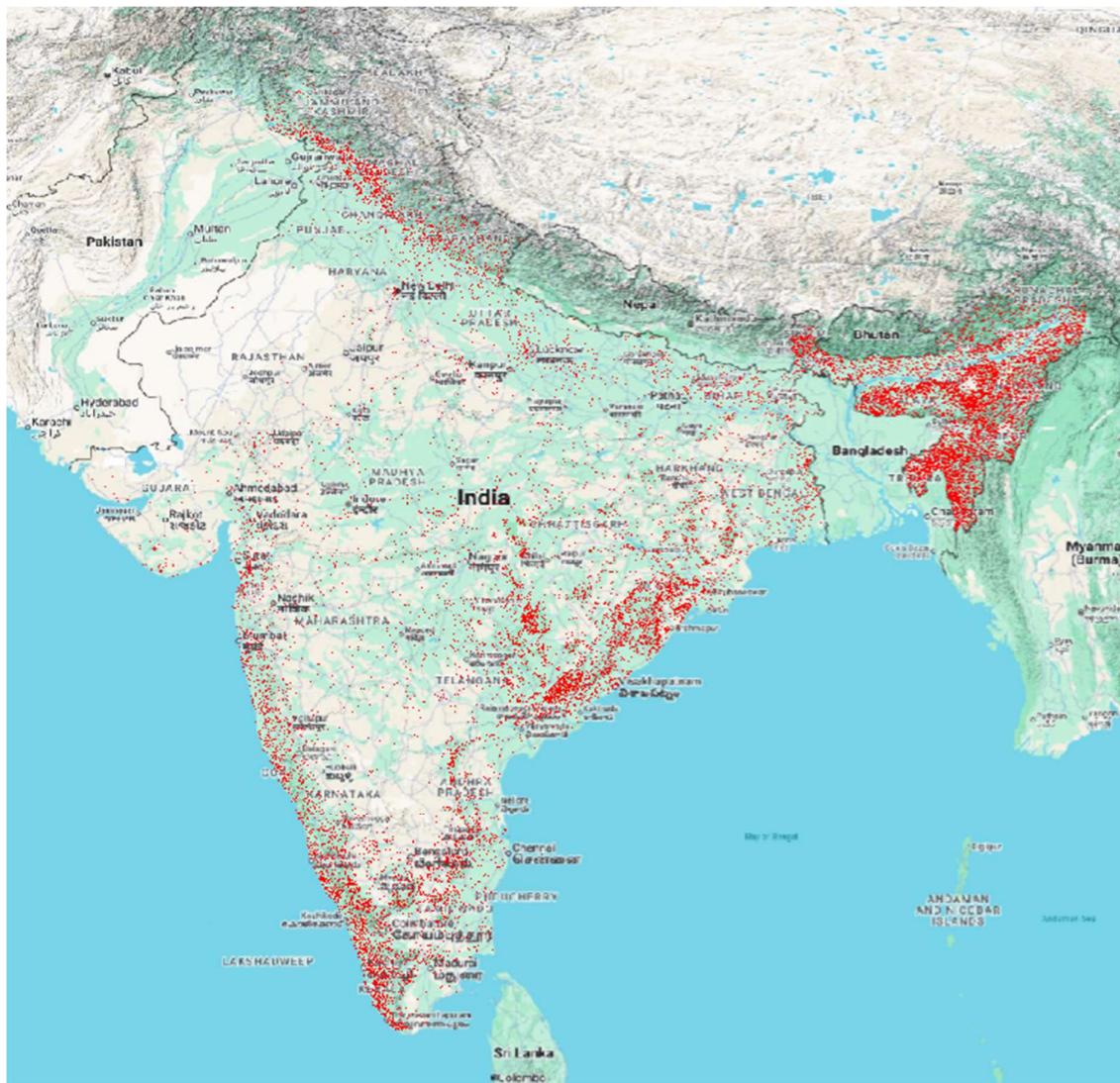


Bamboo

<https://doi.org/10.5281/zenodo.14671750>



Distribution of Bamboo across India

<https://incaindia.org/images/uploads/Paper%20-%202012.pdf>

RELIABILITY OF THE STUDY SETTINGS.

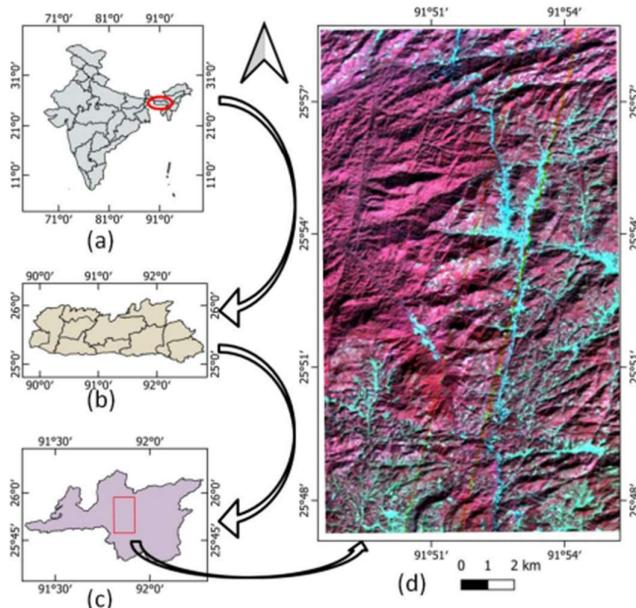


Fig. 1 Geographic location of study area (a) Meghalaya state in India (b) Districts in Meghalaya state (c) study area in Ri Bhoi district of Meghalaya (d) False Color Composite of PRISMA hyperspectral data.

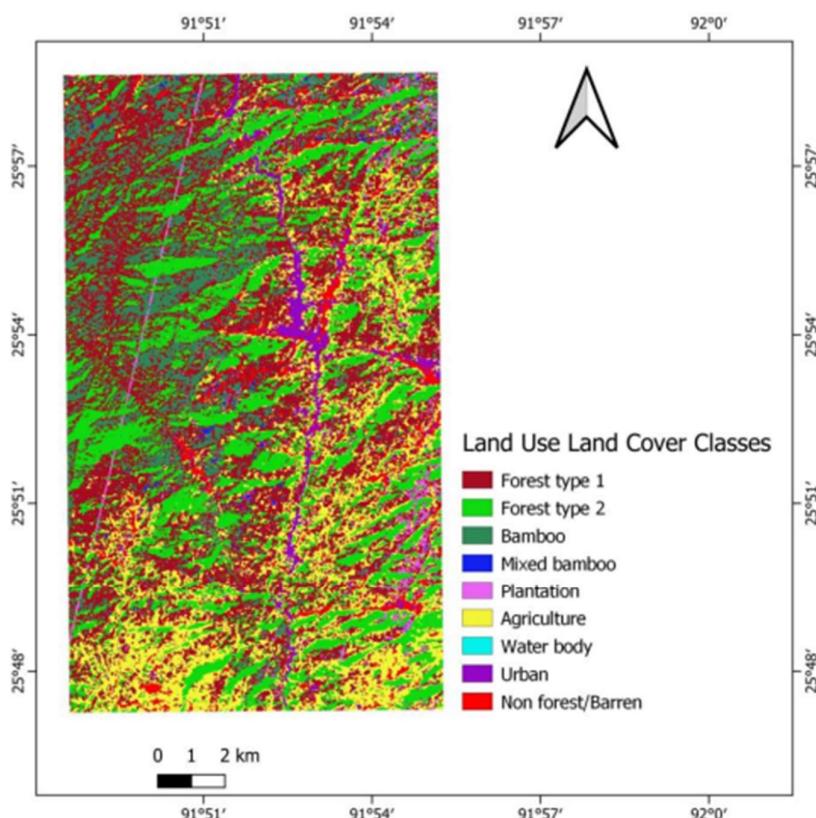


Fig. 8 Classified LULC map using combined database of PCA, VI, aspect and texture (GLCM).

