Cost Benefit Ratio

CALCULATION OF COST BENEFIT RATIO AS PER NEW GUIDELINES			
S.NO		Description	Amount In Lakhs
1	i	Estimated cost of project	411972.00
	ii	Cost -of land re development at Rs 2000/ per hectare(Assumed). For C.C.A. 1.214 Lakhs Hectare.	2428.00
	iii	Estimated cost of forest diversion	17491.65
		Total Estimated cost of project	431891.65
	ANNUAL BENFITS:		
2	A	**Grass value produce for post -project**	
		Grass value produce for post -project (A)	80058.32
	B	**Grass value produce for pre -project**	
	i	Cultivated command area produce pre-project	6628.86
	ii	Loss of Agriculture production in land going out of cultivation project area and distribution system etc	662.83
	iii	Loss of Agriculture production in land going out of cultivation project area under submergence of dindi balancing reservoir	98.55
		Total Grass value pre -project (B)	7390.24
		Net annual Agricultural benefits due to project (E)= A-B	72668.08
	C	**Other net annual benefits** due to aquaculture including pisciculture, drinking water & industrial water, animal husbandry, plantation on reservoir periphery	
	i	Drinking water supply (70.86 M Cum @ 100 Lakhs per M cum)	7086.00
	ii	Power saving due to Gravity instead of lifting 30 TMC water (Rate for 1 T.M.C @ 600 Lakhs)	18000.00
	iii	Fisheries (Average Reservoir area X 250 Kg/ Ha X Rate per Kg) 1511 Ha X 250 Kg/Ha X Rs per Kg 90 = 340.00 Lakhs	340.00
	iV	Economic benefits due to compensatory afforestation	3122.61
		Total Value of other Benefits (C)	28548.61
		Total Net Annual Benefits(F)= E+C	101216.69
iii	D	**ANNUAL COST:**	
	a	Interest capital@ 10 % of Estimated total cost of project	43189.16
	b	Deprecation of the project at 1% of the cost of project assuming the life of project 100 Years	4318.92
	c	Annual operation and maintenance at Rs 250 per Hectare for 1.214 Lakhs Hectare grass irrigated area	303.50
		Total Annual cost (D)	47811.58

COST BENEFIT RATIO : $\frac{\text{Annual Benefits (F)}}{\text{Annual Cost (D)}} = \frac{101216.69}{47811.58} = 2.12$

EE

SE

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STATEMENT SHOWING GRASS VALUE OF PRODUCE UNDER POST PROJECT CONDITIONS

S.NO	Crop	Area in Ha	Yield for Ha in quintals	Gross for Ha in quintals	Rate for quintals	Gross value of produce in Lakhs	Remarks
1	Cotton	12141.00	30.00	364230	4374	15931.42	
2	Chillies	36422.50	20.00	728450	1802	13126.66	
3	Ground nut(Khariff)	18211.00	14.00	254954	4950	12620.22	
4	Ground nut(Rabi)	36422.50	14.00	509915	4950	25240.79	
5	Pulses	18211.00	15.00	273165	4810	13139.23	
		121408.00			TOTAL	80058.32	

STATEMENT SHOWING GRASS VALUE OF PRODUCE UNDER PRE PROJECTCONDITIONS

S.NO	Crop	Area in Ha	Yield for Ha in quintals	Gross for Ha in quintals	Rate for quintals	Gross value of produce in Lakhs	Remarks
1	Jawar	60704	5	303520	1365	4143.04	
2	Bajra	60704	3	182112	1365	2485.82	
	Total	121408		485632		6628.86	

a) Loss of agriculture Production in lands going out cultivation in project area for canal distribution system etc.

S.NO	Crop	Area in Ha	Yield for Ha in quintals	Gross for Ha in quintals	Rate for quintals	Gross value of produce in Lakhs	Remarks
1	Jawar	6070	5	30350	1365	414.27	
2	Bajra	6070	3	18210	1365	248.56	
	Total	12140		48560		662.83	

b) Loss of agriculture Production in lands going out cultivation in project area for canal distribution system etc.

S.NO	Crop	Area in Ha	Yield for Ha in quintals	Gross for Ha in quintals	Rate for quintals	Gross value of produce in Lakhs	Remarks
1	Jawar	466	5	2330	1365	31.80	
2	Bajra	466	3	1398	1365	19.08	
3	paddy	234	12.6	2948.4	1617	47.67	
	Total	1166				98.55	

ABSTRACT

Table-B- Estimation cost for forest diversion

S.No	Parameters	Amount in Lakhs	Remarks
1	Ecosystem services losses due to proposed forest diversion	7355.04	Estimated value as per Guidelines
2	Loss of animal husbandry productivity including losses of fodder	176.47	Estimated value as per Guidelines
3	Cost of human resettlement	–	No Resettlement issues in forest land as no tribal's are involved
4	Loss of public facilities and administrative infrastructure(roads,buildings,schools,dispensaries,electric lines, railways etc..) which would require forest land if these facilities were diverted due to the project	1500.00	Relocating of roads due to submergence (Length of road is 15 Km). considered approximate Rate for 1KM=100 Lakhs
5	Possession value of forest land diverted	529.45	Estimated value as per Guidelines
6	cost of suffering to oustees	–	No Resettlement issues in forest land as no tribal's are involved
7	Habitat Fragmentation cost	882.43	Estimated value as per Guidelines
8	Compensatory a forestation and soil & moisture conservation cost	7048.255	Estimated value as per Guidelines
	Total	17491.645	

