

**KANHAR IRRIGATION PROJECT, U.P.
B.C. RATIO CALCULATIONS**

		(Rupees in Lacs)	
		Pre Project	Post Project
A. GROSS RECEIPTS			
1	Gross value of farm produce	3740.77	52603.61
2	Dung receipts (30% of B-2)	168.34	1578.11
3	Total (A) Gross receipts	3909.11	54181.72
B. EXPENSES			
1	Expenditure on seeds, manure, fertilizers and hired labour	1152.86	10221.83
2	Fodder expenses (15% for pre & 10% at post project of A1)	561.12	5260.36
3	Depreciation (2.7% of A1)	101.00	1420.30
4	Share & Cash rent 5% for pre & 3% for post period of A1)	187.04	1578.11
5	Land Revenue (2% of A1)	74.82	1052.07
	Total (B) Expenses	2076.84	19532.67
C. NET VALUE OF FROM PRODUCE			
1	Total Gross Receipts	3909.11	54181.72
2	Total Expenses	2076.84	19532.67
3	Net Value (1-2)	1832.27	34649.05
D. NET BENEFIT			
1	Net Value after project	34649.05	
2	Net value before project	1832.27	
3	Loss of agri. Produce due to submergence	0.00	
4	Net Annual Agricultural Benefit (1-2-3)	32816.78	
E. Net Benefit from fisheries			
	Spread level of reservoir at FRL=3200ha		
	Spread level of reservoir at MDDL=2200ha		
	Average spread Area of reservoir = 2700ha.		
	Net Benefit from fisheries=2700ha. @ 1.9lacs per hect	5130.00	
	Net Grand Total Benefit from this project (D+E)	37946.78	
E. COST			
	Capital cost of project	225229.22	
	Cost of land development @ Rs. 20000/ha. For 26075 Ha.	5215.00	
	TOTAL COST OF THE PROJECT	230444.22	
F. ANNUAL COST			
1	Interest on capital @ 10% of capital cost	23044.42	
2	Depreciation of the project @ 1% of the Capital cost (less cost of land development)	2252.29	
3	Depreciation of the pumping system 8.33% of the estimated cost (Rs 270.45 lac) of pumping system	22.53	
4	Depreciation of the rising main @ 3.33% of estimated cost Rs 14.83 lacs assuming lift 30 year	0.49	
5	Charge for power for lift irrigation @ Rs. 1900/Ha for 1100	5.50	
6	Annual operation and maintenance charges @ Rs. 1175/ha for 35467 ha. Area irrigated.	416.74	
7	Maintenance of the head works @ 1% (less A, B, P, Q, X, Y)	1051.46	
	TOTAL ANNUAL COST	26793.43	

B.C. Ratio = $\frac{37946.78}{26793.43}$ **1.42**

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KANHAR IRRIGATION PROJECT, UTTAR PRADESH

SALIENT FEATURE

1	Name of the project	:-	KANAHAR IRRIGATION PROJECT
2	River Basin		
	a) Name	:-	Son Basin
	b) Located in		
	(i) States		
	(ii) States (if inter state river)		U.P., Bihar, Chhattisgarh and Jharkhand
	(iii) Countries (if International river)		
3	Name of		
	a) River	:-	Kanahar River
	b) Tributary	:-	Son River
	c) State(s)	:-	U.P., Chhattisgarh and Jharkhand
	d) District		
	(i) Reservoir	:-	Sonbhadra (U.P.), Sarguja (Chhattisgarh), Garwa (Jharkhand)
	(ii) Head Works	:-	Sonbhadra (U.P.)
	(iii) Command area	:-	Sonbhadra (U.P.)
	e) Taluka(s) / Tehsil(s)	:-	
	(i) Reservoir	:-	Dudhi (U.P.), Ramanujgang, Ambikapur (Chhattisgarh), Dhurki, Garhwa, (Jharkhand)
	(ii) Head Works	:-	Dudhi (U.P.)
	(iii) Command area	:-	Dudhi, Robertsgang (U.P.)
	f) Village near the HeadWorks	:-	Amwar (U.P.)
4	Location of Head Works		
	(i) Longitude		83°-17' E
	(ii) Letitude		24°-08' N
5	Project area reference to degree sheets		63 P/4, P/7, P/8
6	<u>Access to the project</u>	<u>Name</u>	<u>Distance from project site</u>
	(i) Rail Head	:-	Dudhi R. S. 13 Km.
	(ii) Road head	:-	Dam site 500 M.