Table 8.3 State/UT wise Distribution of Bamboo area in Recorded Forest Area	S. No.	State/UT's	Bamboo bearing area as per ISFR 2021	Bamboo bearing area as per ISFR 2019	Change in area with respect to ISFR 2019	(in sq km)
1.	Andhra Pradesh		6,104	7,003	-899	
2.	Arunachal Pradesh		15,739	14,981	758	
3.	Assam		10,659	10,525	134	
4.	Bihar		1,103	1,136	-33	
5.	Chhattisgarh		10,467	11,255	-788	
6.	Goa		288	418	-130	
7.	Gujarat		3,547	3,393	154	
8.	Haryana		39	72	-33	
9.	Himachal Pradesh		1,027	650	377	
10.	Jharkhand		3,717	4,123	-406	
11.	Karnataka		8,624	10,181	-1,557	
12.	Kerala		2,404	2,849	-445	
13.	Madhya Pradesh		18,394	20,867	-2,473	
14.	Maharashtra		13,526	15,408	-1,882	
15.	Manipur		8,377	9,903	-1,526	
16.	Meghalaya		5,007	5,410	-403	
17.	Mizoram		4,561	3,476	1,085	
18.	Nagaland		3,947	4,284	-337	
19.	Odisha		11,199	11,827	-628	
20.	Punjab		280	255	25	
21.	Rajasthan		1,555	1,874	-319	
22.	Sikkim		994	1,176	-182	
23.	Tamil Nadu		4,001	4,357	-356	
24.	Telangana		4,535	5,438	-903	
25.	Tripura		4,201	3,783	418	
26.	Uttar Pradesh		1,832	1,235	597	
27.	Uttarakhand		1,201	1,489	-288	
28.	West Bengal		702	855	-153	
29.	Andaman & Nicobar Islands		1,413	1,814	-401	
	Total		1,49,443	1,60,037	-10,594	

Note: Information of bamboo bearing area for Chandigarh, Dadra & Nagar Haveli and Daman & Diu, Delhi, Lakshadweep, J & K, Ladakh and Puducherry is not given due to inadequate data

S. No.	State/UT's	Pure Bamboo	Dense	Scattered	Bamboo present but clumps completely hacked	Regeneration crop
1.	Andhra Pradesh	208	2,253	2,550	176	917
2.	Arunanchal Pradesh	274	3,148	11,906	0	411
3.	Assam	449	2,300	7,798	56	56
4.	Bihar	23	70	511	162	337
5.	Chhattisgarh	623	1,808	5,112	496	2,428
6.	Goa	0	0	137	38	113
7.	Gujarat	79	852	2,378	79	159
8.	Haryana	0	13	26	0	0
9.	Himachal Pradesh	100	276	576	25	50
10.	Jharkhand	32	96	2,793	366	430
11.	Karnataka	287	1,083	3,155	950	3,149
12.	Kerala	92	504	1,167	46	595
13.	Madhya Pradesh	847	4,046	8,327	1,928	3,246
14.	Maharashtra	767	2,705	6,903	1,475	1,676
15.	Manipur	161	1,450	6,766	0	0
16.	Meghalaya	484	750	3,676	0	97
17.	Mizoram	383	1,781	2,331	33	33
18.	Nagaland	172	772	2,917	0	86
19.	Odisha	117	1,723	8,302	117	940

Table 8.4
State/UT wise bamboo bearing area under different classes in Recorded Forest Area

Bamboo Resources of the Country

Bamboo Resources of the Country

S. No.	State/UT's	Pure Bamboo	Dense	Scattered	Bamboo present but clumps completely hacked	Regeneration crop
20.	Punjab	0	112	149	19	0
21.	Rajasthan	19	226	602	414	294
22.	Sikkim	66	155	773	0	0
23.	Tamil Nadu	46	367	1,605	797	1,186
24.	Telangana	159	1,306	2,070	550	450
25.	Tripura	94	669	3,318	13	107
26.	Uttar Pradesh	0	351	1,255	25	201
27.	Uttarakhand	34	172	789	0	206
28.	West Bengal	0	43	638	0	21
29.	Andaman & Nicobar Islands*	0	177	1,118	0	118
Total		5,516	29,208	89,648	7,765	17,306
Total as per ISFR 2019		4,332	30,575	1,02,139	8,260	14,731
Changes w.r.t. ISFR 2019		1,184	-1,367	-12,491	-495	2,575

Note: Information of bamboo density for Chandigarh, Dadar & Nagar Haveli and Daman & Diu, Delhi, Lakshadweep, J & K, Ladakh and Puducherry is not given due to inadequate data.

Table 8.4 reveals that pure bamboo area has increased and dense bamboo area has reduced from the estimates published in ISFR 2019. It implies that part of this area has changed from low to high density area.

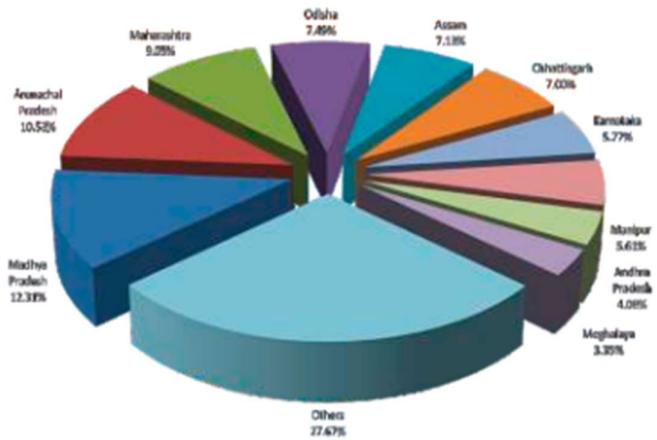


Figure 8.2
Top ten States
in terms of
bamboo
bearing area
(%)

The total bamboo bearing area of the country has been estimated to be 15.0 million ha. Madhya Pradesh has maximum bamboo bearing area of 1.84 m ha followed by Arunachal Pradesh (1.57 million ha), Maharashtra (1.35 million ha) and Odisha (1.12 million ha). As compared to the estimates of ISFR 2019, the total bamboo bearing area in the country has decreased by 1.06 million ha. Comparing state wise area of present assessment with ISFR 2021, it has been observed that bamboo bearing area in Mizoram has shown highest increase of 1,085 sq km followed by Arunachal Pradesh (758 sq km). Similarly, Madhya Pradesh has shown highest decrease of 2,473 sq km in the bamboo bearing area followed by Maharashtra (1,882 sq km).

