COST BENEFIT ANALYSIS FOR BATTISA NALLAH MINOR IRRIGATION PROJECT

ANNEXURE - VI (b)

PARAMETERS FOR EVALUATION OF LOSSES OF FORESTS

SI. No.	Parameters	Minor Irrigation Project
1.	Loss of value of timber, fuel wood and minor forest produce on an annual basis, including loss of man hours per annum of people who are deprived livelihood and wages from the harvest of these commodities.	Loss of timber, fuel wood and minor forest including N.P.V, and compensatory forestation in 91.202 ha x 8.53 lacs per ha = 777.953 lacs. Loss of man hours per annum: 84 families x2 =168 x100 =16800 mandays (which are not fully dependent on forest, they earn livlihood from agriculture for 4 months, NREGS for 3 months). for remining 16800 mandays @ 183.00 = Rs. 30.744 lacs. Hence Total estimated loss = 808.697 lacs
2.	Loss of animal husbandry productivity, including loss of fodder.	Productivity of live stock will not be affected due to construction of the Dam.
3.	Cost of human resettlement.	Resettlement of 84 families = 224.89 Lacs
4.	'	Cost of LT lines in 3 km = 500.00 Lacs Cost of 3 Nos. GLR = 25.00 Cost of Road for 6 km = 1000.00 Lacs Cost of 2 Nos. Primary schools = 38.14 Lacs Total cost of public facilities = 1563.14 Lacs
5.	Environmental losses: (Soil erosion, effect on hydrological cycle, wildlife habitat, micro2 climate, upsetting of ecological balance).	Total forest land proposed for diversion = 91.202 ha. Environmental value of one hectare of fully stocked forest (density 1.0) for a period of 50 years = 126.74 lacs Therefore, considering density of forest = 0.8 total environmental loss for a period of 50 years is worked out as = 91.202 x 0.8x 126.74 = 9247.15 lacs
6.	Suffering to oustees.	Considering Annual income of a house hold as Rs 27000 per annum (As decided by Government of India for BPL families), 1.5 times income for two years i.e 54000 x1.5 multiplied by 84 (The No. of families likely to be displaced) comes out to be Rs. = 68.04 lacs
	TOTAL LOSS (Calculated for 50 years)	11911.92 Lacs



COST BENEFIT ANALYSIS FOR BATTISA NALLAH MINOR IRRIGATION PROJECT PARAMETERS FOR EVALUATION OF BENEFIT, NOTWITHSTANDING LOSS OF FOREST

		\(\frac{1}{2}\) \(\frac{1}2\) \(\frac{1}{2}\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}2\) \(\frac{1}2\) \(\fraca
SI. No.	Parameters	Minor projects
1.	Increase productivity attributable to the specific project	This project is meant for agriculture in 900 ha. And drinking water for 31 villages and 2 towns of Sirohi District. Benefits in Monitary terms is attached in separate sheet.
2.	Benefits to economy	
3.	No. of population benefited	
4.	Employment potential	
5.	Cost of acquisition of facility on non- forest land where feasible	No acquisition of facilities is required other than shown in Annexure VI (B)
6.	Loss of (a) agricultural & (b) non-forest land wherever feasible	Agriculture facilty will increase due to construction of dam, net increse in agriclture is shown on sheet attached.
7.	Cost of rehabilitating the displaced persons as different from compensatory amounts given for displacement	This is a minor irrigation project hence no such cost will arise.
8.	Cost of supply of free fuel- wood to workers residing in or near forest area during the period of construction	No free fuel woud be requred for workers as labour will be engaged by contractor. No departmental labour will be engaged.



COST BENEFIT ANALYSIS FOR BATTISA NALLAH MINOR IRRIGATION PROJECT

BENEFITS OF THE PROJECT IN MONETARY TERMS

Monetary return of the Project for 50 years

I	Annual increase in agricultural production and farm produce after construction of the project = 779.19 Lacs Total increase in production in 50 years = 50x 779.19	38959.50	Lacs
2	Indirect Benefits, increase in employment, increase in water table of near by villages 31200 mandays per year, 1560000 mandays in 50 year @189 = Rs. 2948.00 Lacs	2948.00	Lacs
3	Benfit on account of water supply to the 31 villages and two towns Population of 183281 with present demand of 10100 KLD i.e. Rs. 10.10 lacs per day (assuming Rs 0.10 per litre) Monetary benefit of drinking water for 50 years = 184325.00 Lacs	184325.00	Lacs
	Total Benefits	226232.50	Lacs
	Less Cost of construction of the project (-)	22805.00	Lacs
	Net monetary Benefit	203427.50	Lacs

