its construction was completed in the year 1986.

The Bhima (Ujjani) dam has the total irrigation potential of 1,29,440 hectares (ICA) flow irrigation and 8500 hectares (ICA) lift irrigation. The seven talukas such as Mahda, Mohol, North Solapur, South Solapur, Malshiras, Pandharpur and Mangalwedha are the benefiting area by left and right canals of the Bhima (Ujjani) irrigation project. The length of this dam is 2467 Km. and its height is 42,855 meter. The net work of the Ujjani dam has spread over 348 Km. with its break up or follows.

A) Ujjani left canals	126 K.M.
B) Begumpur Branch	34 K.M.
C) Cina Branch	76 K.M.
D) Ujjani right canal	112 K.M.
	348 K.M.

The total watershed area of the dam is 14,850 Sqm. which has capacity of 3114 million T.M.C. The total cost of construction of the dam is Rs. 340 crores including the development cost of the benefiting area.

BHIMA (UJJANI) PROJECT

SALIENT FEATURES

1) WATER FLANNING :

Catchment area	..	14.850	Sqm.
Gross storage	..	3114	MM3
Live storage	..	1414	MM3

2) IRRIGATION :

Flow Irrigation	..	1,12,940	Ha.
Lift Irrigation	..	8,500	Ha.
Total Cropped Area	..	1,64,920	Ha.

3) DISCHARGE OF CANAL :

Main Canal	..	109	Cum/Sec.
U.L.B.C.	..	67.5	Cum/Sec.
U.R.B.C.	..	42.5	Cum/Sec.

4) DAM :

Length of Masonary	..	912	Mtr.
Portion	..		
Farthen Portion	..	1555	Mtr.

MAXIMUM HEIGHT OF THE DAM :

Masonry	..	56	Mtr.
Earthen	..	39	Mtr.

5) SPILLWAY :

Length	..	608	Mtr.
Designed flood Discharge	..	18,000	Cum/Sec.
Gates	..	41	Nos. (12m(h)x6.5m)
Irrigation outlets	..	5	Nos. 3m x 3.5 m

6) SUBMERGENCE :

Submergence area	..	29,000	Ha.
No. of villages under submergence	..	51	Nos.
Project affected population	..	47,000	

7) DESCRIPTION OF DAM WORK :

Excavation	..	5,97,000	m ³
Earthwork	..	10,88,000	m ³
Masonry	..	5,25,375	m ³
Concrete	..	1,16,000	m ³

8) DESCRIPTION OF CANAL WORK :

Length of U.L.B.C.	..	126	Km.
Length of U.R.B.C.	..	112	Km.
Branches	..	110	Km.
(Begumpur Branch 34 Kms.) +			
(Branches in Sina Villey 76 Kms.).			

2.1 . FINANCIAL ASPECT OF BHIMA (UJJANI) PROJECT :

The following observations can be made regarding profiles of Bhima (Ujjani) dam in respect of its financial aspects and the main issues of irrigation potential created and its actual utilisation. (See table II-1, II-2, II-3, II-4)

- 1) The finance was made available to this project particularly after 1975 which includes the construction of head work, land acquisition and rehabilitation.
- 2) The work of land acquisition and rehabilitation was almost completed in 1977. Before that morethan 50% of the total expenditure of the construction of Bhima dam was incurred on land acquisition and rehabilitation, particularly in the years i.e. 1972, 1973, 1975 and 1976.
- 3) The expenditure of construction on main canal and its branches increased tremendously at higher rate in 1979, 1982, 1983 to 1989.
- 4) The irrigation potential of Bhima dam was created at faster rate particularly from 1982 which was 37560 hectares. and it increased to 92398 hectares in 1988.

5) However actual utilisation of irrigation potential is a problem. Out of 47560 hectares of potential only 16403 hectares were under utilisation in the year 1983. Potential is increasing at faster rate, but the actual utilisation is increasing of very marginal rate. For example, out of the total irrigation potential of 92398 hectares in 1988, only 44613 hectares were utilised and untapped irrigation potential was 47785 hectares.