<http://nesac.gov.in/assets/resources/2020/12/Bamboo-Resource-Mapping-of-six-districts-of-Nagaland.pdf>

Table 6: Districtwise estimate of bamboo growing areas of Nagaland (in ha)

SL. No	DISTRICTS	Geographical Area (TGA)	Area Under Bamboo (ha)	% Area covered
1	Mon	216200.00	5681.40	2.63
2	Longleng	56200.00	2174.79	3.87
3	Mokokchung	161600.00	12155.78	7.52
4	Wokha	160600.00	15888.35	9.89
5	Dimapur	81100.00	2672.20	3.29
6	Peren	173900.00	2578.63	1.48
Total		849600.00	41151.15	4.84

Table 7: Districtwise estimated bamboo culm in six districts of Nagaland

District	Total Bamboo area	Bamboo area (ha)		Average culm /ha		Total number of culms	
		Jati	Kako	Jati	Kako	Jati	Kako
Mon	5681.40	876.64	4807.76	4528	1880	3969426	9038589
Longleng	2174.79	1403.61	771.18	7208	1661	10117221	1280930
Mokokchung	12155.78	2832.30	9323.48	7682	1805	21757729	16828881
Wokha	15888.35	1588.84	14299.51	6860	2595	10899442	37107228
Dimapur	2672.20	267.22	2404.98	6860	2595	1833129	6240923
Peren	2578.63	257.86	2320.77	6860	2595	1768920	6022398
Total	41151.15	7226.47	33927.68			50345867	76518949

