Chapter

ANNEXURES

ANNEXURE-I

Distribution of Districts within Physiographic Zones (Total number of Districts: 593)

S.No.	States/UTs	Name of District
1.	**Western Himalayas: (No. of Districts: 36-complete, 3-partial)**	**Area: 329,255 km²**
1.	Himachal Pradesh	Bilaspur, Chamba, Hamirpur, Kangra, Kinnaur, Kullu, Lahul & Spiti, Mandi, Shimla, Sirmaur, Solan, Una.
2.	Jammu & Kashmir	Anantanag, Badgam, Baramula, Doda, Jammu, Kargil, Kathua, Kupwara, Leh (Ladakh), Pulwama, Punchh, Rajauri, Srinagar Udhampur.
3.	Punjab	Gurdaspur*, Hoshiarpur*, Rupnagar*.
4.	Uttarakhand	Almora, Bageshwar, Chamoli, Champawat, Dehradun, Nainital, PauriGarhwal, Pithoragarh, Rudraprayag, Tehri Garhwal, Uttarkashi.
2.	**Eastern Himalayas: (No. of Districts: 15-complete, 1-partial)**	**Area: 74,618 km²**
1.	Arunachal Pradesh	Dibang Valley, East Kameng, East Siang, Lower Sabansiri, Papum Pare, Tawang, Upper Siang, Upper Sabansiri, West-Kameng, West Siang.
2.	Sikkim	East, North, South, West
3.	West Bengal	Darjeeling*
3.	**North East Ranges: (No. of Districts: 43-complete, 4-Partial)**	**Area: 133,990 km²**
1.	Arunachal Pradesh	Changlang, Lohit, Tirap.
2.	Assam	Cachar, Golaghat*, Hailakandi, Karimganj, Karbi- Anglong* North Cachar Hills, , Nagaon*, Tinsukia*.
3.	Manipur	Bishnupur, Chandel, Churachandpur, Imphal East, Imphal West, Senapati, Tamenglong, Thoubal, Ukhrul.
4.	Meghalaya	East Garo Hills, East Khasi Hills, Jaintia Hills, RiBhoi, South Garo Hills, West Garo Hills, West Khasi Hills.
5.	Mizoram	Aizwal, Champhai, Kolasib, Lawngtlai, Lunglei, Mamit, Saiha, Serchhip.
6.	Nagaland	Dimapur, Kohima, Mokokchung, Mon, Phek, Tuensang, Wokha, Zunheboto.
7.	Tripura	Dhalai, North Tripura, South Tripura, West Tripura.
4.	**Northern Plains: (No. of Districts: 102-complete, 8-partial)**	**Area: 295,780 km²**
1.	Chandigarh	Chandigarh.
2.	Delhi	Central, East, New Delhi, North, North East, North West, South, South West, West.
3.	Haryana	Ambala, Bhiwani, Faridabad, Fatehbad, Gurgaon, Hissar, Jhajjar, Jind, Kaithal, Karnal, Kurkshetra, Mahendragarh*, Panchkula, Panipat, Rewari, Rohtak, Sirsa, Sonipat, Yamunanagar.
4.	Punjab	Amritsar, Bathinda, Faridkot, Fatehgarh Sahib, Firozpur, Gurdaspur*, Hoshiarpur*, Jalandhar, Kapurthala,Ludhiana, Mansa, Moga, Muktsar, Nawanshahr, Patiala, Rupnagar*,Sangrur.
5.	Uttar Pradesh	Agra*, Aligarh, Allahabad*, Ambedkar Nagar, Auraiya, Azamgarh, Baghpat, Bahraich, Ballia, Balrampur, Barabanki, Bareilly, Basti, Bijnor, Budaun,