6) There are two sources of lift and flow irrigation in which flow irrigation constitutes the greater share. However the percentage share of lift irrigation is fluctuating.

TABLE NO. II-1 : FINANCIAL ASPECT OF BHIMA (UJJANI) PROJECT :

(Amount in lakh)

Year	Total Outlay	Total actual expenditure Head-Work + Acquisition/ Rehabilitation
1965-66	-	4.52
1967	-	5.42
1968	-	15.70
1969	-	29.88
1970	-	76.91
1971	164.16	147.73
1972	236.33	216.35
1973	412.18	378.94
1974	561.54	531.65
1975	721.16	672.04
1976	1403.52	1344.58
1977	1347.90	1260.85
1978	1337.50	1240.06
1979	1364.79	1183.13
1980	1856.38	1725.31
1981	1500.05	1335.23
1982	1304.91	1975.88
1983	1956.83	1721.71
1984	1483.89	1461.14
1985	2122.94	1853.65

Year	Total Outlay	Total actual expenditure Head-Work + Acquisition/ Rehabilitation
1986	2238.81	1763.52
1987	1512.47	1062.95
1988	2197.22	1837.69
1989	2479.57	1722.45

Source : A Note on Bhima (Ujjani) Irrigation project 1988-89.

TABLE NO. II-2 : EXPENDITURE PATTERN OF THE CONSTRUCTION
OF BHIMA (UJJANI) DAM :

Year	Expenditure on		Main canal & branches	Total
	Head Work	Acqui. & Reha.		
1965-66	4.37 (96.68%)	00.15 (3.32%)	-	4.52 (100)
1967	3.72 (68.64%)	1.70 (31.36%)	-	5.42 (100)
1968	6.58 (41.91%)	2.25 (14.33%)	6.87 (43.76%)	15.70 (100)
1969	2.02 (6.96%)	7.13 (23.86%)	20.73 (69.38%)	29.88 (100)
1970	29.78 (38.72%)	13.88 (18.05%)	33.25 (43.23%)	76.91 (100)
1971	88.78 (60.18%)	21.13 (14.32%)	37.62 (25.50%)	147.53 (100)
1972	124.90 (57.73%)	57.13 (26.41%)	34.32 (15.86%)	216.35 (100)
1973	120.91 (31.90%)	198.93 (52.50%)	59.10 (15.60%)	378.94 (100)
1974	126.37 (23.77%)	242.98 (30.53%)	162.30 (30.53%)	531.65 (100)
1975	166.17 (24.73%)	365.76 (54.43%)	140.11 (20.84%)	672.04 (100)
1976	220.63 (16.41%)	726.60 (54.04%)	397.35 (29.55%)	1344.58 (100)
1977	242.31 (19.22%)	357.29 (28.34%)	661.25 (52.44%)	1260.85 (100)

Year	Expenditure on		Main canal & branches	Total
	Head Work	Acqui. & Reha.		
1978	138.58 (11.17%)	123.34 (9.94%)	978.14 (77.62%)	1240.06 (100)
1979	106.01 (8.96%)	41.10 (3.47%)	1036.02 (87.57%)	1183.13 (100)
1980	243.06 (14.09%)	300.97 (17.44%)	1181.28 (68.47%)	1725.31 (100)
1981	116.38 (8.72%)	169.30 (12.68%)	1049.55 (78.60%)	1335.23 (100)
1982	57.06 (4.47%)	33.31 (2.62%)	1185.49 (92.91%)	1275.86 (100)
1983	89.74 (5.22%)	102.84 (5.97%)	1529.13 (88.81%)	1721.71 (100)
1984	89.85 (6.13%)	44.88 (3.07%)	1326.81 (90.80%)	1461.14 (100)
1985	85.88 (4.64%)	44.57 (2.40%)	173.20 (92.96%)	1853.65 (100)
1986	63.10 (3.58%)	71.95 (4.08%)	1628.47 (92.34%)	1763.52 (100)
1987	51.23 (4.82%)	26.28 (2.47%)	985.44 (92.71%)	1062.95 (100)
1988	20.87 (1.14%)	235.24 (12.80%)	1581.58 (86.06%)	1837.69 (100)
1989	28.97 (1.69%)	63.03 (3.64%)	1620.45 (94.63%)	1712.45 (100)

Source : Office of the Bhima Project Circle, Solapur.