Table-C- Estimating benefits of forest-diversion in CBA

S.No	Parameters	Amount in Lakhs	Remarks
1	Increase in productivity attribute to specific project	80058.32	Increased the productivity 1,21,408 Ha
2	Benefits to economy due to the specific project	28548.61	As per DPR
3	No of population benefited due to specific project	–	Approximately 15 Lakhs population
4	Economic benefits due to direct and indirect employment due to project	–	3 Lakhs Man days agricultural labour & industrial sectors
5	Economic benefits due to Compensatory afforesation	3122.61	-

Estimation cost for Forest diversion								
S.NO	PARAMETERS	Forest area falling in	Area in Ha	NPV per HA in lakhs	NPV	Factor	Total Amount	Remarks
1	Ecosystem services losses due to proposed forest diversion	Core	200.2062	6.26	1253.291	5	6266.45	5 time of noraml NPV
		Buffer	23.0432	6.26	144.2504	5	721.25	5 time of noraml NPV
		ESZ	58.6809	6.26	367.3424	1	367.34	1 time of noraml NPV
						Total	7355.04	
S.NO	PARAMETERS	Forest area falling in	Area in Ha	NPV per HA in laKhs	NPV	Factor	Total Amount	Remarks
2	Loss of animal husbandry productivity including losses of	Core	200.2062	6.26	1253.291	10%	125.32	10 % NPV value
		Buffer	23.0432	6.26	144.2504	10%	14.42	10 % NPV value
		ESZ	58.6809	6.26	367.3424	10%	36.73	10 % NPV value
						Total	176.47	
S.NO	PARAMETERS	Forest area	Area in Ha	NPV per HA in	NPV	Factor	Total Amount	Remarks
3	Possessive value of forest land diverted	Core	200.2062	6.26	1253.291	30%	375.98	10 % NPV value
		Buffer	23.0432	6.26	144.2504	30%	43.27	10 % NPV value
		ESZ	58.6809	6.26	367.3424	30%	110.2	10 % NPV value
						Total	529.45	
S.NO	PARAMETERS	Forest area	Area in Ha	NPV per HA in	NPV	Factor	Total Amount	Remarks
4	Habitat Fragmentation cost	Core	200.2062	6.26	1253.291	50%	626.64	10 % NPV value
		Buffer	23.0432	6.26	144.2504	50%	72.12	10 % NPV value
		ESZ	58.6809	6.26	367.3424	50%	183.67	10 % NPV value
						Total	882.43	
5	Compensatory a forestation and	281.9302X25 Lakhs=					7048.255	Taken approximate Rate 25.00 Lakhs for
6	Loss of public facilities and administrative infrastructure(road	15 X 100=1500 lakhs						Taken approximate Rate for 1 KM =100 lakh.(Detaille survey under Progress)

Calculation of Economic benefits of Compensatory aforestation				
S.No	years	Incremental value for every year	incremental Amount Benefit(Laks)	Remarks
1	1		98.39	Benefit cost taken for 1Ha /year = Rs 35000 (281.9302 Ha X Rs. 35000)
2	2	(5%+ 98.39)	103.31	
3	3	(5%+103.91)	108.48	
4	4	5%+108.48)	113.91	
5	5	(5%+113.61)	119.61	
6	6	(5%+119.61)	125.60	
7	7	(5%+125.60)	131.88	
8	8	(5%+131.88)	138.48	
9	9	5%+138.48)	145.41	
10	10	(5%+145.41)	152.69	
11	11	(5%+152.68)	160.33	
12	12	(5%+160.33)	168.35	
13	13	5%+168.35)	176.77	
14	14	(5%+176.77)	185.61	
15	15	(5%+185.61)	194.90	
16	16	(5%+194.90)	204.65	
17	17	(5%+204.65)	214.89	
18	18	(5%+214.89)	225.64	
19	19	(5%+225.64)	236.93	
20	20	(5%+236.93)	248.78	
21	21	(5%+248.78)	261.22	
22	22	(5%+261.22)	274.29	
23	23	(5%+274.29)	288.01	
24	24	(5%+288.01)	302.42	
25	25	(5%+302.42)	317.55	
26	26	(5%+317.55)	333.43	
27	27	(5%+333.43)	350.11	
28	28	(5%+350.11)	367.62	
29	29	(5%+367.62)	386.01	
30	30	(5%+386.01)	405.32	
31	31	(5%+405.32)	425.59	

32	32	(5%+425.59)	446.87	
33	33	(5%+446.87)	469.22	
34	34	(5%+469.22)	492.69	
35	35	(5%+492.69)	517.33	
36	36	(5%+517.33)	543.20	
37	37	(5%+543.20)	570.36	
38	38	(5%+570.36)	598.88	
39	39	(5%+598.88)	628.83	
40	40	(5%+628.83)	660.28	
41	41	(5%+660.28)	693.30	
42	42	(5%+693.30)	727.97	
43	43	(5%+727.97)	764.37	
44	44	(5%+764.37)	802.59	
45	45	(5%+802.59)	842.72	
46	46	(5%+842.72)	884.86	
47	47	(5%+884.86)	929.11	
48	48	(5%+929.11)	975.57	
49	49	(5%+975.57)	1024.35	
50	50	(5%+1024.35)	1075.57	
		Total	20614.25	

Benefits from CA	20614.25	Lakhs
Estimate of cost of forest diversion	17491.65	Lakhs
Economic benefits due to CA	3122.61	Lakhs

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