S. No.	States/UTs	Name of District
		Bulandshahar, Chandauli*, Deoria, Etah, Etawah, Faizabad, Farrukhabad, Fatehpur, Firozabad, Gautam Buddha Nagar, Ghaziabad, Ghazipur, Gonda, Gorakhpur, Hardoi, Hathras, Jaunpur, Jyotiba Phule Nagar, Kannauj, Kanpur Dehat, Kanpur Nagar, Kaushambi, Kheri, Kushinagar, Lucknow, Maharajganj, Mainpuri, Mathura, Mau, Meerut, Mirzapur*, Moradabad, Muzaffarnagar, Pilibhit, Pratapgarh, RaiBareli, Rampur, Saharanpur, Sant Kabir Nagar, Sant Ravidas Nagar, Shahjahanpur, Sharavasti, Siddharth Nagar, Sitapur, Sultanpur, Unnao, Varanasi.
6.	Uttarakhand	Hardwar, Udhamsingh Nagar.
5.	**Eastern Plains: (No. of Districts: 62-complete, 11-partial)**	**Area: 223,339 km^2**
1.	Assam	Barpeta, Bongaigaon, Darrang, Dhemaji, Dhubri, Dibrugarh, Goalpara, Golaghat*, Jorhat, Kamrup, Karbi Anglong*, Kokrajhar, Lakhimpur, Marigaon, Nagaon*, Nalbari, Sibsagar, Sonitpur, Tinsukia*.
2.	Bihar	Araria, Aurangabad, Banka*, Begusarai, Bhagalpur, Bhojpur, Buxar, Darbhanga, Gaya*, Gopalganj, Jamui*, Jehanabad, Kaimur(Bhabua)*, Katihar, Khagaria, Kishanganj, Lakhisarai*, Madhepura, Madhubani, Munger*, Muzaffarpur, Nalanda, Nawada, Paschim Champaran, Patna, Purba Champaran, Purnia, Rohtas, Saharsa, Samastipur, Saran, Sheikhpura, Sheohar, Sitamarhi, Siwan, Supaul, Vaishali.
3.	West Bengal	Bankura, Bardhaman, Birbhum, Dakshin Dinajpur, Darjiling*, Hawra, Hoogli, Jalpaiguri, Coochbehar, Kolkata, Maldah, Medinipur, Murshidabad, Nadia, North-24 Parganas, South-24 Parganas, Uttar Dinajpur.
6.	**Western Plains: (No. of Districts: 17-complete, 8-partial)**	**Area: 319,098 km^2**
1.	Daman & Diu	Diu
2.	Gujarat	Ahmadabad*, Amreli, Banas Kantha*, Bhavnagar, Jamnagar, Junagarh, Kuchchh, Patan*, Porbandar, Rajkot, Surendranagar.
3.	Rajasthan	Barmer, Bikaner, Churu, Ganganagar, Hanumangarh, Jaisalmer, Jalor, Jhunjhunu*, Jodhpur, Nagaur*, Pali*, Sikar*, Sirohi*.
7.	**Central Highlands: (No. of Districts: 52-complete, 19-partial)**	**Area: 373,675 km^2**
1.	Bihar	Kaimur* (Bhabua).
2.	Gujarat	Sabar Kantha*.
3.	Haryana	Mahendargarh*.
4.	Madhya Pradesh	Bhind, Bhopal, Chhatarpur, Damoh, Datia, Dewas, Dhar*, Guna, Gwalior, Indore, Jabalpur*, Jhabua*,Katni*, Mandsaur, Morena, Narsimha-Pur*, Neemuch, Panna, Raisen, Rajgarh, Ratlam, Rewa, Sagar, Satna, Sehore, Shajapur, Sheopur, Shivpuri, Tikamgarh,Ujjain, Vidisha,WestNimar*.
5.	Rajasthan	Ajmer, Alwar, Banswara, Baran, Bharatpur, Bhilwara, Bundi, Chittaurgarh, Dausa, Dhaulpur, Dungarpur, Jaipur, Jhalawar, Jhunjhunu*, Karauli, Kota, Nagaur,* Pali*, Rajsamand, Sawai Madhopur, Sikar*, Sirohi*, Tonk, Udaipur.
6.	Uttar Pradesh	Agra*, Allahabad*, Banda, Chandauli*, Chitarkoot, Hamirpur, Jalaun, Jhansi, Lalitpur, Mahoba, Mirzapur*, Sonbhadra*.
8.	**North Deccan: (No. of Districts: 33-complete, 15-partial)**	**Area: 355,988 km^2**
1.	Gujarat	Narmada, Vadodara*.
2.	Madhya Pradesh	Balaghat, Barwani, Betul, Chhindwara, Dhar*, Dindori, East Nimar, Harda, Hosangabad, Jabalpur*, Jhabua*, Mandla, Narsingpur*, Seoni, Shahdol*, Umaria*, West Nimar*.
3.	Maharashtra	Ahmadnagar, Akola, Amrawati, Aurangabad, Bhandara, Bid, Buldana, Chandrapur, Dhule*, Gadchiroli, Gondiya, Hingoli, Jalgoan, Jalna, Kolhapur*, Latur, Nagpur, Nanded, Nandurbar*, Nashik*, Osmanabad, Parbhani, Pune*, Sangli*, Satara*, Solapur, Wardha, Washim, Yavatmal.

S. No.	States/UTs	Name of District
9.	**East Deccan: (No. of Districts: 48-complete, 15-partial)**	**Area: 336,289 km²**
1.	Bihar	Banka*, Gaya*, Jamui*, Lakhisarai*, Maungar* .
2.	Chhattisgarh	Bastar, Bilaspur, Dantewada, Dhamtari, Durg, Janjgir-Champa, Jashpur, Kanker, Kawardha, Korba, Koriya, Mahasamund, Raigarh, Raipur, Rajnandgaon, Surguja.
3.	Jharkhand	Bokaro, Chatra, Deoghar, Dhanbad, Dumka, Garhwa, Giridih, Godda, Gumla, Hazaribagh, Kodarma, Lohardaga, Pakaur, Palamu, Pashchimi Singhbhum, Purbi Singhbhum, Ranchi, Sahibaganj.
4.	Madhya Pradesh	Katni*, Shahdol*, Sidhi, Umaria*.
5.	Orissa	Anugul, Balangir, Balasore*, Bargarh, Cuttack*,Debagarh, Dhenkanal, Jajapur*, Jharsuguda, Kalahandi*, Kendujhar, Koraput*, Mayurbhanj*, Nabarangapur, Nuapada, Sambalpur, Sonapur, Sundargarh.
6.	Uttar Pradesh	Sonbhadra*.
7.	West Bengal	Puruliya.
10.	**South Deccan: (No. of Districts: 26-complete, 11-partial)**	**Area: 292,416 km²**
1.	Andhra Pradesh	Adilabad, Anantpur*, Hyderabad, Karimnagar, Khammam*, Kurnool*, Mahboob Nagar*, Medak, Nalgonda*, Nizamabad, Ranga Reddy, Warangal.
2.	Karnataka	Bagalkot, Banglore, Banglore Rural, Belgaum, Bellary, Bidar, Bijapur, Chamarajanagar*, Chikmagalur*, Chitradurga, Davanagere, Dharwad, Gadag, Gulbarga, Hassan, Haveri, Kodagu*, Kolar*, Koppal, Mandya, Mysore, Raichur, Shimoga*, Tumkur, Uttar kannada*.
11.	**Western Ghats: (No. of Districts: 5-complete, 30-partial)**	**Area: 72,381 km²**
1.	Dadra&NagarHaveli	Dadra & Nagar Haveli.
2.	Gujarat	Navsari*, Surat*, The Dangs, Valsad*.
3.	Karnataka	Chikmangalur*, Dakshina kannada*, Kodagu*, Shimoga*, Udupi*, Uttar Kannad*.
4.	Kerala	Ernakulam*, Idukki, Kasaragod*, Kollam*, Kottayam*, Palakkad*, Pathanmitta*, Wayanad.
5.	Maharashtra	Dhule*, Kolhapur*, Nandurbar*, Nashik*, Pune*, Raigarh*, Ratnagiri*, Sangli*, Satara*, Sindhudurg*, Thane*.
6.	Tamilnadu	Coimbatore*, Kanniyakumari*, The Nilgiris, Tiruneiveli*, Theni*.
12.	**Eastern Ghats: (No. of Districts: 12-complete, 28-partial)**	**Area: 191,698 km²**
1.	Andhra Pradesh	Anantapur*,Chittoor, Cuddapah, East Godawari*, Guntur*, Khammam*, Krishna*, Kurnul*,Mahaboobnagar*, Nalgonda*, Nellore*, Prakasham*, Srikakulam*, Visakhapatnam*, Vizianagaram*, West Godawari*.
2.	Odisha	Baudh, Gajpati, Ganjam*, Kalahandi*, Kandhamal, Kordha*, Koraput*, Malkangiri, Nayagarh, Rayagada.
3.	Karnataka	Chamrajnagar*, Kolar*.
4.	Tamilnadu	Coimbatore*, Dharmapuri, Dindigul, Erode, Karur*, Madurai*, Tiruchirapalli*, Tiruvanamalai*, Namakkal, Salem*, Theni*, Vellore*.
13.	**West Coast: (No. of Districts: 20-complete, 21-partial)**	**Area: 121,242 km²**
1.	Daman & Diu	Daman.
2.	Goa	North Goa, South Goa.
3.	Gujarat	Ahmadabad*, Anand, Banas kantha*, Bharuch, Dohad, Gandhinagar, Kheda, Mahesana, Navsari*, Panchmahals, Patan*, SabarKantha*, Surat*, Vadodara*, Valsad*,
4.	Karnataka	Dakshina Kannada*, Udupi*, Uttar kannada*.
5.	Kerala	Alappuzha, Ernakulam*, Kannur, Kasaragod*, Kollam*, Kottayam*, Kozhikode, Malapuram, Palakkad*, Pathanamthitta*, Thiruvananthapuram, Thrissur.

