

# WATERSHED PRIORITIZATION IN THE CATCHMENT OF KOEL KARO HYDROELECTRIC POWER PROJECT, BIHAR

## ABSTRACT

- |           |                                  |  |
|-----------|----------------------------------|--|
| <b>1.</b> | <b>Survey Area</b>               | <b>Catchment of Koel – Karo Hydroelectric Power Project</b>  |
| <b>2.</b> | <b>Location</b>                  |  |
|           | a) <b>Latitude</b>               | 22°-45" – 23° 36'8" N  |
|           | b) <b>Longitude</b>              | 84°24'30" - 85° 15' E  |
|           | c) <b>Hydrologic Units</b>       | Part of 4H1F Subcatchment (As per Watershed Atlas of India)  |
|           | d) <b>Satellite Coverage</b>     | Path No. 104 and 105<br>Row No. 55 and 56  |
|           | e) <b>Agroclimatic Region</b>    | The Eastern Plateau and Hill Region (Region No. VII)   |
|           | f) <b>Physiographic Region</b>   | Chhotanagpur Plateau.  |
| <b>3.</b> | <b>Total Area</b>                | 5,40,715 ha  |
| <b>4.</b> | <b>Type of Survey</b>            | Rapid Reconnaissance Survey for Prioritization of Microwatersheds using Remote Sensing Techniques.   |
| <b>5.</b> | <b>Period of Survey</b>          | June – October, 1999 in fragments  |
| <b>6.</b> | <b>Base Material</b>             | a False Color Composite (Band 234), Indian Remote Sensing Satellites (I.R.S. 1D – LISS III) of March 21 & May 13, 1998.<br>b Survey of India Toposheet 1:50,000 Scale. |
| <b>7.</b> | <b>Hydrological Sub-Division</b> |  |

Sub-Catchment	Watershed	Subwatershed	Microwatershed
4H1F	4H1F1	7	32
	4H1F2	20	100
	4H1F3	22	146
	4H1F4	22	95
	4H1F5	2	17
	4H1F6	22	137
<b>1</b>	<b>6</b>	<b>95</b>	<b>527</b>

8. **Area under Mapping Unit** 5,14,224 ha  
 9. **Area under Miscellaneous Uses** 26,491 ha  
 10. **Areal Extent of Different EIMU**

Sl. No.	Mapping Unit	Weightage Value	Delivery Ratio	Area (ha)	Percentage
1.	G1	19	0.72	1348	0.2
2.	G2	16	0.77	15888	2.9
3.	G3	16	0.68	18178	3.4
4.	G4	16	0.89	7626	1.4
5.	G5	15	0.79	20845	3.9
6.	G6	17	0.72	62,381	11.5
7.	G7	14	0.61	76063	14.1
8.	G8	16	0.66	112135	20.7
9.	G9	13	0.58	30525	5.7
10.	G10	12	0.56	120410	22.3
11.	G11	19	0.75	17407	3.2
12.	G12	12	0.57	31418	5.8
	<b>Total</b>			<b>514224</b>	<b>95.1</b>
	<b>Miscellaneous</b>			<b>26491</b>	<b>4.9</b>
	<b>Grand Total</b>			<b>540775</b>	<b>100</b>

11. **Gradation of Micro-watersheds in to Priority Categories**

a) **Priority Status of Koel (Basia Dam) Catchment**

Sl. No.	Priority Category	No. of Microwatersheds	Area (ha)	Percentage
1.	Very High	6	7501	1.9
2.	High	28	29002	7.4
3.	Medium	65	70324	18.0
4.	Low	106	114817	29.4
5.	Very Low	168	169500	43.3
	<b>Total</b>	<b>373</b>	<b>391144</b>	<b>100.00</b>

b) Priority Status of Karo (Lohajimi Dam) Catchment

Sl. No.	Priority Category	No. of Microwatersheds	Area (ha)	Percentage
1.	Very High	4	3875	2.6
2.	High	17	16322	10.9
3.	Medium	30	32134	21.5
4.	Low	55	57591	38.5
5.	Very Low	48	39649	26.5
	<b>Total</b>	<b>154</b>	<b>149571</b>	<b>10.00</b>

12. Watershed-wise Distribution of Priority Micro-watershed with Number, Areal Extent (ha) and Percentage in Koel-Karo Catchment (4H1F Sub-Catchment)