Calculation of Benefit Cost Ratio	=	203427.50/11911.92

Benefit Cost Ratio = 17.08 : 1

Executive Engineer Water Resources Division Sirohi

BENEFIT COST RATIO STATEMENT - II

		CCA (Ha)		900.00
		Canal Irrigation (Ha)	0.00	450.00
		Cost of Head works (in Lacs)		5235.00
An	nual Receipt			Amount
A.	Before Canal Rehabilitation			127.45
B.	After Canal Rehabilitation			906.64
C.	Net Benefits (B-A)			779.19
Ca	pital Cost or Project Cost			
To	tal Cost of Project			
1	Cost of the Project (Rs.)(cost of hea	d work-share cost(16055-10820))	5235.00
2	Land development charges @2000 p	oer ha. Of 20% ICA	450.00	1.80
		Total		5236.80
Αn	nual Cost			
1	Interest at 10% on the project cost i	ncluding Land		
	development charges			523.68
2	Depreciation of the project @ 2% o	f the Total capital cost		104.74
3	O&M Expenses @ Rs. 352/-ha.			
	As per practice in department			1.58
4	Maintainance Cost @ 1% of Head v	vorks		52.35
		Total		682.35
BI	NEFIT COST RATION @ 10% IN	TEREST		
Sec. 14	NET BEY			779.19
1-1	ANNUAI			682.35
			1.14	: 1
		1		

Assistant Engineer

Water Recourses, Sub Dn., Sarupganj

Executive Engineer WR, Dn. Sirohi

(स्वा प्रकाशस्त्रुमार) उप निदेशक कृषि एवं पदेन परियोजना निदेशक, आत्या विस्तोही

STATEMENT - I

	Before Project Commencement	After Project Commencement
ICA (in Ha.)		450.00
Category	Amount ((Rs. Lacs)
(A) Gross Receipt (1) Gross value of farm prodece for grain	193.45	1124.99
(2) Dung receipts @ 30% of the fodder expenditure Total (A):-	8.71 202.16	33.75 1158.74
(B) Expenses (1) Expenditure on seeds	16.99 13.81	20.16 35.00
(2) Expenditure on manures & Fertilizers (3) Depreciation on implements @ 2.7% of the gross value of produce (4) Share and cash rent @ 5% /3% of the gross value of produce.	5.22 9.67	30.37 33.75
(5) Expenditure on hired Bullock on labour for 4500/- per Ha.(6) Fodder expenditure @ 15% / 10% of the gross value of produce	0.00 29.02	20.25 112.50
(7) LAND REVENUE @ Rs. 15/- per Ha.(As per state revenue rates) Total (B):-	0.00 74.71	0.07 252.10

Assistant Engineer

Net Receipts = Total (A) - Total (B)

Water Resources Sub Dn., Sarupganj

X-

Executive Engineer WR, Dn. Sirohi

127.45

906.64

(हॉ - प्रकाशकुमार) उप निदेशक कृषि एवं पदेन प्रिरोही

PERFORMA FOR BEFORE COMMENCEMENT OF PROJECT FOR RABI CROPS

Table - 1

Existing Cropping Pattern

								The second secon	The state of the s	
70.70	189.00	21.00	136,80	10.20		hoon oon	on area have	sent irrigation	135.80 21.00	
21.75	103.00	1	130.00	1500			310.50	34.50	- 10idi -	
2		2100	1.35	0.15				34.75	Grand Total :-	
2.06				0 47			!	1	edoto or	1
			12.33	1.37	ř		1		No Crops	₹'
3.52		,	40.0				6.21	0.69	Dalpanan	=
10.01			684	0.76			24.04	i	Miletrotad	21
43 07			116.28	76.71			24.04	276	Gram	=
2000			44000	1300			279.45	31.05	n i cat	: -
%CCA	Area (Ha.)	%CCA	Area (Ha.)	%CCA	Area (Ha.)	WCCA	(natifical)	1 3	Wheat	
	Sdo Ctobs	NO				0/00	Area (Ha)	%CCA		
Total	Unimgated having		Crops	Cr	Network	Ne	irrigated	imi	Season Crop	No.
900 Ha	CCA:		Unirrigated having	Unirrinal	Irrigated by Canal	Irrigate	Mem I memell	/liean		S

Assistant Engineer Water Resources Sub Dn., Sarupganj

Executive Engineer Water Resources Dn., Sirohi

प्रेट्टर दिस्टर.
(श्रे. प्रकाशकुमार)
अपितंशक वृद्धि
व्यक्तिमार वृद्धि
क्रियोजन निरुगक, आन्य