S. No.	States/UTs	Name of District
6.	Lakshadweep	Lakshadweep.
7.	Maharashtra	Mumbai(City), Mumbai (Suburban), Raigarh*, Ratnagiri*, Sindhudurg*, Thane*.
8.	Puducherry	Mahe.
14.	**East Coast: (No. of Districts: 24-complete, 23-partial)**	**Area: 167,494 km^2**
1.	Andaman & Nicobar Islands	Andamans, Nicobars.
2.	Andhra Pradesh	East Godavari*, Guntur*, Krishna*, Nellore*, Prakasam*, Srikakulam*, Visakhapatnam*, Vizianagaram*, West Godavari*.
3.	Odisha	Balasore*, Bhadrak, Cuttack*, Ganjam*, Jagatsinghapur, Jajapur*, Kendrapara, Khordha*, Mayurbhanj*, Puri.
4.	Puducherry	Karaikal, Pondicherry, Yanam.
5.	Tamil Nadu	Ariyalur, Chennai, Cluddalore, Kancheepuram, Kanyakumari*, Karur*, Madurai*, Nagapattinam, Perambalur, Pudukkottai, Ramanathapuram, Sivaganga, Salem*, Thanjavur, Thiruvalllur, Thiruvarur, Tiruchirappalli*, Tirunelveli*, Tiruvanamalai*, Toothu-Kudi, Viluppuram, Virudhunagar, Vellore*.

* Total no. of districts are 593 out of which 97 Districts fall in two Physiographic zones & one district fall in three Physiographic zones.

ANNEXURE-II

Volume Equations

Volume equations to compute volume of wood in predominant trees in each physiographic zone are provided in the following Tables:

01 Western Himalayas

Sl.No.	Species Name	Volume Equation
1	*Abies pindrow*	$V=0.26949-1.61804D+8.79495D^2+2.49489D^3$
2	*Cryptomeria japonica*	$V=-0.01097+5.30991D^2$
3	*Picea smithiana (Picea morinda)*	$\sqrt{V}=0.20050+4.58840D-1.42603\sqrt{D}$
4	*Quercus semecarpifolia*	$V=0.08355-1.28586D+8.76867D^2+1.12150D^3$
5	*Rhododendron arboreum*	$V=0.06007-0.21874\sqrt{D}+3.63428D^2$
6	*Schima wallichii*	$V=-0.01637+6.08487D^2$
7	*Shorea robusta*	$V/D^2=0.1919/D^2-2.7070/D+11.7563$
8	*Symplocos lucida (Symplocos theaefolia)*	$V=-0.03754+0.000587D^2$ dia in cm
9	*Tectona grandis*	$V/D=0.00341/D-0.65623+7.881D$

02 Eastern Himalayas

Sl.No.	Species Name	Volume Equation
1	*Callicarpa arborea*	$\sqrt{V}=-0.07109+2.99732D-0.26953\sqrt{D}$
2	*Castanopsis sp.*	$V=0.05331-0.87098D+6.52533D^2+1.74231D^3$
3	*Duabanga grandiflora (Duabanga sonneratioides)*	$\sqrt{V}=-0.05931+2.63098D$
4	*Michelia sp.*	$V=0.23057-3.51494D+17.62619D^2$
5	*Quercus sp.*	$V/D^2=5.09470+0.00563/D^2$
6	*Syzygium cumini*	$\sqrt{V}=-0.05923+2.33654D$

03 North Eastern Ranges

Sl.No.	Species Name	Volume Equation
1	*Callicarpa arborea*	$\sqrt{V}=-0.04506+2.33446D$
2	*Dipterocarpus turbinatus*	$\sqrt{V}=-0.4464+3.6062D$
3	*Gmelina arborea*	$V=0.01156+0.21230D+5.10448D^2$
4	*Macaranga sp.*	$\sqrt{V}=-0.07109+2.99732D-0.26953\sqrt{D}$
5	*Maniltoa polyandra (Cynometra polyandra)*	$V=0.15958-1.57976D+8.25014D^2-0.48518D^3$
6	*Schleichera oleora (Schleichera trijuga)*	$V=0.010-0.912D+11.396D^2$
7	*Syzygium sp.*	$V=-0.02792+0.92933D-5.56465D^2+25.77488D^3$