Sl.No	Watershed code	No. of Subwatershed	Very High	High	Medium	Low	Very Low	Total
1.	4H1F - 1	7	2 1949 5.8	Nil - -	13 13409 39.9	12 11451 34.1	5 6774 20.2	32 33583 6.2
2.	4H1F - 2	20	2 2714 2.3	20 21695 18.9	26 30225 26.3	31 38395 33.4	21 21928 19.1	100 114957 21.2
3.	4H1F - 3	22	2 2838 1.9	8 7307 5.0	22 24054 16.2	45 46707 31.6	69 67039 45.3	146 147945 27.4
4.	4H1F - 4	22	- - -	- - -	4 2636 2.8	18 18264 19.3	73 73759 77.9	95 94659 17.5
5.	4H1F - 5	2	Nil	3 3224 15.0	7 9281 43.2	6 8301 38.6	1 676 3.2	17 21482 4.0
6.	4H1F - 6	22	4 3875 3.0	14 13098 10.3	23 22853 17.8	49 49290 38.5	47 38973 30.4	137 128089 23.7
	<b>Total</b>	<b>95</b>	<b>10</b> <b>11376</b> <b>2.1</b>	<b>45</b> <b>45324</b> <b>8.4</b>	<b>95</b> <b>102458</b> <b>18.9</b>	<b>161</b> <b>172408</b> <b>31.9</b>	<b>216</b> <b>209149</b> <b>38.7</b>	<b>527</b> <b>540715</b> <b>100.00</b>

### 13. Slope Gradients in the Catchment Area

Sl. No.	Slope Groups	Slope Percentage	Area in Ha	Percentage of Total Area
1.	Nearly Level to Very Gently Sloping	0 - 3	31,418	5.8
2.	Very Gently to Gently Sloping	1 - 5	3,40,481	63.0
3.	Gently to Moderately Sloping	3 - 10	97,966	18.1
4.	Strongly to Moderately Steep	10 - 25	20,845	3.9
5.	Steep to Very Steep	25 - 50	23,514	4.3
	<b>Total</b>		<b>514224</b>	<b>95.1</b>
	<b>Miscellaneous</b>		<b>26491</b>	<b>4.9</b>
	<b>Grand Total</b>		<b>5,40,715</b>	<b>100.00</b>

### 14. Erosion Status in the Catchment Area

Sl. No.	Erosion Classes	Symbol	Area in Ha	Percentage of Ha
1.	None to Slight	e0	1,51,828	28.1
2.	Slight to Moderate	e1-e2	46,413	8.6
3.	Moderate	e2	76,063	14.1
4.	Moderate to Severe	e2-e3	1,94,042	35.8
5.	Severe	e3	28,471	5.3
6.	Severe to Very Severe	e3-e4	17,407	3.2
	<b>Total</b>		<b>514224</b>	<b>95.1</b>
	<b>Miscellaneous</b>		<b>26491</b>	<b>4.9</b>
	<b>Grand Total</b>		<b>540715</b>	<b>100.0</b>

### 15. Land Use in Catchment Area

Sl. No.	Land Use	Area (ha)	Percentage of Total Area
1	Agriculture	4,02,407	74.4
2	Forest	64,591	12.0
3	Rocky & Stony	28,471	5.3
4	Gullied Land	17,407	3.2
5	Mined land	1348	0.2
	<b>Total</b>	<b>5,14,224</b>	<b>95.1</b>
	<b>Miscellaneous</b>	<b>26491</b>	<b>4.9</b>
	<b>Grand Total</b>	<b>540715</b>	<b>100.0</b>

**16. Composition of Physiographic Unit**

<b>Sl. No.</b>	<b>Physiographic Units</b>	<b>Area (ha)</b>	<b>Percentage</b>
1	Hill	43,040	7.9
2	Ridges/Mounds	20,845	3.9
3	Undulating Plain	62,381	11.5
4	Leveled Plain	3,39,133	62.8
5	Narrow Valleys and Marginal	48,825	9.0
	<b>Total</b>	<b>5,14,224</b>	<b>95.1</b>
	<b>Miscellaneous</b>	<b>26,491</b>	<b>4.9</b>
	<b>Grand Total</b>	<b>540715</b>	<b>100.00</b>