7	Estimated life of the project (Years)	:-	100 Years	
8	Type of projects (Irrigation/Multipurpose)	:-	Irrigation	
9	Irrigation (Ha)			
a)	Gross commanded area (GCA)	:-	37320	Ha.
b)	Culturable area in U.P. (CCA)	:-	26075	Ha.
c)	Area under irrigation (break up)			
	(i) Kharif	:-	21121.00	Ha.
	(ii) Rabi	:-	14342.00	Ha.
	(iii) Gross Irrigated area (GIA) (U.P.)	:-	35463.00	Ha.
	(iv) Intensity of irrigation	:-	136%	
d)	Cost per hectare of gross area irrigated (U.P.)	:-	Rs. 635110.47	/Ha.
e)	Cost per 1000 Cum. Of gross/live storage	:-	29237/53443	
10	Water Supply (Domestic)			
a)	Names of town / Village served	:-	Dudhi, Bagharu	
b)	Size if population served	:-	More than 2.0 Lacs	
c)	Quantum of water made available	:-	1000 Cum.	
d)	Quantum of water per capita (liter)/day	:-	400	
11	Quantum of water for industrial use	:-	Nil.	
12	<u>Project performance</u>		<u>Period</u> <u>Simulation</u>	<u>No of</u> <u>failure</u>
	Irrigation	:-	28	4
13	Catchments area at headwork site (Km ²)			
a)	Gross	:-	4584	
b)	Intercepted (by contemplates project)	:-	3064	
c)	Unintercepted	:-	1520	
14	Precipitation			
	Catchment period of record 1961-2011			
a)	Average			Rainfall (weighted mm)
b)	Maximum			3590
c)	Minimum			6180
d)	Coefficient of variation			11.1
				1.043
				Monsoon (June - Oct.)

15 Command

Cropping Season

		Kharif (June-Oct)	Rabi (Nov-Feb)	Hot weather (Mar-May)
a) Average	-	841	30	34
b) 80 Percent dependable	-	669	19	8
16 Annual yield calculated at the proposed site (M cum) period of record 1976-2004		(June-Oct)		
a) Maximum	-	4723		
b) Minimum	-	598		
c) Average	-	2105		
d) Dependable (percent)		Monsoon (June-Oct)		
(i) 50	-	1525		
(ii) 75	-	1218		
(iii) 90	-	1101		
(iv) 98	-	598		
17 Utilization with in the state (Mcum)	-			
18 State share in case of interstate	-	Nil		
19 Committed utilization				
a) Up stream major medium minor				
(i) Project completed	-	Nil		
(ii) Project under construction	-	Nil		
(iii) Further project	-	Nil		
(iv) Any others	-	Nil		
b) Down streame major medium minor				
(i) Project completed	-	Nil		
(ii) Project under construction	-	Nil		
(iii) Further project	-	123		
(iv) Any others		Nil		
20 Proposed utilization by the project				
a) Kharif	-	81		
b) Rabi	-	55		
c) Total	-	136		

21	Reservoir Water Level (El-m)	
a)	Maximum water level	:- 267.920
b)	Full reservoir level	:- 265.552
c)	Minimum draw down level	:- 260.212
d)	Dead storage level	:- 260.212
22	Free board (m)	:- 3.00
23	Wave height (m)	:- 2.00
24	Live storage (Mcum)	:- 122.11
25	Capacity at (Mcum)	
a)	Full reservoir level	:- 223.21
b)	Minimum draw down level	:- 101.10
c)	Dead storage level	:- 101.10
26	Sedimentation (Mcum)	:- After 50 year
a)	Above MDDL	:- 10.40
b)	Below MDDL	:- 88.90
c)	Encroachment of live storage (Percent)	:- 8.50%
27	Assumed annual losses evaporation from the reservoir (Mcum)	:- 24.70
28	Land and property submerged	
a)	Village affected (Nos)	:- 19
b)	Land affected (Ha.)	
(i)	Gross	:- 4088.13
(ii)	Culturable	:- 1747.97
(iii)	Irrigated	:- Nil
c)	Building/house (no.)	
(i)	Private	:- 1018
(ii)	Communities	:- 10
d)	Well (no.)	:- 224 (Kuchcha), 41(pukka)
29	Submergence ratio (with reference to culturable) command area	:- 0.067
30	Number of families affected	:- 2278
31	Headworks	:-