04 Northern Plains

Sl.No.	Species Name	Volume Equation
1	*Acacia catechu*	$V=0.16609-2.78851D+17.22127D^2-11.60248D^3$
2	*Diospyros sp.*	$V=0.06206-1.43609D+9.778164D^2$
3	*Eucalyptus sp.*	$V=0.02894-0.89284D+8.72416D^2$
4	*Holarrhena pubescens (Holarrhena antidysenterica)*	$V=0.17994-2.78776D+14.44961D^2$
5	*Lagerstroemia parviflora*	$V=0.10529-1.68829D+10.29573D^2$
6	*Mallotus philippensis*	$V=0.14749-2.87503D+19.61977D^2-19.11630D^3$
7	*Shorea robusta*	$\sqrt{V}=0.16306+4.8991D-1.57402\sqrt{D}$
8	*Tectona grandis*	$V=0.08847-0.46936D+11.98979D^2+1.970560D^3$

05 Eastern Plains

Sl.No.	Species Name	Volume Equation
1	*Albizia sp.*	$\sqrt{V}=-0.07109+2.99732D-0.26953\sqrt{D}$
2	*Aglaia spectabilis (Amoora wallichii)*	$\sqrt{V}=0.00905+3.7648D-0.64993\sqrt{D}$
3	*Lagerstroemia parviflora*	$V=0.11740-1.58941D+9.76464D^2$
4	*Lannea coromandelica*	$\sqrt{V}=-0.32985+2.21152D+0.78769\sqrt{D}$
5	*Schima wallichii*	$V=0.27609-3.68443D+15.86687D^2$
6	*Shorea robusta*	$V/D2=0.00389/D^2-0.27516/D+6.90733$

06 Western Plains

Sl.No.	Species Name	Volume Equation
1	*Acacia ferruginea*	$\sqrt{V}=-0.00142+2.61911D-0.54703\sqrt{D}$
2	*Anogeissus pendula*	$V/D^2=0.00085/D^2-0.35165/D+4.77386-0.90585D$
3	*Boswellia serrata*	$\sqrt{V}=-0.11629+2.4254D$
4	*Butea monosperma (old)*	$\sqrt{V}=-0.24276+2.95525D$
5	*Capparis decidua*	$V=0.081467-1.063661D+6.452918D^2$
6	*Lannea coromandelica*	$V=-0.00146-0.39953D+5.33895D^2$
7	*Wrightia tinctoria*	$V=0.028917-7.777047D^3$

07 Central Highlands

Sl.No.	Species Name	Volume Equation
1	*Acacia catechu*	$V=-0.02471+0.16897D+1.12083D^2+2.9328D^3$
2	*Anogeissus latifolia*	$\sqrt{V}=-0.20236+3.13059D$
3	*Boswellia serrata*	$\sqrt{V}=-0.1503+2.79425D$
4	*Cassia fistula*	$\sqrt{V}=-0.153973+2.724109D$
5	*Diospyros melanoxylon*	$V=0.15581-2.2075D+9.17559D^2$
6	*Lannea coromandelica*	$V/D^2=0.14004/D^2-2.35990/D+11.90726$

08 North Deccan

Sl.No.	Species Name	Volume Equation
1	*Anogeissus latifolia*	$V/D=0.145667/D-2.704089+17.4656D-10.4903D^2$
2	*Boswellia serrata*	$V=0.050452-1.228748D+9.123381D^2$
3	*Dalbergia latifolia*	$\sqrt{V}=-0.144504+2.943115D$
4	*Lannea coromandelica*	$V=0.093318-1.531417D+9.011590D^2$
5	*Syzygium cumini*	$V/D=0.076856/D-1.359767+8.72548D-0.591440D^2$
6	*Tectona grandis*	$\sqrt{V}=-0.405890+1.98158D+0.987373\sqrt{D}$
7	*Terminalia alata (Terminalia tomentosa)*	$\sqrt{V}=-0.203947+3.159215D$
8	*Wrightia tinctoria*	$\sqrt{V}=0.050294+3.115497D-0.687813\sqrt{D}$

09 East Deccan

Sl.No.	Species Name	Volume Equation
1	*Anogeissus latifolia*	$V/D^2=-0.02958/D^2+8.05003$
2	*Cleistanthus collinus*	$V=0.030925-0.567037D+5.709471D^2$
3	*Diospyros melanoxylon*	$V=0.12401-2.00966D+10.87747D^2$
4	*Lagerstroemia parviflora*	$V=0.06913-1.37605D+11.89119D^2$
5	*Lannea coromandelica*	$V=0.057424-1.153088D+8.542648D^2$
6	*Madhuca longifolia*	$V=-0.00092-0.55547D+7.34460D^2$
7	*Shorea robusta*	$V=0.05823-1.22994D+10.51982D^2$
8	*Terminalia alata (Terminalia tomentosa)*	$V=0.05061-1.11994D+8.77839D^2$

10 South Deccan

Sl.No.	Species Name	Volume Equation
1	*Anogeissus latifolia*	$V=0.289-2.653D+11.771D^2$
2	*Chloroxylon swietenia*	$V=-0.0532D+3.2378D^2$
3	*Dalbergia lanceolaria (Dalbergia paniculata)*	$V=0.18945-2.46215D+10.54462D^2$
4	*Diospyros melanoxylon*	$V=0.024814-0.578532D+6.11017D^2$
5	*Grewia sp.*	$V=-0.01611+4.90810D^2$
6	*Hardwickia binata*	$V=0.063632+5.355486D^3$
7	*Terminalia crenulata*	$V=0.051812-1.076790D+7.991280D^2$