Table -2

PERFORMA FOR BEFORE COMMENCEMENT OF PROJECT IN RABI CROPS

Estimated value of production & cost of inputs (irrigated & Unirrigated Area)

ço	Area (Ha.)	Woll	britania bu	Area (Ha.)				100	Total	T	Rate	000	Rate	Rate
No.	Crop	Tubewell	Canal	Unirrigated	Unirrigated having No	Total	Yield	Yield	P	Production	Seeds		Seeds Fertilizers	Seeds Fertilizers Production
		irrigated	Network	9	Crops		Qtl/Ha.	2		per Qti	per Qtl ner Ha	ner Ha	ner Ha nor Ha	ner Ha
	Wheat	279 45	000	116 00	200			W.		201 001	L	L	per na.	per na.
= -	0	04.0.12	0.00	116.28	0.00	395.73	28.00	11080.44	72	1530.00	530.00 3875.00		3875.00	3875.00 3150.00
=	Gialii	24.84	0.00	6.84	0.00	31.68	15.00	475 20	بر	3313.00		1060 00	4960 00 2420 00	4960 00 0420 00 46.24
=:	Mustrated	6.21	000	4000	200				50	10.00	400.00		00.000	4900.00 2430.00
		0.61	0.00	12.33	0.00	18.54	14.00	259.56	31:	3150.00	50.00 500.00		500.00	500.00 3095.00
N	sdoro on		0.00	1.35	189.00	190.35	000	000		100	+	000	200	200
	Grand Total :-	310 50	000	436 00	200		0.00	0.00		0.00	0.00		0.00	0.00
1		010.00	0.00	100.00	189.00	636.30	;	11815.20) SI	:	:		:	:

Assistant Engineer
Water Resources Sub Dn., Sarupganj

Executive Engineer Water Resources Dn., Sirohi - BONNO

Dosk Cheek

(हों. प्रकाशकृतार) उपनिदेशक कृषि एवं परंन

李

परियोजना निरंशक, आत्रा

Table - 3

PERFORMA FOR AFTER COMMENCEMENT OF PROJECT IN RABI CROPS

ii Gram iii Mustrated iv Fennel v Tomato							S. Season Crop	Proposed Cropping Pattern
					C.o.	%	T	
	0.00	0.00	0.69	2.76	31.05	%CCA	Irrigated	
310.50	0.00	0.00	6.21	24.84	279.45	Area (Ha.)	ated	
50.00	16.50	22.50	1.00	2.50	7.50	%CCA	Irrigated Net	
450.00	148.50	202.50	9.00	22.50	67.50	Area (Ha.)	Irrigated by Canal Network	
11.74	0.00	0.00	2.40	7.34	2.00	%CCA	Unirrigat Cr	
105.66	0.00	0.00	21.60	66.06	18.00	Area (Ha.)	Unirrigated having Crops	
:	1	1	1	1		%CCA	Unirriga No (
:	-	1	1	-	:	Area (Ha.)	Unirrigated having No Crops	CCA:
96.24	16.50	22.50	4.09	12.60	40.55	%CCA		900
866.16	148.50	202.50	36.81	113.40	364.95	Area (Ha.)	Total	900 Ha

Assistant Engineer
Water Resources Sub Dn., Sarupganj

Executive Engineer Water Resources Dn., Sirohi 30000

(डॉ. प्रकार) हुनार) अपनिकार कृपि एतं पतं षरियोजना उद्यक्षान, आत्मा सिरोही Dest orex.