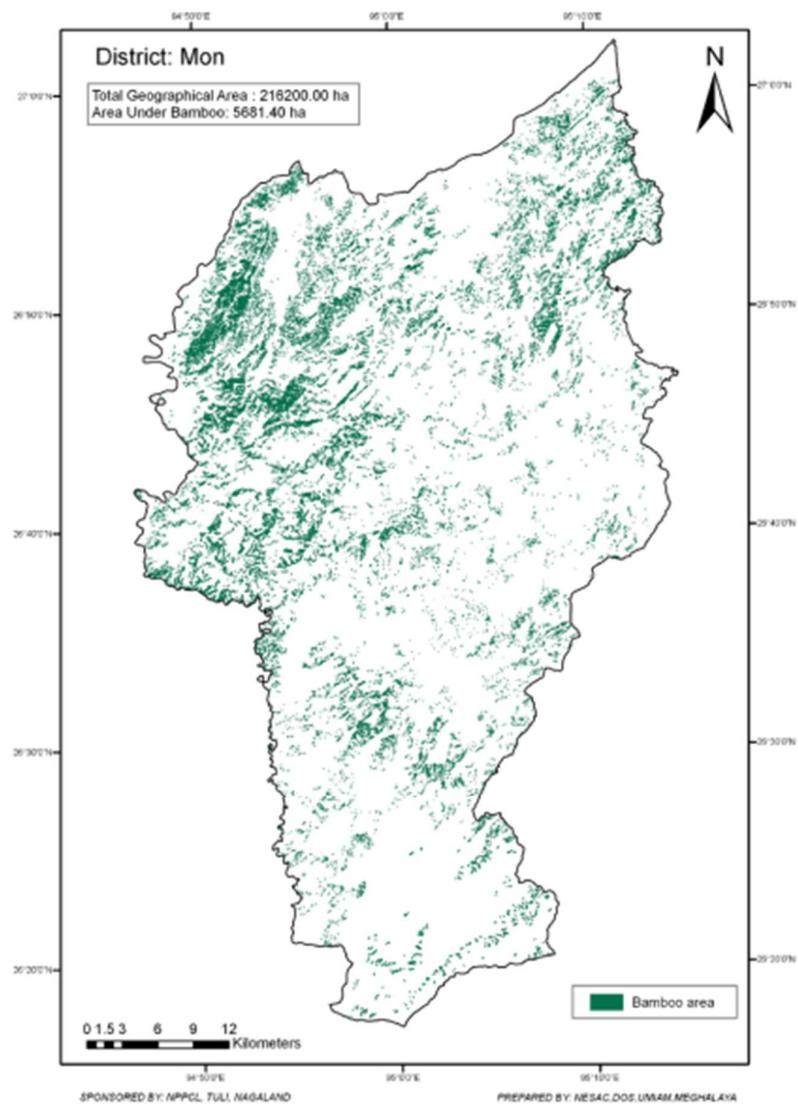


Fig.4. Bamboo cover map of Mon district

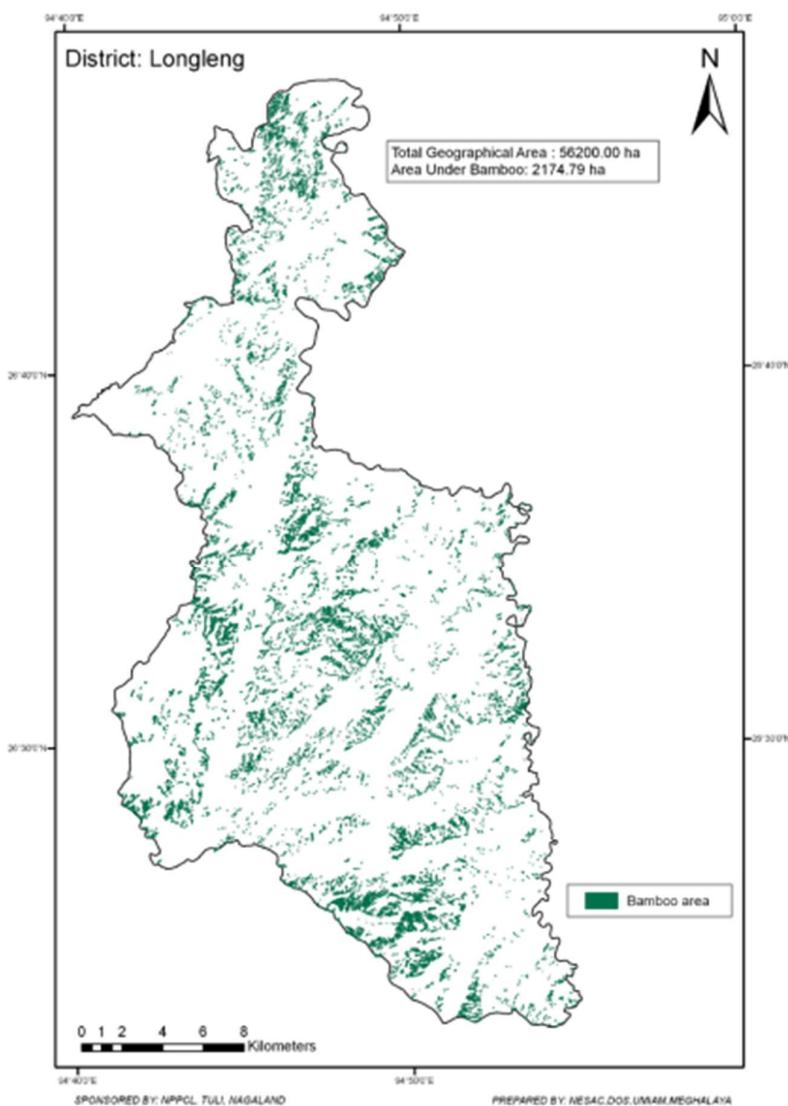


Fig.7. Base cover map of Longleng district

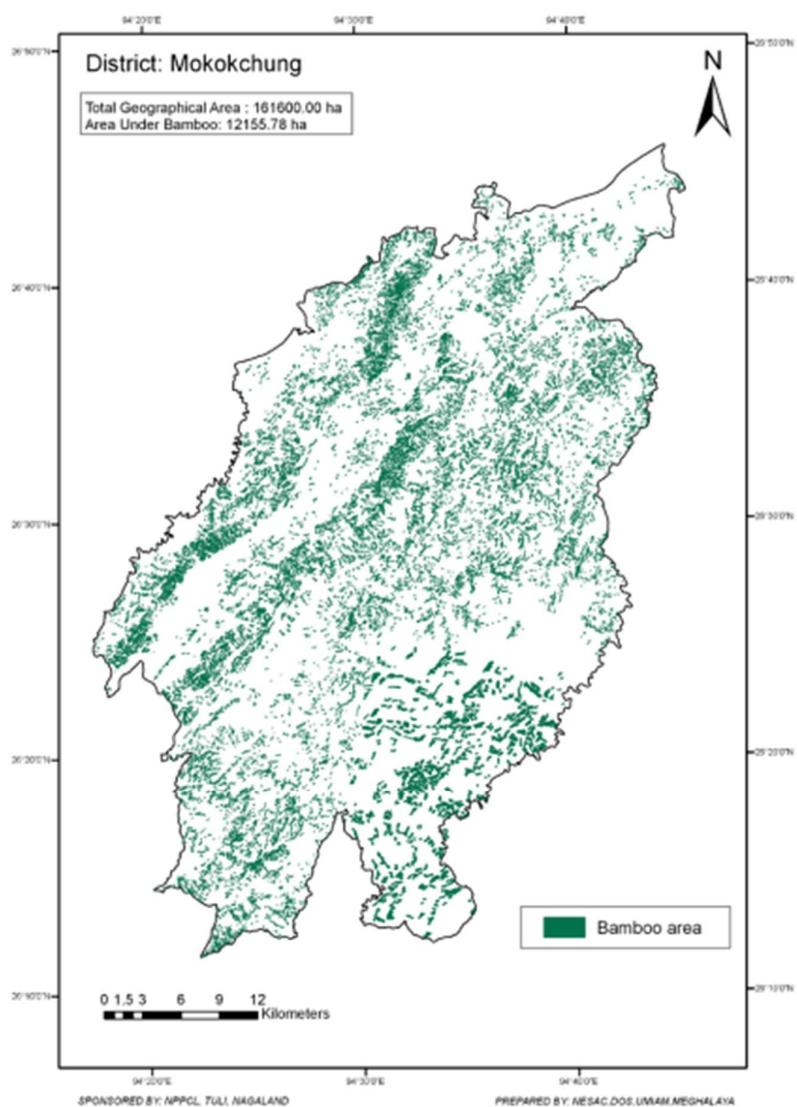


Fig.10. Bamboo cover map of Mokokchung district

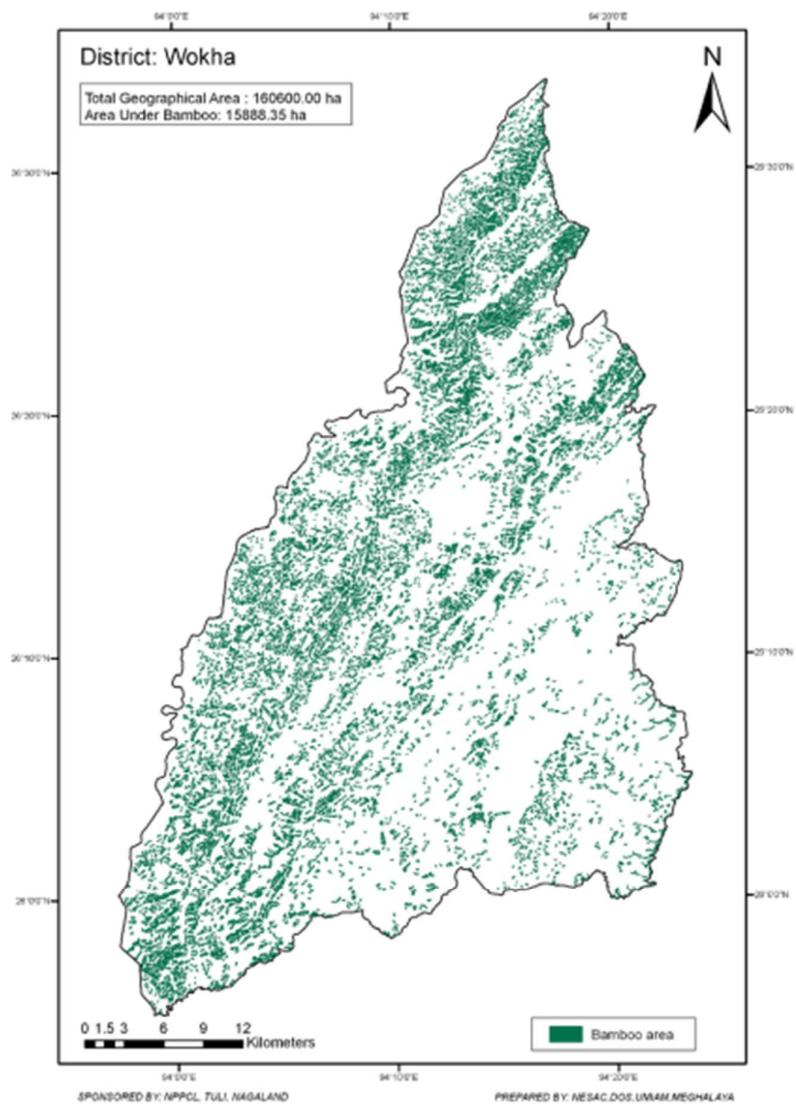


Fig.13. Bamboo map of Wokha district

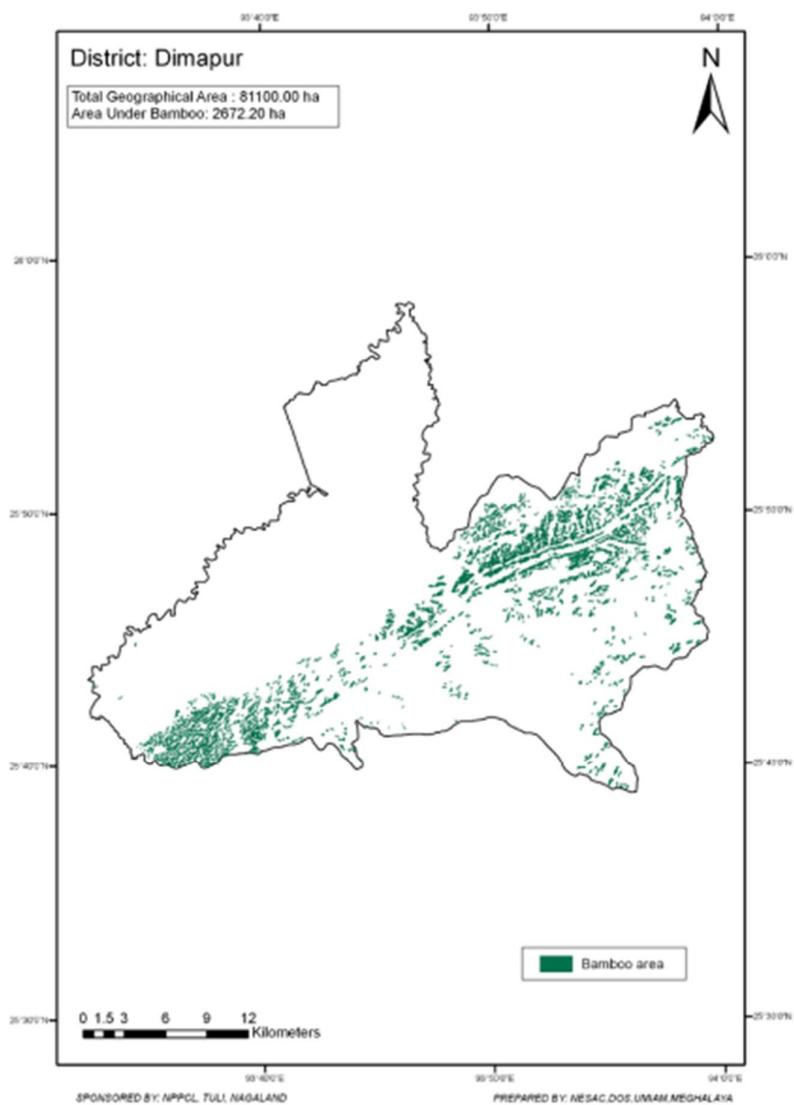


Fig.16. Bamboo cover map of Dimapur district

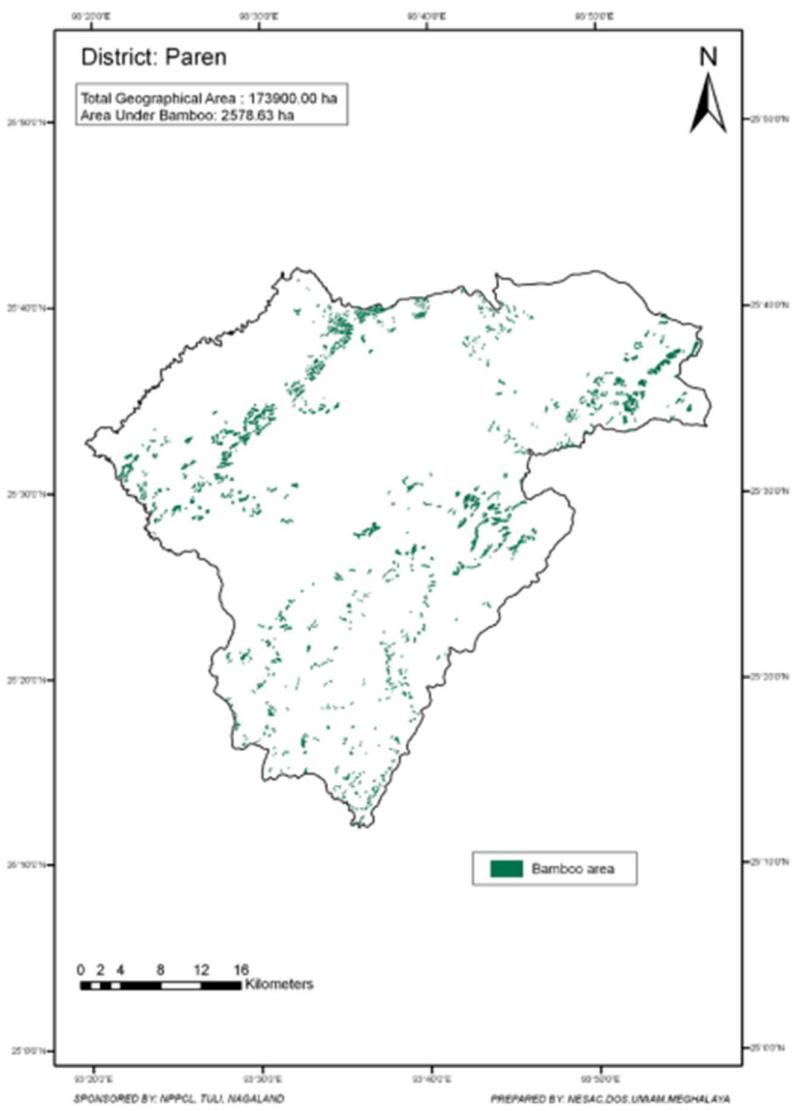


Fig.19. Bamboo cover map of Paren district

<https://nesac.gov.in/assets/resources/2020/12/Bamboo-resource-of-Arunachal-Pradesh.pdf>

Table 5: Circlewise estimate of bamboo growing areas of Tawang district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
TAWANG	Zemithang	563.64	1.84	31.82
	Lumla	182.82	1.32	22.92
	Mukto	217.29	0.79	13.72
	Tawang	265.25	1.12	19.36
	Jang	302.33	0.40	6.86
	Thingbu	835.93	0.31	5.33
Total		2367.27	5.78	100.00

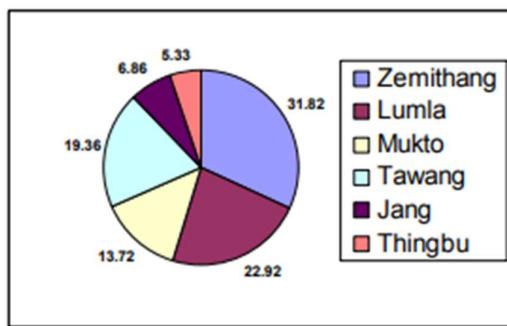


Fig. 9. Distribution of Bamboo area (%) in different Circles of Tawang district

Table 6: Circlewise estimate of bamboo growing areas of West Kameng district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
WEST KAMENG	Balimau	541.19	0.64	2.33
	Bhalukphung	359.06	0.91	3.26
	Bomdila	17.93	0.76	2.73
	Dirang	1348.69	10.42	37.47
