

INVENTORY OF DEGRADED LANDS OF THIRUNELVELI DISTRICT OF TAMILNADU USING REMOTE SENSING TECHNIQUES

ABSTRACT

1. Details of Survey

- i) Kind of survey : Land degradation mapping
 ii) Level of mapping : Reconnaissance
 iii) Scale : 1:50,000

2. Period of survey

: December 2000 & March 2001

3. Base material

: IRS-IC&1D- False Colour Composite (1999)
 and Survey of India toposheets on 1:50,000 scale

4. Details of area

- i) Total area of the district : 682308 ha
 ii) Agro-climatic zone : 10 Southern Plateau and Hilly Region
 12 the west coast plain and hill region
 iii) Geographical extent : 8°8'23" to 9°25'10" N latitude &
 77° 8'50" to 77° 58' 20" E longitude.

5. Nature and extent of degraded lands.

Mapping symbol	Description	Area in ha.	Percentage
We	Water erosion		
We1	Severe Water erosion(sheet, rill & few gullies)		
We1a1	Severe water erosion, plain, agriculture lands.	10893	1.60
We1a1/3	Severe water erosion, plain, agriculture lands changed to plantation	161	0.02
We1a2	Severe water erosion, plain, forest lands	234	0.03
We1a4	Severe water erosion, plain, other lands including open scrub & pasture lands.	2032	0.30
We1a4/3	Severe water erosion, plain ,other lands including open scrub & pasture lands changed to plantation	357	0.05
We1b1	Severe water erosion, undulating, agriculture lands	1665	0.24
We1b2	Severe water erosion, undulating, forest lands.	157	0.02
We1b4	Severe water erosion, undulating, other lands including open scrub & pasture lands.	1185	0.17
We1c4	Severe water erosion, rolling, other lands including open scrub & pasture lands.	498	0.07
We1d2	Severe water erosion, hilly, forest lands.	1037	0.15
We1d4	Severe water erosion, hilly, other lands including open scrub & pasture lands.	2208	0.32
	SUB TOTAL	20427	2.99
We2	Very Severe Water erosion		
We2a1	Very severe water erosion, plain ,agriculture lands.	370	0.05
We2a4	Very severe water erosion, plain, other lands including open scrub & pasture lands.	580	0.09
We2b1	Very severe water erosion, undulating, agriculture lands	527	0.07
We2b4	Very severe water erosion , undulating, other lands including open scrub & pasture lands.,	1047	0.16
We2c2	Very severe water erosion, rolling, forest lands.	29	0.00
We2d4	Very severe water erosion, hilly, other lands including open scrub & pasture lands.	22	0.00
	SUB TOTAL	2575	0.38

	Wind Activity		
Wa1a1	Severe (active plain & dune), plain, agriculture lands.	190	0.03
Wa1a1/3	Severe (active plain & dune), plain, agriculture lands changed to plantation lands.	35	0.01
Wa1a4/1	Severe (active plain & dune), plain, other lands changed to agriculture lands.	35	0.01
Wa1a4/3	Severe (active plain & dune), plain, other lands changed to plantation lands.	2395	0.35
Wa1b4	Severe (active plain & dune), undulating, other lands including open scrub & pasture lands.	245	0.04
Wa2a1	Very severe (active & shifting dunes & sand casting), plain, agriculture lands.	2375	0.35
Wa2a1/3	Very severe (active & shifting dunes & sand casting), plain, agriculture lands changed to plantation lands.	612	0.09
Wa2a4	Very severe (active & shifting dunes & sand casting), plain, other lands including open scrub & pasture lands.	1231	0.18
Wa2a4/3	Very severe (active & shifting dunes & sand casting), plain, other lands changed to plantation lands.	141	0.02
Wa3a4	Coastal sand casting, plain, other lands including open scrub & pasture lands.	770	0.11
Wa3a4/3	Coastal sand casting, plain, other lands changed to plantation lands.	430	0.06
SUB TOTAL		8459	1.24
Sa	Salt affliction		
Sa1a1	Moderately saline sodic, plain, agriculture lands	1172	0.17
Sa1a4	Moderately saline sodic, plain, other lands including open scrub & pasture lands.	594	0.09
SUB TOTAL		1766	0.26
Sw	Stony waste		
Sw1a4	Stony waste, plain, other lands including open scrub & pasture lands.	182	0.03
Sw1b4	Stony waste, undulating, other lands including open scrub & pasture lands.	239	0.04
Sw1c4	Stony waste, rolling, other lands including open scrub & pasture lands.	63	0.01
Sw1d4	Stony waste, hilly, other lands including open scrub & pasture lands.	70	0.01
SUB TOTAL		554	0.08
Rq	Rock quarry		
Rq1a1	Rock quarry, plain, agriculture lands	188	0.03
Rq1b1	Rock quarry, undulating, agriculture lands	200	0.03
Rq1b4	Rock quarry, undulating, other lands including open scrub & pasture lands.	247	0.04
Rq1c1	Rock quarry, rolling, agriculture lands.	35	0.01
Rq1c2	Rock quarry, rolling, forest lands.	26	0.00
Rq1c4	Rock quarry, rolling, other lands including open scrub & pasture lands.	194	0.03
Rq1d4	Rock quarry, hilly, other lands including open scrub & pasture lands.	50	0.01
SUB TOTAL		940	0.14
Rw	Rocky waste		
Rw1a4	Rocky waste, plain, other lands including open scrub & pasture lands.	150	0.02
Rw1b1	Rocky waste, undulating, agriculture lands.	164	0.02
Rw1b2	Rocky waste, undulating, forest lands.	21	0.00
Rw1b4	Rocky waste, undulating, other lands including open scrub & pasture lands.	764	0.11
Rw1c4	Rocky waste, rolling, other lands including open scrub & pasture lands.	158	0.02
Rw1d4	Rocky waste, hilly, other lands including open scrub & pasture lands.	262	0.04
SUB TOTAL		1519	0.22
TOTAL		36240	5.31