TABLE NO. II-3 : IRRIGATION POTENTIAL CREATED AND ACTUAL UTILISATION :

(In Hectares)

Year (June)	Total Potential created (in hectares)	Actual utilisation	Untapped Potential
1979	16700	5309	11391
1980	21400	4999	16401
1981	30400	9180	21220
1982	37560	11990	25570
1983	47560	16403	31157
1984	62560	18467	44093
1985	73025	22417	50608
1986	80016	30188	49828
1987	86525	44198	42327
1988	92398	44613	47785

Source : A Note on Bhima (Ujjani) Irrigation Project 1988-89

The table No. II-3 gives the information about the trend of irrigation potential created and its actual utilisation of irrigation water from June 1979 to June 1988. We can also calculate the untapped irrigation potential of the Bhima (Ujjani) project.

TABLE NO. II-4 : MEANS OF IRRIGATION POTENTIAL AND ITS UTILISATION :

Year	Total Potential	By Lift	%	Total Flow	Utilisation by Lift	% of flow	% of Lift
1979	16700	2000	11.98%	5309	-	100%	NIL
1980	21400	2725	12.73%	4999	-	100%	NIL
1981	30400	6100	20.06%	9180	8460	92.15%	7.85%
1982	37560	8500	22.63%	11990	10051	83.83%	16.17%
1983	47560	8500	17.87%	16403	12662	77.19%	22.81%
1984	62560	12045	19.25%	18467	13262	71.81%	28.19%
1985	73025	12045	16.49%	22417	15883	70.85%	29.15%
1986	80016	12045	15.05%	30188	22635	74.98%	25.02%
1987	86525	12045	13.92%	44198	27133	61.39%	38.61%
1988	92398	12045	30.03%	44613	20884	47.25%	52.75%

Source : A Note on Bhima (Ujjani) Irrigation project 1988-89.

2.2 ORGANISATION AND ADMINISTRATION WORK OF BHIMA (UJJANI) IRRIGATION PROJECT :

The present organisation and administration work for the Bhima (Ujjani) irrigation project consists of two circles at Solapur.

A) BHIMA PROJECT CIRCLE, SOLAPUR :

There are five divisions under this circle.

- 1) Ujjani Canal Division No. I - Bhimanagar.
- 2) Ujjani Canal Division No. III - Solapur.
- 3) Ujjani Canal Division No. VIII - Solapur.
- 4) Ujjani Canal Division No. X-Pandharpur.
- 5) Bhima Canal Design Division - Solapur.

1) UJJANI CANAL DIVISION NO. I - BHIMANAGAR :

Under this Division there are four Sub-Divisions.

- 1) Ujjani Canal Sub-Division No. 2, Bhimanagar.
- 2) Ujjani Canal Sub-Division No. 8, Bhimanagar.
- 3) Masonary Sub-Division, Bhimanagar.
- 4) Earthen Dam Sub-Division, Bhimanagar.

The Main work of this division is as follows :

Residual works of Ujjani Dam, Land acquisition and Rehabilitation Bhima Acqueduct (Completed) and Ujjani left

bank canal Km. 1 to 47 and its Distribution system, Ujjani right bank canal Km. 1 and 2 and construction of Ujjani Hydro Electric Project.

2) UJJANI CANAL DIVISION NO. III - SOLAPUR :

Under this Division there are six Sub-Divisions.

