

Report on Prioritisation of Micro-watersheds of Mahanadi Basin (4G1E Sub-catchment) Districts Phulbani, Kalahandi, Boudh, Raygada and Bolangir of Odisha

Abstract

1. **Survey Area** : 4G1E Sub-catchment of Mahanadi Basin districts, Phulbani, Kalahandi, Boudh. Raygada and Bolangir of Odisha State.
2. **Location** : 19^o 43' to 20^o 50' N Latitude
83^o 5' to 84^o 17' E Longitude
3. **Total Area** : 620489 hectare
4. **Agro Climatic Region** : 7 (Eastern Plateau and hills) as per Planning Commission Classification.
5. **Period of Survey** : November 2006 to March 2007.
6. **Type of Survey** : Rapid Reconnaissance Survey
7. **Base Material Used** : Survey of India Topographic Map (scale 1: 50,000)

8. Areal Extent of different Runoff Potential Mapping Units

Sl.No.	RPMU	Runoff Potential Value	Area (ha)	Area (%)
1	AL01	55	57462	9.26
2	AL02	57	25548	4.12
3	AL03	60	5370	0.87
4	AL04	61	5352	0.86
5	AL05	68	17787	2.87
6	AL06	59	33464	5.39
7	AL07	61	774	0.12
8	CG01	70	5533	0.89
10	CG02	70	86225	13.90
11	CG03	84	33654	5.42
12	CG04	95	7080	1.14
13	CG05	79	76047	12.26
14	CG06	88	10033	1.62
15	CG07	83	5348	0.86
16	CG08	90	3675	0.59

Sl.No.	RPMU	Runoff Potential Value	Area (ha)	Area (%)
17	CG09	78	11968	1.93
18	CG10	90	2621	0.42
19	CG11	71	20012	3.23
20	CG12	77	5257	0.85
21	CG13	66	12493	2.01
22	CG14	66	2481	0.40
23	CG15	64	9619	1.55
24	CG16	66	1914	0.31
25	CG17	66	3031	0.49
26	CG18	74	4677	0.75
27	CG19	60	52261	8.42
28	CG20	58	59043	9.52
29	CG21	58	48713	7.85
30	HA	0	2226	0.36
31	TA	0	1470	0.24
32	RI	0	9351	1.51
	Grand Total		620489	100

- 9. Hydrological Divisions:** Water Resource Region (4)
Basin (4G)
Catchment (4G1)
Subcatchment (4G1E)
Watersheds (4G1E 1, 2, ...8)
Subwatersheds (4G1E 1a,.b, .c..., 4G1E 2a, b, .c...)
Microwatersheds (4G1E 1a1..., 4G1E 2a1, ...)

10. Soil Erosion Hazard

Erosion	Balangir	Boudh	Kalahandi	Phulbani	Rayagada	Area (ha)	%
None to slight erosion	7490	26762	83203	14063	205	131723	21.23
Moderate erosion	2682	16236	86234	132110	7141	244403	39.39
Moderate to severe erosion	1954	12089	63474	99324	3345	180186	29.04
Severe erosion	665	6181	20970	22994	320	51130	8.24
Misc.	528	2448	6746	3312	13	13047	2.1
Grand Total	13319	63716	260627	271803	11024	620489	100

11. Priority Categorization

Sl.No.	Priority Category	No.of Microwatersheds	Area (ha.)	Area (%)
1	Very High (above 75)	60	55887	9.01
2	High (70-75)	177	176761	28.49
3	Medium (65-70)	204	187862	30.28
4	Low (60-65)	120	114095	18.39
5	Very Low (60 & below)	94	85884	13.84
	Grand Total	655	620489	100

12. District wise Priority Categorization

PriorityCategory	Balangir	Boudh	Kalahandi	Phulbani	Rayagada	Area (ha)	%
Very High (above 75)	0	2871	27753	24252	1011	55887	9.01
High (70-75)	2013	3087	43604	125005	3052	176761	28.49
Medium (65-70)	3648	13310	52589	113060	5255	187862	30.28
Low (60-65)	788	22123	80929	8549	1706	114095	18.39
Very Low (60 & below)	6870	22325	55752	937	0	85884	13.84
Grand Total	13319	63716	260627	271803	11024	620489	100

13. Salient Features:

☐ 4G1E subcatchment has been subdivided into 8 watersheds following the systematic delineation and codification method outlined in Watershed Atlas of India (1:1 M scale). Each watershed is then segregated into subwatersheds and each subwatershed subsequently sub-divided into microwatershed using large scale drainage map (1:50,000). All the 655 microwatersheds have been prioritized by appreciating its run off potential indices (RPI). Higher the value of RPI, higher the priority and vice-versa. Out of 655 microwatersheds comprising an area of (620489 ha), 55887 ha. (9.01%) covered by 60 microwatersheds have been categorized under very high priority and 176761 ha. (28.49%) covered by 177 microwatersheds have been categorized as high priority area which need immediate attention for suitable runoff control measures under integrated watershed development programme. Thus 655 microwatersheds have been delineated and codified for 4G1E subcatchment.

☐ Kalahandi district has the highest spatial extent of very high priority area i.e 27753 ha (4.47%) followed by Phulbani district Boudh district and Rayagada district having 24252 ha (3.90%) ,2871 ha (0.46%) and 1011 ha (0.16%) respectively. It is worth noting that Bolangir district has no very high priority area.

- ▣ About 63623 ha (10.25%) area of the survey area is unmanaged to poorly managed while 236363 ha. (38.09%) area is moderately managed.
- ▣ Severely eroded lands occupy 51130 ha (8.24%) while moderately to severely eroded land covering 180186 ha (29.04%) that need proper soil water conservation practices.