11 Western Ghat

Sl.No.	Species Name	Volume Equation
1	*Artocarpus hirsuta*	$V=0.076-1.319D+11.370D^2$
2	*Olea dioica*	$V=-0.03001+5.75523D^2$
3	*Palaquium ellipticum*	$V=0.16948-1.85075D+10.63682D^2$
4	*Syzygium cumini*	$\sqrt{V}=0.30706+5.12731D-2.09870\sqrt{D}$
5	*Tectona grandis*	$V=-0.2414+2.8458D-5.5816D^2+14.816D^3$
6	*Terminalia alata (Terminalia tomentosa)*	$\sqrt{V}=-0.203947+3.159215D$

12 Eastern Ghat

Sl.No.	Species Name	Volume Equation
1	*Anacardium occidentale*	$\sqrt{V}=0.06063+3.43666D-0.75571\sqrt{D}$
2	*Anogeissus latifolia*	$V=0.13928-2.87067D+20.22404D^2-13.80572D^3$
3	*Bombax ceiba*	$V/D^2=0.136196/D^2-2.07674/D+10.1566$
4	*Chukrasia tabularis*	$V=-0.079733-0.0021006D+0.001114D^2$(dia in cm)
5	*Grewia tiliifolia*	$\log_e V=2.2491+2.5206 \log_e D$
6	*Pterocarpus marsupium*	$\sqrt{V}=-0.16276+2.82002D+0.04034\sqrt{D}$
7	*Shorea robusta*	$\sqrt{V}=0.19994+4.57179D-1.56823\sqrt{D}$
8	*Xylia xylocarpa*	$V=0.098-1.52D+8.963D^2$

13 West coast

Sl.No.	Species Name	Volume Equation
1	*Acacia ferruginea*	$V=-0.048108+5.873169D^2$
2	*Adina cordifolia*	$\sqrt{V}=0.21569+4.329878D-1.504977\sqrt{D}$
3	*Azadirachta indica*	$V=-0.03510+5.32981D^2$
4	*Bombax ceiba*	$V/D^2= 0.18573/D^2 -2.85418/D+15.03576$
5	*Lagerstroemia myriocarpa (Lagerstroemia lanceolata)*	$V=0.23839-2.48071D+10.14106D^2$
6	*Lannea coromandelica*	$\sqrt{V}=0.404153+5.555051D-2.545525\sqrt{D}$

14 East coast

Sl.No.	Species Name	Volume Equation
1	*Bauhinia sp.*	$V=-0.04262+6.09491D^2$
2	*Boswellia serrata*	$V=0.36432-1.32768\sqrt{D}+9.48471D^2$
3	*Careya arborea*	$V=0.0219-0.9274D+7.4162 D^2$
4	*Cleistanthus collinus*	$\sqrt{V}=0.12956+3.7819D-1.04671\sqrt{D}$
5	*Hevea brasiliensis*	$\log_e V=2.1795+2.5045 \log_e D$
6	*Syzygium cumini*	$\log_e V=2.132776+2.479397 \log_e D$
7	*Tectona grandis*	$V=0.023613-0.531006D+6.731036D^2$

ANNEXURE-III A

Table III A: Estimated Number of Stems by Species and Diameter Class in Forest at Country Level (nos. in '000)

Sl. No.	Species	Diameter Class (cm)				Percentage
		10-30	30-50	50+	Total	
1	*Abies pindrow / Abies spectabilis*	21,550	12,030	11,451	45,030	0.34
2	*Acacia catechu*	167,247	3,611	195	171,053	1.31
3	*Albizia sp.*	66,306	10,323	1,291	77,920	0.60
4	*Alnus nepalensis*	33,978	8,143	517	42,637	0.33
5	*Anogeissus latifolia*	472,103	42,970	3,264	518,338	3.97
6	*Boswellia serrata*	112,248	49,825	4,646	166,719	1.28
7	*Buchanania lanzan (Buchanania latifolia)*	190,125	4,607	72	194,805	1.49
8	*Butea monosperma*	193,661	15,876	618	210,155	1.61
9	*Castanopsis sp.*	145,882	37,013	8,234	191,129	1.46
10	*Cedrus deodara*	26,996	18,072	9,498	54,567	0.42
11	*Chloroxylon swietenia*	217,373	8,450	161	225,985	1.73
12	*Cleistanthus collinus*	200,461	3,116	59	203,636	1.56
13	*Dalbergia lanceolaria (Dalbergia paniculata)*	47,580	11,084	1,218	59,882	0.46
14	*Diospyros melanoxylon*	179,810	16,542	1,004	197,356	1.51
15	*Hardwickia binata*	46,950	9,926	1,973	58,849	0.45
16	*Lagerstroemia parviflora*	273,882	11,523	613	286,018	2.19
17	*Lannea coromandelica*	278,043	41,821	1,914	321,777	2.46
18	*Madhuca longifolia*	117,248	28,692	9,240	155,180	1.19
19	*Mangifera indica*	6,347	2,128	1,750	10,225	0.08
20	*Picea smithiana (Picea morinda)*	15,159	12,071	11,603	38,834	0.30
21	*Pinus roxburghii (Pinus longifolia)*	171,984	69,119	22,443	263,545	2.02
22	*Pinus wallichiana (Pinus excelsa)*	60,936	23,392	11,240	95,568	0.73
23	*Pterocarpus marsupium*	60,106	13,761	2,426	76,292	0.58
24	*Quercus floribunda (Quercus dilatata)*	28,495	5,975	4,783	39,253	0.30
25	*Quercus leucotrichophora (Quercus incana)*	195,378	32,793	9,977	238,148	1.82
26	*Quercus semecarpifolia*	48,948	22,471	11,781	83,200	0.64
27	*Quercus sp.*	94,455	30,192	11,890	136,537	1.05
28	*Rhododendron arboreum*	134,180	18,736	3,639	156,555	1.20
29	*Schima wallichii*	112,317	17,773	3,789	133,880	1.02
30	*Schleichera oleosa (Schleichera trijuga)*	28,695	6,355	1,687	36,737	0.28
31	*Shorea robusta*	1,070,782	193,708	44,062	1,308,552	10.02
32	*Syzygium cumini*	75,909	18,779	4,227	98,914	0.76
33	*Taxus baccata*	13,638	2,135	796	16,570	0.13
34	*Tectona grandis*	917,563	90,381	9,449	1,017,393	7.79
35	*Terminalia belerica*	18,885	4,882	1,858	25,625	0.20
36	*Terminalia crenulata*	402,533	64,794	9,519	476,845	3.65
37	*Terminalia myriocarpa*	2,738	4,124	1,802	8,664	0.07
38	*Terminalia paniculata*	48,043	6,562	2,462	57,068	0.44
39	*Toona ciliata (Cedrela toona)*	13,900	6,148	465	20,513	0.16
40	*Xylia xylocarpa*	102,151	12,363	2,160	116,673	0.89
41	*Rest of species*	4,714,746	560,210	150,913	5,425,869	41.54
Grand Total		**11,129,330**	**1,552,476**	**380,691**	**13,062,497**	**100.00**

