

Report on Inventory of Degraded Lands of East, West, North and South Districts of Sikkim using Remote Sensing Techniques

ABSTRACT

1. **Survey Area** : East, West, North and South Districts of Sikkim
2. **Type of Survey** : Land Degradation Mapping
3. **Total Area** : 7,09,600 ha
4. **Scale** : 1:50,000
5. **Period of field visit** : November, 2006 to February, 2007
6. **Base Material** : Geocoded FCC (3, 2, 1) of IRS-P6 LISS-III (1:50,000) and Survey of India Toposheets (1:50,000)
7. **Location** : 88° 0'58" to 88° 55'25" E Longitude and 27° 04'46" to 28° 07'48" N Latitude
8. **District-wise area** : East District – 95,400 ha.
West District – 1,16,600 ha.
North District – 4,22,600 ha.
South District – 75,000 ha.
9. **Agro-climatic Zone** : Eastern Himalayan Region (II) as per Planning Commission
10. **Extent of different degraded and normal land** :

Sl.No.	Land Degradation Mapping Unit	Land Characteristics	Area in ha.	%
1	Weld1	Mountain, > 15 % slope, poorly terraced cultivation, severe water erosion	7546	1.06
2	Weld2	Mountain, > 15 % slope, degraded forest land, severe water erosion	9933	1.40
3	Weld4	Mountain, > 15 % slope, open scrub land, severe water erosion	5521	0.78
4	Ls1d2	Mountain, > 15 % slope, degraded forest land, land slides	538	0.07
5	Ls1d4	Mountain, > 15 % slope, open scrub land, land slides	215	0.03
6	Rw1d4	Mountain, > 15 % slope, rocky wastes	86097	12.13

7	Gm1d4	Mountain, > 15 % slope, glacial moraine	13632	1.92
8	AN	Normal agriculture land	63888	9.03
9	A(P)N	Normal plantation (Mixed trees and horticulture plantation) in agricultural area	6530	0.92
10	FN	Normal forest land	234383	33.03
11	F(A)N	Normal agriculture (Rainfed) in forest area	4012	0.56
12	PN	Normal plantation (Tea, Cardamom, mixed trees and horticulture plantation)	3535	0.49
13	ON	Normal open scrub, waste land, grass/pasture land	10801	1.52
14	SN	Snow covered area (Seasonal and Permanent)	258594	36.44
15	Misc.land	Settlement, Waterbody and River	4375	0.62
Grand Total			7,09,600	100.00

11. Land Degradation Mapping Unit : Kind of Land Degradation (We, Ls, R Gm etc.)
Degree of Severity of Degradation (1, 2, 3, 4 etc.)
Major Topography Classes (a, b, c and d)
Major Land Use Classes (1, 2, 3, 4 etc)

12. Kind of Land Degradation :

Sl. No.	Kind of Land Degradation	Area in ha.					%
		East	West	North	South	Total	
1.	Water erosion	3694	7920	6615	4771	23000	3.24
2.	Land Slides	170	278	181	124	753	0.1
3.	Rocky Wastes	2058	8926	74685	428	86097	12.13
4.	Glacial Moraine	-	150	13482	-	13632	1.92
5.	Normal Land	88148	98094	321613	68888	576743	81.99
6.	Miscl. Land	1330	1232	1024	789	4375	0.62
Grand Total		95,400	1,16,600	4,22,600	75,000	7,09,600	100.00

13. Degradation under Different Major Land Use :

<i>Sl. No.</i>	<i>Major Land Use</i>	<i>Degraded / Normal land</i>	<i>Area in ha.</i>	<i>%</i>
1.	<i>Agriculture</i>	<i>Degraded</i>	7546	1.06
		<i>Normal</i>	67900	9.59
2.	<i>Forest</i>	<i>Degraded</i>	10471	1.47
		<i>Normal</i>	234383	33.03
3.	<i>Plantation</i>	<i>Normal</i>	10065	1.41
4	<i>Others</i>	<i>Degraded</i>	105465	14.86
		<i>Normal</i>	263395	37.96
5.	<i>Miscl. Lands</i>		4375	0.62
Grand Total			7,09,600	100.00

14. Salient Features:

- Total degraded land of Sikkim is 123482 ha area which constitutes about 17.39% of the total geographical area of the state. Out of 123482 ha. degraded lands, 94963ha. (13.38%), 17274ha. (2.43%), 5,922 ha (0.84%) and 5323ha. (0.75%) area are occupied by North, West, East and South Sikkim districts respectively.
- Out of 123482 ha. degraded lands, 86097 ha. area constituting 12.13% of the total degraded lands are occupied by rocky wastes whereas degraded lands due to water erosion and glacial moraine occupy 23000ha. (3.24 %) and 13632ha. (1.92 %) area respectively. Only 753 ha. area constituting 0.10% of the total degraded lands is affected by land slides.
- Out of 75446 ha. agriculture lands, 7546 ha. lands constituting 10% of the total agricultural lands are affected by severe water erosion. Only 9933 ha. forest lands constituting 4.06% of the total forest lands are suffering from severe water erosion and only 538 ha (0.07%) of the total forest is affected by land slides. Maximum degradation is found in other land use classes like open scrub, wastelands, pasture lands etc. About 105465 ha. area covering 86.41% of the total degraded land under other land use classes is affected by different kinds of land degradation like rocky waste, glacial moraine, severe water erosion and land slides.
- South Sikkim district is mainly suffering from severe water erosion whereas East and West Sikkim districts are affected by both severe water erosion and rocky wastes. Major kinds of land degradation in North Sikkim district are rocky wastes and glacial moraine.