- 1) Ujjani Canal Sub-Division No. 11, Karkam.
- 2) Ujjani Canal Sub-Division No. 13, Ropale.
- 3) Ujjani Canal Sub-Division No. 14, Tungat.
- 4) Ujjani Canal Sub-Division No. 34, Modnimba.
- 5) Ujjani Canal Sub-Division No. 16, Solapur.
- 6) Ujjani Canal Sub-Division No. 56, Ashti.

The main work of this division is as follows :

Ujjani Left Bank Canal Km. 48 to 76 and Km. 85 to 105 and its distribution system. Distributory No. 33 of Extention of Begampur Branch Canal.

3) UJJANI CANAL DIVISION NO. VII, SOLAPUR :

Under this division there are five Sub-Divisions.

- 1) Ujjani Canal Sub-Division No. 15, Patkul.
- 2) Ujjani Canal Sub-Division No. 45, Patkul.
- 3) Ujjani Canal Sub-Division No. 44, Kolegaon.
- 4) Ujjani Canal Sub-Division No. 46, Kolegaon.
- 5) Ujjani Canal Sub-Division No. 49, Karkamb.

The main work of this division is as follows :

Construction of Ujjani Left Bank Canal Km. 77 to 84, Km. 105 to 126 and its distribution system and manufacturing work of pipes at Karkamb, Taluka - Pandharpur. Construction of Kolhapur type War at Aarali.

4) UJJANI CANAL DIVISION NO. X - PANDHARPUR :

Under this division there are five Sub-Divisions.

- 1) Ujjani Canal Sub-Division No. 17, Pandharpur.
- 2) Ujjani Canal Sub-Division No. 47, Ankoli.
- 3) Ujjani Canal Sub-Division No. 57, Begumpur.
- 4) Ujjani Canal Sub-Division No. 58, Begumpur.
- 5) Ujjani Canal Sub-Division No. 64, Ankoli.

The main work of this division is as follows :

Entire work of Begumpur Branch Km. 1 to 34 and Extention of Begumpur Branch from Km. 34 to 52 with its distribution system.

5) BHIMA CANAL DESIGN DIVISION - SOLAPUR :

Under this division there are one Sub-Division and two Sub-Engineer.

The main work of this division is as follows :

Preparation of drawings and designs of structures of Bhima Project as well as Warna and Dudhaganga Project.

B) BHIMA CANAL CIRCLE SOLAPUR :

There are five divisions under this circle.

- 1) Ujjani Canal Division No. V, Pandharpur.
- 2) Ujjani Canal Division No. VI, Pandharpur.
- 3) Ujjani Canal Division No. VII, Solapur.
- 4) Ujjani Canal Division No. IX, Mangalwedha.
- 5) Ujjani Canal Division No. XI, Solapur.

1) UJJANI CANAL DIVISION NO. V - PANDHARPUR :

Under this division there are five sub-Divisions.

- 1) Ujjani Canal Sub-Division No. 21, Shripur.
- 2) Ujjani Canal Sub-Division No. 24, Shripur.
- 3) Ujjani Canal Sub-Division No. 25, Shripur.
- 4) Ujjani Canal Sub-Division No. 26, Shripur.
- 5) Ujjani Canal Sub-Division No. 27, Shripur.

The main work of this division is as follows :

Construction of Ujjani Right Bank Canal Km. 3 to 29
and its distribution system.

2) UJJANI CANAL DIVISION NO. VI - PANDHARPUR :

There are six Sub-Divisions under this Divisions.

- 1) Ujjani Canal Sub-Division No. 28, Tondale Bondale.
- 2) Ujjani Canal Sub-Division No. 29, Bhandishegaon.

- 3) Ujjani Canal Sub-Division No. 30, Bhandishegaon.
- 4) Ujjani Canal Sub-Division No. 31, Tondale Bondale.
- 5) Ujjani Canal Sub-Division No. 32, Pandharpur.
- 6) Ujjani Canal Sub-Division No. 41, Pandharpur.