ANNEXURE-III B

Table III B: Estimated Volume by Species and Diameter Class in Forest at Country Level (in million m^3)

Sl. No.	Species	Diameter Class (cm)				Percentage
		10-30	30-50	50+	Total	
1	*Abies pindrow / Abies spectabilis*	5.563	14.233	48.061	67.857	1.63
2	*Acacia catechu*	12.799	2.409	0.394	15.602	0.37
3	*Albizia sp.*	8.540	7.793	3.208	19.542	0.47
4	*Alnus nepalensis*	9.370	11.302	1.889	22.561	0.54
5	*Anogeissus latifolia*	76.938	43.587	9.708	130.233	3.12
6	*Boswellia serrata*	20.100	39.711	11.477	71.289	1.71
7	*Buchanania lanzan (Buchanania latifolia)*	15.492	2.596	0.816	18.904	0.45
8	*Butea monosperma*	21.261	11.918	1.638	34.817	0.83
9	*Castanopsis sp.*	17.609	29.322	19.795	66.726	1.60
10	*Cedrus deodara*	5.684	19.190	34.281	59.155	1.42
11	*Chloroxylon swietenia*	13.162	3.152	0.278	16.592	0.40
12	*Cleistanthus collinus*	15.407	1.847	0.189	17.444	0.42
13	*Dalbergia lanceolaria (Dalbergia paniculata)*	6.788	10.696	3.826	21.310	0.51
14	*Diospyros melanoxylon*	17.125	13.201	2.908	33.234	0.80
15	*Hardwickia binata*	6.269	7.146	5.125	18.541	0.44
16	*Lagerstroemia parviflora*	33.016	10.972	1.779	45.766	1.10
17	*Lannea coromandelica*	37.105	34.595	5.250	76.949	1.84
18	*Madhuca longifolia*	15.550	22.881	25.125	63.556	1.52
19	*Mangifera indica*	1.361	2.109	10.426	13.896	0.33
20	*Picea smithiana (Picea morinda)*	3.615	14.277	117.292	135.184	3.24
21	*Pinus roxburghii (Pinus longifolia)*	23.193	59.760	58.783	141.736	3.40
22	*Pinus wallichiana (Pinus excelsa)*	12.122	27.694	37.906	77.721	1.86
23	*Pterocarpus marsupium*	10.623	13.970	8.287	32.880	0.79
24	*Quercus floribunda (Quercus dilatata)*	4.264	5.587	20.645	30.496	0.73
25	*Quercus leucotrichophora (Quercus incana)*	19.876	18.305	22.946	61.127	1.46
26	*Quercus semecarpifolia*	8.841	20.845	45.791	75.477	1.81
27	*Quercus sp.*	14.841	22.644	28.016	65.500	1.57
28	*Rhododendron arboreum*	11.504	7.759	4.801	24.065	0.58
29	*Schima wallichii*	15.168	16.089	10.664	41.921	1.00
30	*Schleichera oleosa (Schleichera trijuga)*	5.257	6.386	4.984	16.626	0.40
31	*Shorea robusta*	181.114	206.082	157.943	545.140	13.06
32	*Syzygium cumini*	10.502	15.253	13.396	39.151	0.94
33	*Taxus baccata*	6.998	4.382	3.919	15.299	0.37
34	*Tectona grandis*	113.047	71.980	38.937	223.964	5.37
35	*Terminalia belerica*	2.762	4.512	7.313	14.586	0.35
36	*Terminalia crenulata*	51.139	57.610	31.177	139.925	3.35
37	*Terminalia myriocarpa*	1.352	6.314	7.068	14.734	0.35
38	*Terminalia paniculata*	4.255	5.606	10.882	20.743	0.50
39	*Toona ciliata (Cedrela toona)*	7.736	12.984	0.970	21.691	0.52
40	*Xylia xylocarpa*	12.420	10.398	5.617	28.435	0.68
41	Rest of species	556.902	448.831	587.253	1,592.986	38.17
Grand Total		**1,416.672**	**1,345.928**	**1,410.762**	**4,173.362**	**100.000**

ANNEXURE-III C

Table III C: Estimated Number of Stems by Species and Diameter Class in TOF at Country Level (nos. in '000)