	Jamiri	456.26	4.80	17.26
	Kalaktaang	278.35	1.89	6.78
	Nafra	1031.72	4.37	15.70
	Rupa	400.80	2.62	9.42
	Thrizino	416.59	1.41	5.06
Total		4850.58	27.82	100

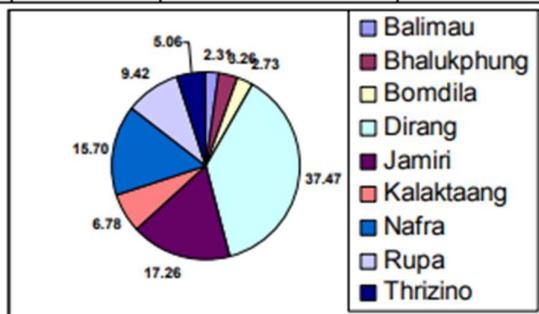


Fig. 10. Distribution of Bamboo area (%) in different Circles of West Kameng district

Table 7: Circlewise estimate of bamboo growing areas of East Kameng district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
EAST KAMENG	Bameng	357.46	0.16	1.26
	Chayangtajo	498.37	1.32	10.19
	Khenewa	297.94	0.15	1.15
	Lada	574.81	0.65	5.02
	Pakke Keshang	882.96	3.64	28.11
	Pipu	490.72	0.80	6.15
	Richukrong	446.78	3.31	25.53
	Sejosa	1121.04	2.33	18.00
	Seppa	579.44	0.59	4.59
Total		5249.51	12.96	100

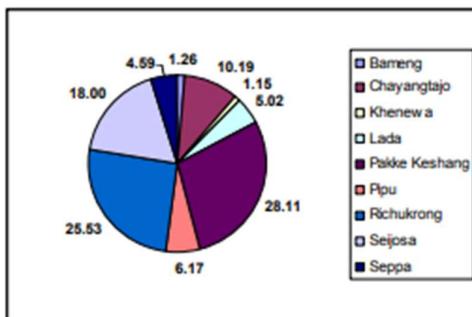


Fig. 11. Distribution of Bamboo area (%) in different Circles of East Kameng district

Table 8: Circlewise estimate of bamboo growing areas of Kurung Kumey district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
KURUNG KUMEY	Chambang	333.50	5.23	21.94
	Hurid (Damin)	1580.87	1.84	7.73
	Koloriang	357.95	0.83	3.47
	Longding Koling	960.72	4.22	17.67
	Nyapin	615.26	0.70	2.92
	Palin	415.91	1.63	6.83
	Parsi Parlo	354.56	0.03	0.13
	Sangram	233.34	0.10	0.41
	Sarli	1349.22	3.09	12.94
	Tali	535.03	6.19	25.96
Total		6736.35	23.84	100