Table -4

PERFORMA FOR AFTER COMMENCEMENT OF PROJECT IN RABI CROPS

Estimated value of production & cost of Inputs (Irrigated Area) CCA

Crop Well/ Irrigated by Unirrigated Unirrigated Tubewell Canal having having No Total Vield Vield Network Crops Crops Crops Qti/Ha. Qti	Avg. Total rops Oti/Ha. Oti per Oti	Avg. Total Avg. Total Production Ops Qti/Ha. Qti per Qti	Avg. Total Production Seeds F	Avg. Total Production Seeds Fertilizers Product	Avg. Total Rate Avg. Yield Yield Production Seeds Fertilizers Qti/Ha. Qti per Oti per Ha per Ha
Avg. To Yield Yiel	Avg. Total Yield Yield Product Ops Qti/Ha. Qti per Qt 1530.0 1701.00 3313.0 14.00 515.34 3150.0	Avg. Total Yield Yield Production ops 28.00 1530.00 2313.00 4	CCA 900 Ha Avg. rigated ng No Total Yield Yield Production Seeds Ops QtI/Ha. Qtl per Qtl per Ha. 364.95 28.00 10218.60 1530.00 3875.00 113.40 15.00 1701.00 3313.00 4960.00 36.81 14.00 515.34 3150.00 500.00	CCA 900 Ha Avg. rigated ng No Avg. Yield Total Yield Production Seeds Fertilizers Product ops Qti/Ha. Qti per Qti per Ha. per Ha. per Ha. per Ha. per Ha. 156.3- 113.40 15.00 1701.00 3313.00 4960.00 2430.00 56.35 36.81 14.00 515.34 3150.00 500.00 3095.00 16.23	CCA 900 Ha Avg. rigated ng No Avg. Yield Total Yield Production Seeds Fertilizers Product ops Qti/Ha. Qti per Qti per Ha. per Ha. per Ha. per Ha. per Ha. 156.3- 113.40 15.00 1701.00 3313.00 4960.00 2430.00 56.35 36.81 14.00 515.34 3150.00 500.00 3095.00 16.23
Avg. To Yield Yiel	Avg. Total Yield Yield Product pg No Total Ott/Ha. Ott Product 1330.0 148.50 15687.50 1300.00	Avg. rigated ops Total vield ops Avg. Vield ops Total vield ops Production ops ops 364.95 28.00 10218.60 1530.00 113.40 15.00 1701.00 3313.00 202.50 10.00 2025.00 8500.00 148.50 375.00 55687.50 1300.00	CCA 900 Ha Avg. rigated ng No Total Yield Yield Production Seeds Ops Qtl/Ha. Qtl per Qtl per Qtl per Ha. 364.95 28.00 10218.60 1530.00 3875.00 113.40 15.00 1701.00 3313.00 4960.00 36.81 14.00 515.34 3150.00 500.00 202.50 10.00 2025.00 8500.00 100.00 148.50 375.00 55687.50 1300.00 15.00	CCA 900 Ha Rate Avg. Yield Total Yield Production Production Seeds Fertilizers Product ops Qti/Ha. Qti per Qti per Ha. per Ha. Product 364.95 28.00 10218.60 1530.00 3875.00 4150.00 156.3- 36.81 14.00 515.34 3150.00 500.00 3095.00 16.23 202.50 10.00 2025.00 8500.00 100.00 4200.00 172.13 148.50 375.00 55687.50 1300.00 15.00 5010.00 723.94	CCA 900 Ha Rate Avg. Yield Total Yield Production Production Seeds Fertilizers Product ops A4.95 28.00 10218.60 1530.00 3875.00 4150.00 156.3- 364.95 28.00 1701.00 3313.00 4960.00 2430.00 156.3- 36.81 14.00 515.34 3150.00 500.00 3095.00 16.23 202.50 10.00 2025.00 8500.00 100.00 4200.00 172.13 148.50 375.00 55687.50 1300.00 15.00 5010.00 723.94
Avg. To Yield Yiel	Avg. Total Yield Yield Product per Qt	Avg. Total Yield Yield Production ops	CCA 900 Ha Avg. rigated ng No Total Total Total Yield Production Production Seeds 364.95 28.00 10218.60 1530.00 3875.00 36.81 14.00 515.34 3150.00 500.00 202.50 10.00 2025.00 8500.00 100.00 866.16 70147.44 70147.44 15.00 15.00	CCA 900 Ha Avg. rigated ops Avg. Yield Total Yield Production Seeds Fertilizers Product ops Qti/Ha. Qti per Qti per Ha. per	CCA 900 Ha Avg. rigated ops Avg. Yield Total Yield Production Seeds Fertilizers Product ops Qti/Ha. Qti per Qti per Ha. per