Sl. No.	Species	Diameter Class (cm)				Percentage
		10-30	30-50	50+	Total	
1	*Acacia nilotica (Acacia arabica)*	156,330	24,038	1,826	182,194	3.59
2	*Acacia lenticularis*	69,412	5,735	295	75,442	1.48
3	*Albizzia sp.*	24,978	8,492	976	34,446	0.68
4	*Alnus nepalensis*	14,805	1,208	133	16,146	0.32
5	*Anacardium occidentale*	52,544	2,012	0	54,556	1.07
6	*Areca catechu*	373,156	415	0	373,571	7.35
7	*Artocarpus heterophyllus*	52,971	12,738	1,571	67,280	1.32
8	*Azadirachta indica*	228,153	41,045	6,948	276,146	5.44
9	*Bombax ceiba*	32,860	8,965	4,066	45,891	0.90
10	*Borassus flabelliformis*	21,346	87,206	1,410	109,962	2.16
11	*Butea monosperma*	129,222	18,486	1,894	149,602	2.94
12	*Cedrela toona (Toona ciliata)*	13,516	2,643	181	16,340	0.32
13	*Cocos nucifera*	284,798	54,798	117	339,713	6.69
14	*Dalbergia sissoo*	49,013	7,238	805	57,056	1.12
15	*Eucalyptus sp.*	119,312	12,542	1,683	133,537	2.63
16	*Ficus bengalensis*	2,771	640	1,758	5,169	0.10
17	*Ficus racemosa*	2,326	3,063	1,178	6,567	0.13
18	*Ficus religiosa*	4,297	2,316	1,989	8,602	0.17
19	*Ficus sp.*	14,602	1,818	831	17,251	0.34
20	*Gmelina arborea*	23,849	4,424	1,752	30,025	0.59
21	*Grevillea robusta*	55,249	3,308	665	59,222	1.17
22	*Grewia optiva (Grewia oppositifolia)*	48,655	1,191	56	49,902	0.98
23	*Hevea brasiliensis*	82,578	1,878	0	84,456	1.66
24	*Madhuca latifolia*	7,628	7,459	13,266	28,353	0.56
25	*Mangifera indica*	311,090	73,996	33,888	418,974	8.25
26	*Phoenix sylvestris*	20,453	8,868	30	29,351	0.58
27	*Pinus wallichiana (Pinus excelsa)*	18,958	2,362	411	21,731	0.43
28	*Pinus kesiya (Pinus Khasya)*	78,111	1,018	4	79,133	1.56
29	*Pinus roxburghii (Pinus longifolia)*	112,328	22,092	3,230	137,650	2.71
30	*Populus sp.*	47,261	1,449	7	48,717	0.96
31	*Prosopis ceneraria*	25,242	8,670	840	34,752	0.68
32	*Quercus leucotrichophora (Quercus incana)*	39,947	3,742	345	44,034	0.87
33	*Quercus sp.*	10,889	4,476	1,405	16,770	0.33
34	*Shorea robusta*	49,205	5,910	1,976	57,091	1.12
35	*Syzygium cumini (Eugenia jambolana)*	46,929	10,301	2,426	59,656	1.17
36	*Tamarindus indica*	9,863	3,677	1,823	15,363	0.30
37	*Tectona grandis*	102,489	3,099	217	105,805	2.08
38	*Terminalia arjuna*	11,361	3,739	533	15,633	0.31
39	*Terminalia crenulata*	20,208	2,198	379	22,785	0.45
40	*Zizyphus mauritiana*	44,269	3,311	145	47,725	0.94
41	Rest of *spp.*	1,494,255	167,257	42,401	1,703,913	33.54
	Total	**4,307,229**	**639,823**	**133,460**	**5,080,512**	**100**

ANNEXURE-III D

Table III D: Estimated Volume by Species and Diameter Class in TOF at Country Level (in million m^3)

Sl. No.	Species	Diameter Class (cm)				Percentage
		10-30	30-50	50+	Total	
1	*Acacia nilotica (Acacia arabica)*	17.904	13.113	2.651	33.668	2.27
2	*Acacia lenticularis*	5.363	3.095	0.532	8.990	0.61
3	*Albizzia sp.*	6.200	9.222	2.836	18.258	1.23
4	*Alnus nepalensis*	3.654	1.414	0.859	5.927	0.40
5	*Anacardium occidentale*	4.995	1.261	0.000	6.256	0.42
6	*Areca catechu*	9.340	0.153	0.000	9.493	0.64
7	*Artocarpus heterophyllus*	12.079	13.860	5.414	31.353	2.11
8	*Azadirachta indica*	41.124	39.414	24.631	105.169	7.08
9	*Bombax ceiba*	7.896	7.054	18.122	33.072	2.23
10	*Borassus flabelliformis*	6.822	64.049	2.548	73.419	4.95
11	*Butea monosperma*	12.948	13.051	4.675	30.674	2.07
12	*Cedrela toona (Toona ciliata)*	3.011	2.376	0.568	5.955	0.40
13	*Cocos nucifera*	58.390	31.539	0.414	90.343	6.08
14	*Dalbergia sissoo*	11.131	6.172	1.796	19.099	1.29
15	*Eucalyptus sp.*	16.187	10.992	3.897	31.076	2.09
16	*Ficus bengalensis*	0.469	0.746	14.985	16.200	1.09
17	*Ficus racemosa*	0.417	3.011	4.835	8.263	0.56
18	*Ficus religiosa*	0.609	1.924	11.429	13.962	0.94
19	*Ficus sp.*	2.127	1.776	6.053	9.956	0.67
20	*Gmelina arborea*	5.031	3.949	3.007	11.987	0.81
21	*Grevillea robusta*	5.025	2.431	1.494	8.950	0.60
22	*Grewia optiva (Grewia oppositifolia)*	4.809	0.977	0.127	5.913	0.40
23	*Hevea brasiliensis*	11.279	1.269	0.000	12.548	0.85
24	*Madhuca latifolia*	1.218	6.136	61.003	68.357	4.60
25	*Mangifera indica*	21.371	41.199	106.798	169.368	11.41
26	*Phoenix sylvestris*	5.554	5.059	0.045	10.658	0.72
27	*Pinus wallichiana (Pinus excelsa)*	3.367	2.193	1.264	6.824	0.46
28	*Pinus kesiya (Pinus Khasya)*	10.409	0.747	0.012	11.168	0.75
29	*Pinus roxburghii (Pinus longifolia)*	13.655	17.069	8.626	39.350	2.65
30	*Populus sp.*	6.527	1.088	0.019	7.634	0.51
31	*Prosopis ceneraria*	3.726	5.826	1.738	11.290	0.76
32	*Quercus leucotrichophora (Quercus incana)*	3.523	2.232	0.694	6.449	0.43
33	*Quercus sp.*	1.869	3.321	3.266	8.456	0.57
34	*Shorea robusta*	6.867	6.357	9.658	22.882	1.54
35	*Syzygium cumini (Eugenia jambolana)*	6.919	8.349	8.407	23.675	1.59
36	*Tamarindus indica*	1.767	3.304	10.720	15.791	1.06
37	*Tectona grandis*	11.375	2.549	0.619	14.543	0.98
38	*Terminalia arjuna*	1.758	3.312	1.947	7.017	0.47
39	*Terminalia crenulata*	2.375	1.822	1.437	5.634	0.38
40	*Zizyphus mauritiana*	6.412	2.091	0.255	8.758	0.59
41	Rest of *spp.*	174.446	126.303	155.550	456.299	30.73
	Total	**529.948**	**471.805**	**482.931**	**1,484.684**	**100**