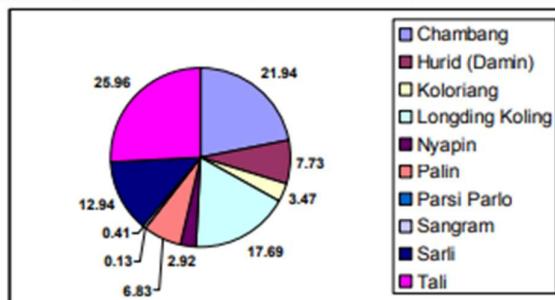


Fig. 12. Distribution of Bamboo area (%) in different Circles of Kurung Kumey district

Table 9: Circlewise estimate of bamboo growing areas of Papum Pare district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
PAPUM PARE	Kimin	549.21	6.63	14.36
	Doimukh	124.72	3.52	7.63
	Naharlagun	172.49	3.33	7.22
	Itanagar	175.23	3.02	6.54
	Balijan	1056.73	17.75	38.46
	Sagalee	733.07	9.34	20.23
	Mengio	580.44	2.57	5.57
Total		3391.89	46.16	100

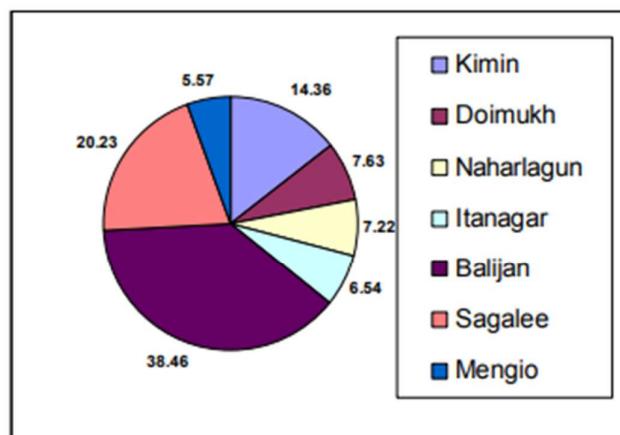


Fig. 13. Distribution of Bamboo area (%) in different Circles of Papum Pare district

Table 10: Circlewise estimate of bamboo growing areas of Lower Subansiri district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
LOWER SUBANSIRI	Dullungmukh	446.31	1.52	9.94
	Yachuli	803.36	5.02	32.87
	Ziro	233.24	0.75	4.90
	Pistana	400.17	2.40	15.73
	Raga	943.03	5.59	36.56
Total		2826.11	15.27	100

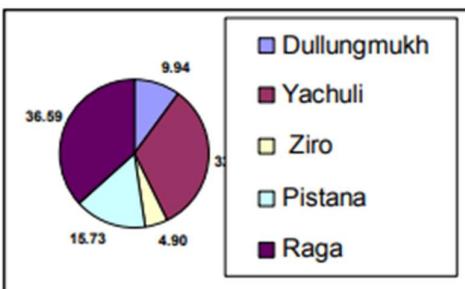


Fig. 14. Distribution of Bamboo area (%) in different Circles of Lower Subansiri district

Table 11: Circlewise estimate of bamboo growing areas of Upper Subansiri district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
UPPER SUBANSIRI	Baririjo	496.74	0.63	2.66
	Dumporijo	384.12	2.40	10.11
	Daporijo	324.24	1.12	4.72
	Giba	594.99	3.57	15.05
	Limeking	976.42	2.01	8.48
	Nacho	1089.95	3.23	13.60
	Payeng	665.85	2.21	9.31
	Puchigeku	300.20	0.94	3.96
	Siyum	492.55	1.36	5.74
	Taksiang	1106.09	4.87	20.53
	Taliha	181.09	1.39	5.86
Total		6612.23	23.73	100

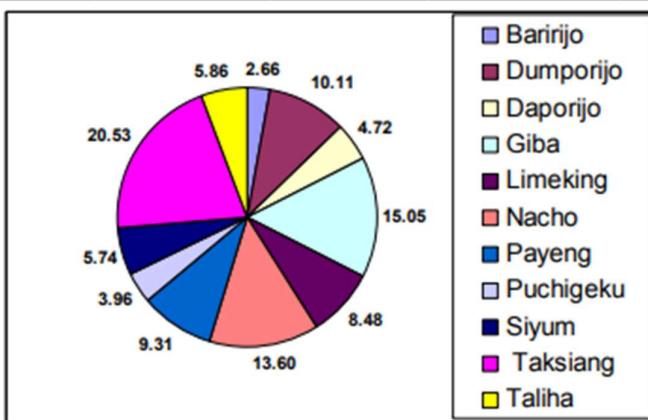


Fig. 15. Distribution of Bamboo area (%) in different Circles of Upper Subansiri district

Table 12: Circlewise estimate of bamboo growing areas of West Siang district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
WEST SIANG	Along	567.23	1.21	6.23
	Basar	361.66	0.33	1.72
	Darak	702.23	4.82	24.91
	Daring	267.24	1.23	6.37
	Gensi	499.09	0.71	3.70
	Jomlu	129.18	0.53	2.74
	Kayeng	288.02	0.48	2.49
	Kongku	442.95	2.00	10.35
	Likabali	321.97	0.95	4.94
	Liromoda	280.68	2.53	13.07
	Mechuka	1173.04	0.51	2.63
	Mobuk	119.26	0.25	1.31
	Monigong	1273.27	0.86	4.44
	Payum	849.68	1.00	5.17
	Pidi	286.51	0.14	0.76
	Tato	525.47	1.07	5.52
	Tirbin	140.15	0.38	1.96
	Yomcha	91.79	0.33	1.71
Total		8319.42	19.34	100

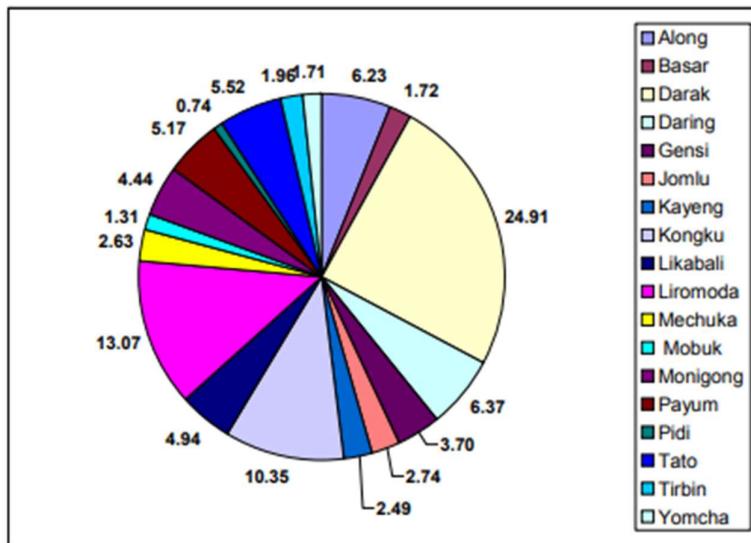


Fig. 16. Distribution of Bamboo area (%) in different Circles of West Siang district

Table 13: Circlewise estimate of bamboo growing areas of East Siang district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
EAST SIANG	Bilat	283.95	1.40	14.30
	Boleng	236.08	1.01	10.31
	Koyu	382.51	1.18	12.07
	Mebo	943.41	2.00	20.45
	Nari	143.13	0.20	2.04
	New Seren	114.66	0.22	2.21
	Oyan	114.42	0.01	0.14
	Pangin	581.07	0.80	8.16
	Pasighat	284.82	0.55	5.59
	Ribotarsing	175.34	0.17	1.77
	Riga	574.49	2.16	22.10
	Ruksin	123.05	0.09	0.86
Total		3956.92	9.77	100

