ANNEXURE-II

Volume equations

The 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	*Abies smithiana*	$\sqrt{V}=0.20050+4.58840D-1.42603\sqrt{D}$
3	*Cryptomeria japonica*	$V=-0.01097+5.30991D^2$
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*	$V/D2=0.1919/D2-2.7070/D+11.7563$
8	*Symplocos theaefolia*	V=-0.03754+0.000587D2 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 spp*	$V=0.05331-0.87098D+6.52533D2+1.74231D^3$
3	*Duabanga sonneratioides*	$\sqrt{V}=-0.05931+2.63098D$
4	*Michelia spp.*	$V=0.23057-3.51494D+17.62619D^2$
5	*Quercus species*	$V/D2=5.09470+0.00563/D^2$
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	*Cynometra polyandra*	$V=0.15958-1.57976D+8.25014D2-0.48518D^3$
3	*Dipterocarpus turbinatus*	$\sqrt{V}=-0.4464+3.6062D$
4	*Eugenia species*	$V=-0.02792+0.92933D-5.56465D^2+25.77488D^3$

Sl.No.	Species Name	Volume Equation
5	*Gmelina arborea*	$V=0.01156+0.21230D+5.10448D^2$
6	*Macaranga spp.*	$\sqrt{V}=-0.07109+2.99732D-0.26953\sqrt{D}$
7	*Schleichera Trijuga*	$V=0.010-0.912D+11.396D^2$

04 Northern Plain

Sl.No.	Species Name	Volume Equation
1	*Acacia catechu*	$V=0.16609-2.78851D+17.22127D^2-11.60248D^3$
2	*Diospyros species*	$V=0.06206-1.43609D+9.778164D^2$
3	*Eucalyptus species*	$V=0.02894-0.89284D+8.72416D^2$
4	*Holarrhena antidysenterica*	$V=0.17994-2.78776D+14.44961D^2$
5	*Lagerstroemia parviflora*	$V=0.10529-1.68829D+10.29573D^2$
6	*Mallotus philippinensis*	$V=0.14749-2.87503D+19.61977D^2-19.11630D^3$
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 Plain

Sl.No.	Species Name	Volume Equation
1	*Albizia species*	$\sqrt{V}=-0.07109+2.99732D-0.26953\sqrt{D}$
2	*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*	$V/D2=0.00085/D^2-0.35165/D+4.77386-0.90585D$
3	*Boswellia serrata*	$\sqrt{V}=-0.11629+2.4254D$
4	*Butea monosperma (old)*	$\sqrt{V}=-0.24276+2.95525D$
5	*Capparis deciduas*	$V=0.081467-1.063661D+6.452918D^2$
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*	$V=-0.02471+0.16897D+1.12083D^2+2.9328D3$
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*	$V/D2=0.14004/D^2-2.35990/D+11.90726$

08 North Deccan

Sl.No.	Species Name	Volume Equation
1	*Anogeisus 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 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	*Anogeisus latifolia*	$V/D2=-0.02958/D^2+8.05003$
2	*Cleistanthus collinus*	$V=0.030925-0.567037D+5.709471D^2$
3	*Diospysos 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 latifolia*	$V=-0.00092-0.55547D+7.34460D^2$
7	*Shorea robusta*	$V=0.05823-1.22994D+10.51982D^2$
8	*Terminalia tomentosa*	$V=0.05061-1.11994D+8.77839D^2$

10 South Deccan

Sl.No.	Species Name	Volume Equation
1	*Anogeisus latifolia*	$V=0.289-2.653D+11.771D^2$
2	*Chloroxylon swietenia*	$V=-0.0532D+3.2378D^2$
3	*Dalbergia paniculata*	$V=0.18945-2.46215D+10.54462D^2$
4	*Diospyros melanoxylon*	$V=0.024814-0.578532D+6.11017D^2$
5	*Grewia species*	$V=-0.01611+4.90810D^2$
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 hirsute*	$V=0.076-1.319D+11.370D^2$
2	*Olea dioica*	$V=-0.03001+5.75523D^2$
3	*Palaquim 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 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	*Anogeisus latifolia*	$V=0.13928-2.87067D+20.22404D^2-13.80572D^3$
3	*Bombax ceiba*	$V/D2=0.136196/D^2-2.07674/D+10.1566$
4	*Chukrasia tabularis*	$V=-0.079733-0.0021006D+0.001114D^2$(dia in cm)
5	*Grewia tiliaefolia*	$\log_e V=2.2491+2.5206 \log_e D$
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/ Melia indica*	$V=-0.03510+5.32981D^2$
4	*Bombax ceiba*	$V/D^2= 0.18573/D^2\ 2.85418/D+15.03576$
5	*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 species*	$V=-0.04262+6.09491D^2$
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	*Hovea 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*	$V=0.023613-0.531006D+6.731036D^2$