

Inventory of Degraded Lands of North and South 24 Parganas Districts of West Bengal Using Remote Sensing Techniques.

Abstract

1. **Kind of Survey:** Land Degradation Mapping.
2. **Level of Mapping:** Reconnaissance.
3. **Scale:** 1:50,000
4. **Period of Survey:** December 1998 to April 1999
5. **Base Materials:** IRS 1B, LISS II, Geocoded False Colour Composite of November 1990 and April 1995 and Survey of India Topographical Maps in 1:50,000 scale.
6. **Total Area of Districts:** North 24 Parganas – 3,78,090ha
South 24 Parganas – 9,66,171 ha
7. **Agroclimatic Zone:** The Lower Gangetic Plain Regions III
8. **Geographical Extent:** North 24 Parganas – $22^{\circ}11'6''$ to $23^{\circ}15'2''$ N Latitude and $89^{\circ}5'$ to $88^{\circ}20'$ E Longitude.
South 24 Parganas – $21^{\circ}31'$ to $22^{\circ}38'$ N Latitude and $88^{\circ}5'$ to $89^{\circ}10'$ E Longitude.

9. Nature, Extent and Percentage of Degraded Lands.

| Sl. No. | Map Symbol | Description | 24 Parganas | | | |
|----------------------|------------|--|---------------|------|---------------|------|
| | | | North | | South | |
| | | | Area(ha) | % | Area(ha) | % |
| Degraded Area | | | | | | |
| 1. | Sa1a1 | Salt affliction, < 50%, Plain, agriculture | 21341 | 5.6 | 110084 | 11.4 |
| 2. | Sa2a1 | Salt affliction, > 50%, Plain, agriculture | 15469 | 4.1 | 128753 | 13.3 |
| 3. | W11a1 | Water logging, seasonal, affecting one crop (4-6 months submergence), plain, agriculture | 13950 | 3.7 | 5219 | 0.6 |
| 4. | W11a4 | Water logging, seasonal, 4-6 months submergence, plain, open scrub/ pasture. | 475 | 0.1 | - | - |
| 5. | W12a1 | Water logging, permanent, affecting two crop (>6 months submergence), plain, agriculture | 6643 | 1.8 | 791 | 0.1 |
| 6. | W12a4 | Water logging, permanent >6 months submergence, plain, open scrub/ pasture. | 5527 | 1.5 | - | - |
| 7. | W13a2 | Water logging, inland marshes, plain, forest | - | - | 5848 | 0.6 |
| 8. | W13a4 | Water logging, inland marshes, plain, open scrub/ pasture. | - | - | 7465 | 0.8 |
| 9. | Mf1a4 | Mudflat, seasonal, plain, open scrub/ pasture | 117 | 0.1 | 4384 | 0.4 |
| 10. | Bk2a1 | Brick kiln, <50% coverage of mapped area, plain, agriculture | 540 | 0.1 | 183 | - |
| 11. | Wa3a4 | Beach sand, plain, other land | - | - | 908 | 0.1 |
| Sub Total | | | 64062 | | 263635 | |
| Normal Area | | | | | | |
| 12 | 1. | Agriculture | 229473 | 60.6 | 126586 | 13.1 |
| | 2. | Forest | 2874 | 0.8 | 250573 | 25.9 |
| | 3. | Plantation/ horticultural crops | 1987 | 0.5 | 6193 | 0.6 |
| | 4. | Open scrub | 25 | - | - | - |
| Sub Total | | | 234354 | | 383352 | |
| | s | Settlement along with orchard plantation | 34155 | 9.0 | 111538 | 11.6 |
| | w | Water bodies | 45514 | 12.1 | 207646 | 21.5 |
| Sub Total | | | 79669 | | 319184 | |
| Total | | | 378090 | | 966171 | |

10. Salient Findings: -

- Degraded lands spread over 64062 ha and 263635 ha in North and South 24 Parganas districts accounting for 17.0% and 27.3% respectively of the total area.
- Salt affliction is major problem that covers 36810 ha (9.7% of district area, 57.5% of the problematic area) in North and 238837 ha (24.7% of district area, 90.9% of problematic area) in South 24 Parganas district.
- Beach sand covers about 908 ha (0.1%) of total area in South 24 Parganas district.
- Waterlogging problem exist in 26595 ha (7.1% of district area & 41.5% of problematic area) in North and 19323 ha (2.0% of district area & 6.9% of problematic Area) in South 24 Parganas district.
- Brick kilns and mud flat cover 540 ha and 117 ha in North and 183 ha and 4384 ha in South 24 Parganas district respectively.
- Remote sensing data possess high potential for mapping and monitoring of degraded lands.
- Change in land use has been found in agricultural land in both the districts. It has been increased by 24936 ha (6%) in North 24 Parganas whereas decreased by 33577 ha (3.5%) in South 24 Parganas district.
- Change in detection of forest land has also been noticed in both the districts. It is totally absent in agriculture census data of North 24 Parganas district but has been detected in area of 2874 ha (0.8%) using remote sensing technique.
- Land degradation is more rampant on agricultural land in both the districts. Out of total agricultural area of 2.87 lakh ha (15.3%) suffered from various kinds of degradation. In case of South 24 Parganas district, out of 3.71 lakh ha of agricultural land, degraded lands cover 2.45 lakh ha (25.4%).
- Salt affliction with varying intensities is dominant problem in agricultural land. Salt affliction with <50% and >50% coverage of mapping unit spread in both the districts are as:

North 24 Parganas: (i) Salt affliction <50% - 21341 ha (5.6%)

(ii) Salt affliction >50% - 15469 ha (4.1%)

South 24 Parganas: (i) Salt affliction<50% - 110084 ha (11.4%)

(ii) Salt affliction>50% - 128753 ha (13.3%)

- Water logging seasonal and permanent occupies the area in both the districts are as follows:

North 24 Parganas: (i) Seasonal – 13950 ha (3.7%)

(ii) Permanent – 15464 ha (4.1%)

South 24 Parganas: (i) Seasonal – 5219 ha (0.6%)

(ii) Permanent – 791 ha (0.1%)

- Normal land covers major part of the respective districts such as :

North 24 Parganas: 229473 ha (60.6%) agricultural land, 2874 ha (0.8%) forest land, 1987 ha (0.5%) plantation /horticultural land, 25 ha open scrub land, 34155 ha (9.0%) settlement and 45514 ha (12.1%) water bodies.

South 24 Parganas: 126586 ha (13.1%) agricultural land, 250573 ha (25.9%) forest land, 6193 ha (0.6%) plantation /horticultural land, 111538 ha (11.6%) settlement and 207646 ha (21.5%) water bodies and 908 ha (0.1%) sand beach.