32	Dam		
33	Type of dam	:-	
	a) Homogenous/zoned/Rockfill	:-	Homogenous zoned in river gap
	b) Length of the dam at top (m)		
	(i) Right flank	:-	1240
	(ii) Left flank	:-	1749
	c) Top width (m)	:-	9.16
	d) Maximum height above G.L.(m)		
	(i) Right flank	:-	39.9
	(ii) Left flank	:-	39.5
	e) Type of cutoff and maximum depth (Upstreame blanket/open trench/ diaphragm /Groutcurtain/combination of alternative)	:-	Combination of alternative
34	Spillway (Overflow section)		
	a) Type of spillway	:-	Ogee
	b) Full reservoir level (El-m)	:-	265.552
	c) Maximum water level (El-m)	:-	267.920
	d) Length	:-	311.750
	e) Maximum height above the deepest foundation	:-	28.802
	f) Crest level (El-m)	:-	251.302
	g) Number of gates	:-	16
	h) Type of gate	:-	Radial
	i) Size of gates (m)	:-	15.5 x 14.5 m.
	j) Maximum discharging capacity at F.R.L.and M.W.L.	:-	29,148 cumec (10.29 Lac. cusec)
	k) Flood height (m)	:-	2.368
	l) Tail water level (El-m)		
	i) Maximum	:-	233.800
	ii) Minimum	:-	229.000
	m) Type of energy dissipation arrangement	:-	Ski jump Bucket
35	Main canal	:-	Left Kanhar Canal
		:-	Right Kanhar Canal
		:-	Left Pandu Basin Canal
		:-	Right Pandu Basin Canal
36	Purpose of canal	:-	Irrigation

37 Type

- a) Flow/Lift :- Flow
- b) Lined-unlined : Lined (Partially)
- c) Discharging capacity of channel above which :- whole length
- d) Type of lining :- Concrete

38 Main canal data

		<u>LKC</u>	<u>RKC</u>	<u>LPBC</u>	<u>RPBC</u>
a) Length (Km)	:-	25.60	31.50	29.10	24.00
b) Full supply level at head (El-m)	:-	260.00	260.00	252.30	252.68
c) Full supply depth at head (m)	:-	1.75	1.75	1.60	1.89
d) Bed width at head (m)	:-	1.50	5.20	2.00	3.00
e) Side slope at head	:-	1.5:1	1.5:1	1.5:1	1.5:1
f) Bed slope	:-	0.2m/Km	0.2m/Km	0.2m/Km	0.2m/Km
g) Maximum discharge capacity at head	:-	4.80	18.00	4.80	9.20
h) Total number of canal structures on main and branch canal	:-	56	46	48	42
i) Gross command area (ha) in U.P	:-	37320			
j) culturable command area (ha) U.P	:-	26075			
j) culturable command area (ha) Jharkhand	:-	7000			

39 Branch canal(s)

:- Flow canal

- a) Numbers :- Two
- b) Total length (Km) :- 57.10

40 Total length of distribution system

:- 190 Km

41 Name of Crop (Season wise)

Percentage Area (CCA)

		<u>Existing</u>	<u>Proposed</u>
<u>Kharif</u>			
1) Paddy	:-	11.80	25.00
2) Maize	:-	8.80	15.00
3) Arhar	:-	5.60	5.00
4) Pulse (Urd)	:-	1.20	20.00
5) Ground nut	:-	-	4.00
6) Tomato	:-	-	5.00
7) Onion	:-	-	7.00
8) Jwar	:-	1.70	-



9) Kodo Sanwan	:-	11.80	-
10) Til	:-	4.30	-
11) Other Kharif	:-	0.30	-
<u>Rabi</u>			
1) Wheat	:-	3.90	15.00
2) Gram	:-	4.90	5.00
3) Mustard	:-	2.00	4.00
4) Potato	:-	-	5.00
5) Peas	:-	-	23.00
6) Tomato	:-	-	1.00
7) Onion	:-	-	1.00
42 Cost of the Project	:- Rs.	223934.64	Lacs.
Unit I- Headwork	:- Rs.	141341.33	Lacs.
Unit II- Main Canal & Branches	:- Rs.	82593.31	Lacs.
	Quantity (M.T.)	Value (Rs. Lakhs)	Revenue (Rs. Lakhs)
43 Food production (Ton)	:-	3519832.00	8764.85 56.58
44 Benefit cost ratio	:-	1.42:1	


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