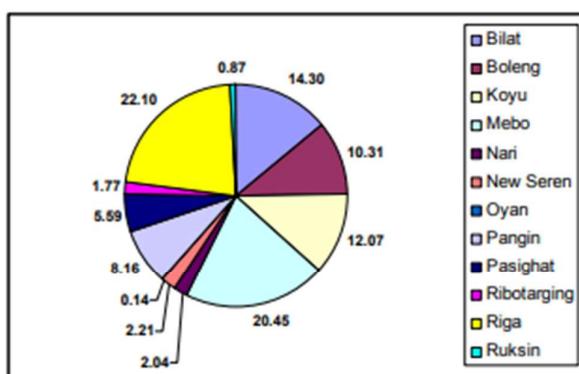


Fig. 17. Distribution of Bamboo area (%) in different Circles of East Siang district

Table 14: Circlewise estimate of bamboo growing areas of Upper Siang district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
UPPER SIANG	Geku	204.65	0.57	2.22
	Gelling	301.80	1.43	5.57
	Jengging	549.68	3.40	13.20
	Katan	454.07	0.76	2.96
	Mariyang	611.19	3.93	15.26
	Migging	1353.33	2.03	7.93
	Palling	164.75	0.97	3.77
	Singa	795.81	4.02	15.62
	Tutin	1527.54	4.87	18.92
	Yingkiong	548.23	3.75	14.56
Total		6511.06	25.74	100

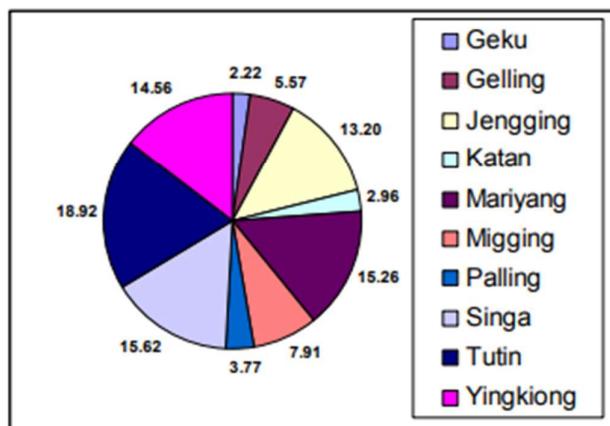


Fig. 18. Distribution of Bamboo area (%) in different Circles of Upper Siang district

Table 15: Circlewise estimate of bamboo growing areas of Dibang Valley district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
DIBANG VALLEY	Anelih	659.84	2.86	15.59
	Anini	1663.54	1.87	10.20
	Alinye	4760.74	7.38	40.32
	Mipi	2079.43	6.21	33.88
Total		9163.55	18.32	100

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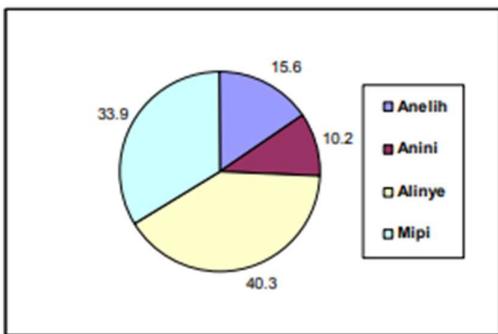


Fig. 19. Distribution of Bamboo area (%) in different Circles of Dibang Valley district

Table 16: Circlewise estimate of bamboo growing areas of Lower Dibang Valley district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
LOWER DIBANG	Dambuk	1164.94	4.12	35.15
	Dasali	860.48	1.88	16.08
	Hunli	475.36	1.11	9.53
	Koronu	188.89	2.33	19.88
	Kronli	594.65	1.06	9.07
	Roing	883.13	1.20	10.29
Total		4167.46	11.71	100

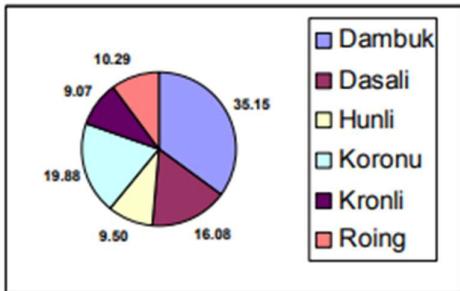


Fig. 20. Distribution of Bamboo area (%) in different Circles of Lower Dibang Valley district

Table 17: Circlewise estimate of bamboo growing areas of Anjaw district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
ANJAW	Changlagaon	1126.09	1.01	8.70
	Goiliang	697.05	1.56	13.41
	Hawai	1671.67	3.32	28.64
	Hayuliang	1285.12	3.81	32.88
	Kibithoo	529.43	0.10	0.87
	Manchal	628.17	0.88	7.60
	Walong	1186.85	0.92	7.89
Total		7124.38	11.60	100

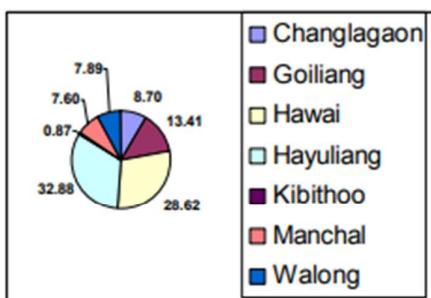


Fig. 21. Distribution of Bamboo area (%) in different Circles of Anjaw district

Table 18: Circlewise estimate of bamboo growing areas of Lohit district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
LOHIT	Chowkham	637.79	2.86	11.09
	Leking	128.33	0.36	1.38
	Namsai	247.40	1.04	4.04
	Payong	163.18	0.62	2.41
	Sanpura	656.84	7.33	28.39
	Tezu	1162.46	3.82	14.78
	Wakro	1511.65	9.79	37.92
Total		4507.65	25.82	100

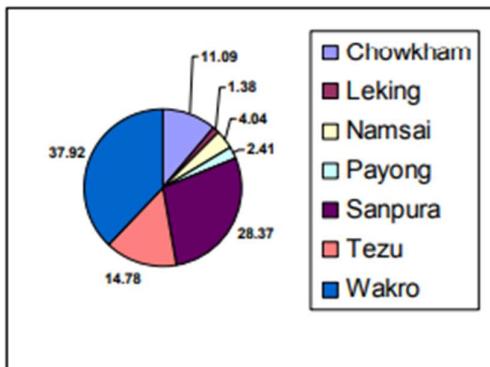


Fig. 22. Distribution of Bamboo area (%) in different Circles of Lohit district

Table 19: Circlewise estimate of bamboo growing areas of Changlang district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
CHANGLANG	Bordumsa	214.16	0.82	2.66
	Changlang	481.60	4.27	13.91
	Diyun	232.79	1.56	5.06
	Jairampur	274.44	0.96	3.14
	Kharsang	99.69	1.05	3.40
	Khimiyong	177.23	1.74	5.68
	Manmao	281.15	1.94	6.32
	Miao	1767.19	11.84	38.51
	Nampong	789.89	1.11	3.60
	Namtak	100.61	1.94	6.30
Total		5106.34	30.74	100.00

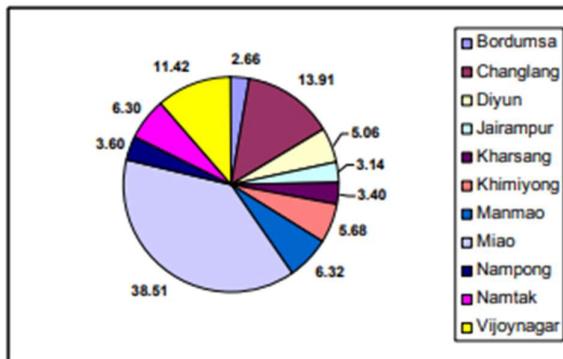


Fig. 23. Distribution of Bamboo area (%) in different Circles of Changlang district