ANNEXURE-IV

Bamboo Density and Quality

Bamboo Density

Code	Item	Description	
		Clump forming	Non Clump forming
1	Pure Bamboo	200 or more clumps/ha	More than 12000 culms
2	Very Dense	151-199 clumps/ha	9001-12000 culms
3	Dense	101-150 clumps/ha	6001-9000 culms
4	Moderately Dense	51-100 clumps/ha	3001-6000 culms
5	Scattered	21-50 clumps/ha	1201-3000 culms
6	Sparse	1-20 clumps/ha	1-1200 culms
7	Bamboo Present but clumps completly hacked by people.		
8	No bamboo	Bamboo totally absent.	
9	Regeneration crop	Clump formation has not yet taken place.	

Bamboo Quality

Code	Site Class	Description
1	I	Avarage culm height 9 metres or more for Dendrocalamus strictus and similar bamboo species and 14 metres or more for Bambusa arundinacea and similar bamboo species.
2	II	Average culm height 6 metres or more but less than 9 metres for Dendrocalamus strictus and similar bamboo species and10 metres or more but less than 14 metres for Bambusa arundinacea.
3	III	Average culm height of 2 metres or more but less than 6 metres for Dendrocalamus strictus and smilar bamboo species and two metres or more but less than 10 metres for Bambusa arundinacea.
4	IV	Regeneration crop.
5		Not applicable.

ANNEXURE-V

States/UTs-wise Forest Cover Information in Different Patch Size Class

Sl. No.	States/UTs	Patch size Range in sq km						
		>0.976<=10	>10<=100	>100<=500	>500<=1000	>1000<=5000	>5000<=10000	>10000
		% of Forest Cover						
1	Andhra Pradesh	9.27	11.18	12.92	14.25	14.54	37.84	0
2	Arunachal Pradesh	1.37	0.46	0.34	0	1.73	0	96.1
3	Assam	16.48	11.76	17.2	4.38	7.86	0	42.32
4	Bihar	27.22	5.34	21.77	20.23	25.44	0	0
5	Chhattisgarh	9.11	8.48	9.49	6.63	39.14	27.15	0
6	Delhi	55.31	44.69	0	0	0	0	0
7	Goa	13.29	6.35	0	0	80.36	0	0
8	Gujarat	30.8	19.35	19.7	8.82	21.33	0	0
9	Haryana	49.88	29.38	20.74	0	0	0	0
10	Himachal Pradesh	19.78	19.33	25.54	14.33	21.02	0	0
11	Jammu & Kashmir	17.06	12.34	8.53	2.48	59.59	0	0
12	Jharkhand	16.92	8.7	19.75	9.36	45.27	0	0
13	Karnataka	12.06	7.4	4.84	4.06	5.59	22.86	43.19
14	Kerala	17.65	4.51	2.27	0	22.96	52.61	0
15	Madhya Pradesh	8.92	9.15	12.8	9.63	17.12	42.38	0
16	Maharashtra	15.13	13.48	17.97	7.27	13.19	32.96	0
17	Manipur	3.54	0.62	1.09	4.86	0	0	89.89
18	Meghalaya	3.44	0.57	0	0	7.45	0	88.54
19	Mizoram	0.44	0	0	0	0	0	99.56
20	Nagaland	2.02	0.51	0	0	0	0	97.47
21	Odisha	12.94	10.24	7.1	8.12	26.99	10.32	24.29
22	Punjab	34.65	3.72	30.42	31.21	0	0	0
23	Rajasthan	32.31	24.66	19.29	17.37	6.37	0	0
24	Sikkim	1.91	3.25	0	0	94.84	0	0
25	Tamil Nadu	17.75	12.16	8.41	0	61.68	0	0
26	Tripura	4.83	0.75	0	0	0	94.42	0
27	Uttar Pradesh	34.58	15.87	26.08	23.47	0	0	0
28	Uttarakhand	6.11	4.57	4.17	3.07	0	0	82.08
29	West Bengal	44.58	28.22	8.4	3.07	15.73	0	0
30	Andaman & Nicobar	3.23	9.28	10.61	21.87	55.01	0	0
31	Chandigarh	100	0	0	0	0	0	0
32	Dadra & Nagar Haveli	16.43	83.57	0	0	0	0	0
33	Daman & Diu	100	0	0	0	0	0	0
34	Lakshadweep	100	0	0	0	0	0	0
35	Puducherry	100	0	0	0	0	0	0