The main work of this division is as follow :

Construction of Ujjani Right Bank Canal Km. 30 to 65
and its distribution system.

3) UJJANI CANAL DIVISION NO. VII SOLAPUR :

Under this division there are six Sub-Divisions.

- 1) Ujjani Canal Sub-Division No. 37, Mohol.
- 2) Ujjani Canal Sub-Division No. 38, Mohol.
- 3) Ujjani Canal Sub-Division No. 40, Mohol.
- 4) Ujjani Canal Sub-Division No. 60, Mohol.
- 5) Ujjani Canal Sub-Division No. 62, Mohol.
- 6) Ujjani Canal Sub-Division No. 63, Mohol.

The main work of this division is as follows :

Construction of Mohol Branch Km. 1 to 25 with
disnet work.

4) UJJANI CANAL DIVISION NO. IX - MANGALWEDHA :

Under this division there are six Sub-Divisions.

- 1) Ujjani Canal Sub-Division No. 33, Pandharpur.
- 2) Ujjani Canal Sub-Division No. 50, Pandharpur.
- 3) Ujjani Canal Sub-Division No. 51, Pandharpur.
- 4) Ujjani Canal Sub-Division No. 52,, Mangalwedha.
- 5) Ujjani Canal Sub-Division No. 53, Mangalwedha.
- 6) Ujjani Canal Sub-Division No. 22, Mangalwedha.

The main work of this division is as follows :

Construction of Ujjani Right Bank Canal Km. 66 to 112 with its distribution system and extension works.

5) UJJANI CANAL DIVISION NO. XI - SOLAPUR :

Under this division there are seven Sub-Divisions.

- 1) Ujjani Canal Sub-Division No. 20, Kurul.
- 2) Ujjani Canal Sub-Division No. 23, Kurul.
- 3) Ujjani Canal Sub-Division No. 35, Solapur.
- 4) Ujjani Canal Sub-Division No. 36, Mandrup.
- 5) Ujjani Canal Sub-Division No. 42, Solapur.
- 6) Ujjani Canal Sub-Division No. 43, Solapur.
- 7) Ujjani Canal Sub-Division No. 63, Solapur.

The main work of this division is as follows :

Construction of Kurul Branch Km. 1 to 27, Mohol
Karamba Branch Km. 26 to 62 with distribution system
and saudane cut and extension work of Kurul and Mohol,
Karamba Branch.

ORGANISATION AND ADMINISTRATION WORK OF BHIMA (UJJANI)
PROJECT :