Table 20: Circlewise estimate of bamboo growing areas of Tirap district

Name of District	Name of Block/Circle	Geographical Area (Sq.km)	Bamboo Area (Sq.km)	% Area covered
TIRAP	Deomali	323.84	3.99	23.28
	Kanubari	152.92	0.54	3.13
	Khonsa	459.18	2.91	17.00
	Laju	221.91	4.93	28.78
	Longding	209.87	1.38	8.05
	Panchao	208.42	1.04	6.07
	Pumao	174.17	1.30	7.61
	Wakka	217.92	1.04	6.07
Total		1968.24	17.14	100

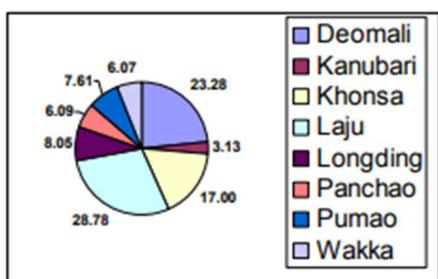
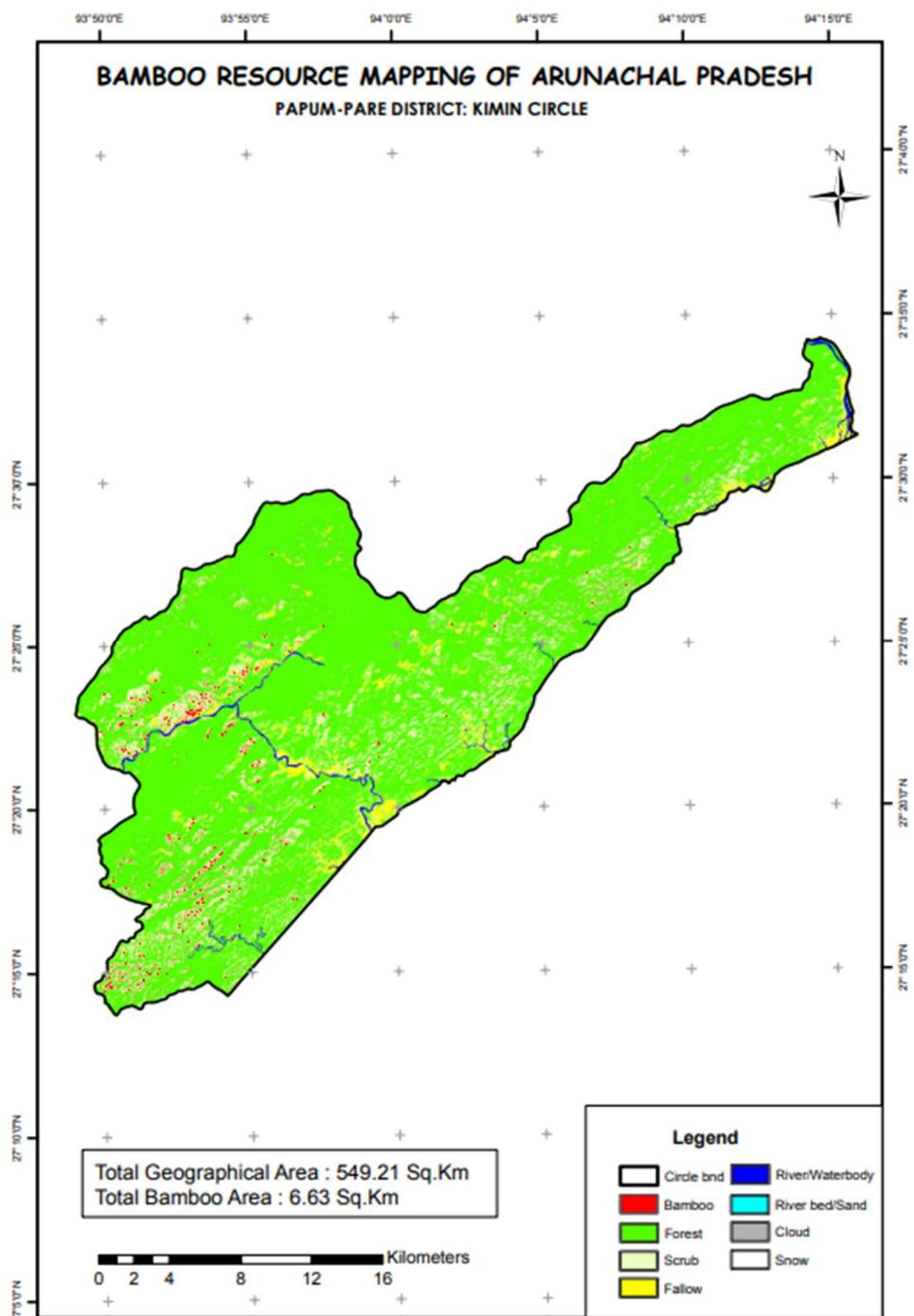


Fig. 24. Distribution of Bamboo area (%) in different Circles of Tirap district

Circlewise maps of bamboo growing areas of Arunachal Pradesh overlaid with major land cover classes are given in Annexure – I.



And many more from the same website

Table 1: State wise bamboo density in recorded forest area

State/UT	Pure bamboo	Dense	Scattered	Bamboo present but clumps completely hacked	Re-genera-tion crop	No bamboo	RFA (sq km)
Andhra Pradesh	16	3,111	3,485	142	824	29,680	37,258
Arunachal Pradesh	137	5,358	9,558	34	38	36,282	51,407
Assam	41	1,543	7,244	102	25	17,877	26,832
Bihar	0	126	809	24	45	5,873	6,877
Chhattisgarh	11	2,005	6,010	933	2,101	48,712	59,772
Goa	0	66	279	12	25	843	1,225
Gujarat	1	1,103	1,840	176	424	18,103	21,647
Haryana	0	0	21	0	0	1,538	1,559
Himachal Pradesh	0	120	307	3	110	36,493	37,033
Jharkhand	5	684	2,769	259	753	19,135	23,605
Karnataka	3	2,821	4,393	282	2,943	27,842	38,284
Kerala	11	757	1,972	123	621	7,825	11,309
Madhya Pradesh	56	4,581	9,256	1,714	2,560	76,522	94,689
Maharashtra	51	3,911	7,951	1,389	2,625	45,652	61,579
Manipur	95	2,790	7,676	59	67	6,731	17,418
Meghalaya	47	2,035	3,816	21	24	3,553	9,496
Mizoram	35	922	2,287	16	7	2,374	5,641
Nagaland	57	1,669	4,196	30	73	2,598	8,623
Odisha	26	2,918	7,035	584	1,546	49,095	61,204
Punjab	0	6	28	0	10	3,040	3,084
Rajasthan	0	415	1,326	24	211	30,761	32,737
Sikkim	0	214	339	0	0	5,288	5,841
Tamil Nadu	23	718	2,265	163	985	18,723	22,877
Telangana	3	1,647	2,068	67	993	22,126	26,904
Tripura	19	545	3,018	4	31	2,677	6,294
Uttar Pradesh	1	145	620	43	127	15,646	16,582
Uttarakhand	0	190	470	17	401	36,922	38,000
West Bengal	0	92	349	261	240	10,937	11,879
Dadra & Nagar Haveli	0	11	24	3	20	146	204
Total	638	40,503	91,411	6,485	17,829	582,994	739,860