Avg. To Yield Yield Yield Yield Yield Yield 1021 15.00 1021 17.01 17.00 515 10.00 2025 375.00 5568;	CCA Avg. Total Yield Yield Product Qtl/Ha. Qtl per Qt 28.00 10218.60 1530.0 15.00 1701.00 3313.0 14.00 515.34 3150.0 10.00 2025.00 8500.00 375.00 55687.50 1300.00	CCA 900 Avg. Total Yield Yield Production Qtl/Ha. Qtl per Qtl 28.00 10218.60 1530.00 15.00 1701.00 3313.00 14.00 515.34 3150.00 10.00 2025.00 8500.00 375.00 55687.50 1300.00	Avg. Total Yield Production Seeds Qtl/Ha. Qtl per Qtl per Ha. 28.00 1701.00 3313.00 4960.00 14.00 515.34 3150.00 500.00 10.00 2025.00 8500.00 15.00 375.00 55687.50 1300.00 15.00	Avg. Yield Total Yield Production Production Seeds Fertilizers Product Qtl/Ha. Qtl per Qtl per Ha. per Ha. per Ha. 28.00 10218.60 1530.00 3875.00 4150.00 156.3- 15.00 1701.00 3313.00 4960.00 2430.00 56.35 10.00 515.34 3150.00 500.00 3095.00 16.23 10.00 2025.00 8500.00 100.00 4200.00 172.13 375.00 5687.50 1300.00 15.00 5010.00 723.94	CCA 900 Ha Avg. Total Yield Total Production Rate Fertilizers Product Qtil/Ha. Qtl per Qti per Ha. per Ha. per Ha. Product 28.00 10218.60 1530.00 3875.00 4150.00 156.3 15.00 1701.00 3313.00 4960.00 2430.00 56.35 14.00 515.34 3150.00 500.00 3095.00 16.23 10.00 2025.00 8500.00 100.00 4200.00 172.13 375.00 55687.50 1300.00 15.00 5010.00 723.94
To Yie 1021 1701 1701 515 5568	Total Yield Product Qti per Qt 10218.60 1530.0 1701.00 3313.0 515.34 3150.0 2025.00 8500.00 55687.50 1300.00	CCA 900 Total Yield Production Qtl per Qtl 10218.60 1530.00 1701.00 3313.00 515.34 3150.00 2025.00 8500.00 55687.50 1300.00	CCA 900 Ha Total Rate Yield Production Seeds Qtl per Qtl per Ha. 10218.60 1530.00 3875.00 1701.00 3313.00 4960.00 515.34 3150.00 500.00 2025.00 8500.00 100.00 55687.50 1300.00 15.00	CCA 900 Ha Total Rate Vield Production Seeds Fertilizers Product Qti per Qti per Ha. per Ha. Product 10218.60 1530.00 3875.00 4150.00 156.3 1701.00 3313.00 4960.00 2430.00 56.35 515.34 3150.00 500.00 3095.00 16.23 2025.00 8500.00 100.00 4200.00 172.13 55687.50 1300.00 15.00 5010.00 723.94 70147.44	CCA 900 Ha Total Rate Total Production Seeds Fertilizers Product Qti per Qti per Ha. per Ha. Product 10218.60 1530.00 3875.00 4150.00 156.3 1701.00 3313.00 4960.00 2430.00 56.35 515.34 3150.00 500.00 3095.00 16.23 2025.00 8500.00 100.00 4200.00 172.13 55687.50 1300.00 15.00 5010.00 723.94 70147.44
CCA Total Yield Qtl 10218.60 1701.00 1701.00 515.34 2025.00 55687.50	Product per Qt 1530.0 3313.0 3150.0 8500.0 1300.0	Production per Qti 1530.00 3313.00 3500.00 1300.00	Production Seeds Production Seeds Per Qti per Ha. 1530.00 3875.00 3313.00 4960.00 3150.00 500.00 8500.00 100.00 1300.00 15.00	Rate Rate Production Seeds Fertilizers Product per Qti per Ha. per Ha. per Ha. 1530.00 3875.00 4150.00 156.3 3313.00 4960.00 2430.00 56.35 3150.00 500.00 3095.00 16.23 8500.00 15.00 5010.00 723.94	Rate Rate Production Seeds Fertilizers Product per Qti per Ha. per Ha. Product 1530.00 3875.00 4150.00 156.3 3313.00 4960.00 2430.00 56.35 3150.00 500.00 3095.00 16.23 8500.00 15.00 5010.00 723.94
	Product per Qt 1530.0 3313.0 3150.0 8500.00	900 Production per Qti 1530.00 3313.00 3150.00 8500.00	900 Ha Rate Production Seeds per Qti per Ha. 1530.00 3875.00 3150.00 4960.00 3150.00 100.00 1300.00 15.00	900 Ha Rate Production Seeds Fertilizers Product per Qti per Ha. per Ha. Product 1530.00 3875.00 4150.00 156.3a 3313.00 4960.00 2430.00 56.35 3150.00 500.00 3095.00 16.23 8500.00 15.00 5010.00 723.94	800 Ha Rate Production Seeds Fertilizers Product per Qti per Ha. per Ha. per Ha. 1530.00 3875.00 4150.00 156.3a 3313.00 4960.00 2430.00 56.35 3150.00 500.00 3095.00 16.23 8500.00 15.00 5010.00 723.94

Assistant-Engineer
Water Resources Sub-Dn., Sarupganj

Executive Engineer Water Resources Dn., Sirohi

पि हुआ देखार (क्रे.प्रकाशकुमार) अपनिकास कृषि प्रतिकास कृषि