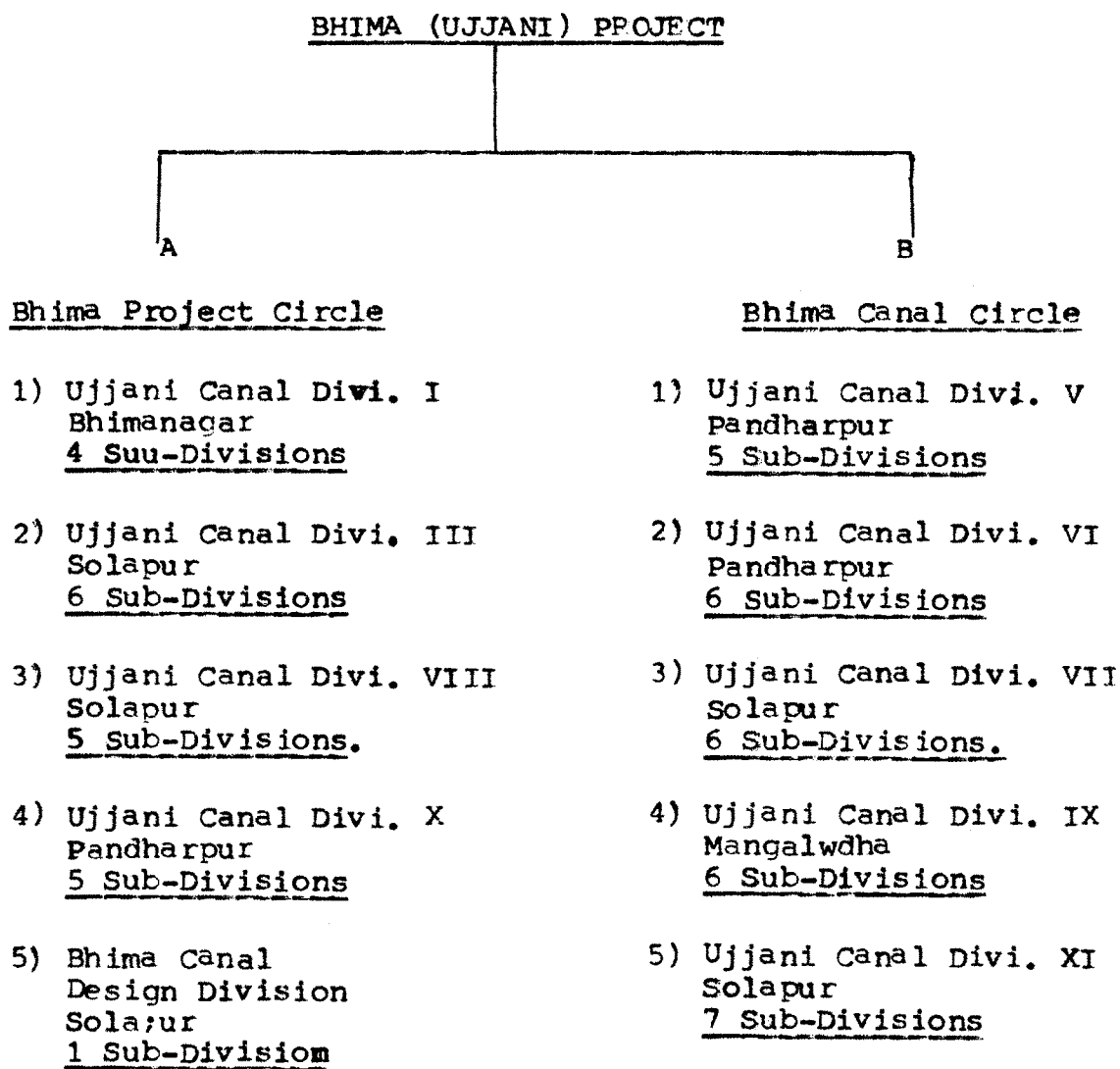


TABLE NO. II-5 : TOTAL LEVEL OF WATER STORAGE AND ACTUAL IRRIGATION POTENTIAL :

Date	Level of water Meter	Gross storage (Million cubic Meter)	Live storage (Million Cubic Meter)
01-10-1975	464.090	-	-
03-08-1976	486.362	909.46	-789.14
01-08-1977	490.482	1596.63	-101.97
02-09-1978	491.447	1826.39	+127.79
13-08-1979	492.802	2075.32	+376.72
29-09-1980	494.327	2357.37	+658.77
31-10-1981	495.372	2653.22	+954.62
15-10-1982	496.137	2877.54	+1178.94
18-08-1983	496.887	3134.16	+1435.56
27-10-1984	496.827	3114.75	+1416.15
21-10-1985	494.972	2339.95	+ 641.37
09-10-1986	495.772	2766.46	+1067.86
26-10-1987	496.022	2838.47	+1139.87
16-10-1988	496.657	3054.20	+1355.06

Dead Storage = 1698.60 Million Cubic Meter.

Live Storage = Gross storage - dead storage.

Reference : Lake level Register Bhima (Ujjani) Irrigation Project, Bhimnagar.

It is clear from the above table No. II-5 that the water storage capacity of the dam has been continuously increasing over the period of 14 years from 1975 to 1988.