NORMAL LANDS			
N1	Agriculture lands.	323361	47.39
N1/3	Agriculture lands changed to Plantation.	43854	6.43
N1/4	Agriculture lands changed to other lands including open scrub & pasture lands.	67415	9.88
N2	Forest lands.	115540	16.93
N2/3	Forest lands changed to Plantation.	403	0.06
N3	Plantation.	7527	1.10
N3/1	Plantation changed to agriculture lands.	489	0.07
N4	Other lands including open scrub & pasture lands.	22343	3.27
N4/1	Other lands changed to agriculture lands.	2438	0.36
N4/3	Other lands changed to Plantation.	733	0.11
SUBTOTAL		584103	85.61
MISCELLANEOUS			
HABITATION		15407	2.26
RIVER		4743	0.70
RESERVOIR		1497	0.22
TANK		40318	5.91
SUB TOTAL		61965	9.08
GRAND TOTAL		682308	100.00

6. SALIENT FEATURES

Thirunelveli district is affected by six major type of land degradation – water erosion, wind activity, salt affliction, stony waste, rock quarry & rocky waste. Water erosion is the major type of land degradation which is active over an area of 23002 ha followed by wind activity over an area of 8459 ha. Distribution of area under different kinds of land degradation is tabled below.

i. Distribution of area under different kinds of land degradation

Kind of land degradation	Area(ha)	Percentage for total degraded lands	Percentage of degraded lands for total area
Water erosion	23002	63.48	3.37
Wind activity	8459	23.34	1.24
Salt affliction	1766	4.87	0.26
Stony waste	554	1.53	0.08
Rock quarry	940	2.59	0.14
Rocky waste	1519	4.19	0.22
Total	36240	100.00	5.31

ii. Land use wise distribution of area under normal lands

S. No.	Land use	Area(ha)	Percentage
1	Agriculture	326288	55.86
2	Forest	115540	19.78
3	Plantation	52517	8.99
4	Other lands	89758	15.37
	Total	584103	100.00

iii: Land use wise & land scape wise distribution of area under different kinds of degraded lands (Area in ha.)

S.No	Landscape	We1	We2	Wa1	Wa2	Wa3	Sa1	Sw1	Rq1	Rw1	TOTAL	%
Agriculture												
1	a	10893	370	225	2375	0	1172	0	188	0	15223	42.0
2	b	1665	527	0	0	0	0	0	200	164	2556	7.1
3	c	0	0	0	0	0	0	0	35	0	35	0.1
4	d	0	0	0	0	0	0	0	0	0	0	0.0
	Total	12558	897	225	2375	0	1172	0	423	164	17814	49.2
Forest												
1	a	234	0	0	0	0	0	0	0	0	234	0.6
2	b	157	29	0	0	0	0	0	0	21	207	0.6
3	c	0	0	0	0	0	0	0	26	0	26	0.1
4	d	1037	0	0	0	0	0	0	0	0	1037	2.9
	Total	1428	29	0	0	0	0	0	26	21	1504	4.2
Plantation												
1	a	518	0	2430	753	430	0	0	0	0	4131	11.4
2	b	0	0	0	0	0	0	0	0	0	0	0.0
3	c	0	0	0	0	0	0	0	0	0	0	0.0
4	d	0	0	0	0	0	0	0	0	0	0	0.0
	Total	518	0	2430	753	430	0	0	0	0	4131	11.4
Other lands												
1	a	2032	580	0	1231	770	594	182	0	150	5539	15.3
2	b	1185	1047	245	0	0	0	239	247	764	3727	10.3
3	c	498	0	0	0	0	0	63	194	158	913	2.5
4	d	2208	22	0	0	0	0	70	50	262	2612	7.2
	Total	5923	1649	245	1231	770	594	554	491	1334	12791	35.3
	Grand Total	20427	2575	2900	4359	1200	1766	554	940	1519	36240	100.0

Note a- plain; b- undulating; c-rolling; d- hill

iv. Land use wise & landscape wise extent of degraded lands (Area in ha.)

S.NO	Landscape	LAND USE				TOTAL	%
		Agriculture	Forest	Plantation	Other lands		
1	Plain	15223	234	4131	5539	25127	3.68
2	Undulating	2556	207	0	3727	6490	0.95
3	Rolling	35	26	0	913	974	0.15
4	Hilly	0	1037	0	2612	3649	0.53
	Total	17814	1504	4131	12791	36240	5.31
	Percentage	2.61	0.22	0.61	1.87	5.31	

v. Landscape wise area of degraded lands

Sl. No.	LANDSCAPE	EXTENT(ha)	%
1	Plain	25127	3.68
2	Undulating	6490	0.95
3	Rolling	974	0.15
4	Hilly	3649	0.53
	Total	36240	5.31