

気候変動対策支援ツール (JICA Climate-FIT)
Version5.0

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別表 1 燃料 i の正味発熱量

当該燃料の値を下表の“Net calorific value (TJ/Gg)”より選択。

TABLE 1.2 DEFAULT NET CALORIFIC VALUES (NCVs) AND LOWER AND UPPER LIMITS OF THE 95% CONFIDENCE INTERVALS ¹			
Fuel type English description	Net calorific value (TJ/Gg)	Lower	Upper
Crude Oil	42.3	40.1	44.8
Orimulsion	27.5	27.5	28.3
Natural Gas Liquids	44.2	40.9	46.9
Gasoline	Motor Gasoline	44.3	42.5
	Aviation Gasoline	44.3	42.5
	Jet Gasoline	44.3	42.5
Jet Kerosene	44.1	42.0	45.0
Other Kerosene	43.8	42.4	45.2
Shale Oil	38.1	32.1	45.2
Gas/Diesel Oil	43.0	41.4	43.3
Residual Fuel Oil	40.4	39.8	41.7
Liquefied Petroleum Gases	47.3	44.8	52.2
Ethane	46.4	44.9	48.8
Naphtha	44.5	41.8	46.5
Bitumen	40.2	33.5	41.2
Lubricants	40.2	33.5	42.3
Petroleum Coke	32.5	29.7	41.9
Refinery Feedstocks	43.0	36.3	46.4
Other Oil	Refinery Gas ²	49.5	47.5
	Paraffin Waxes	40.2	33.7
	White Spirit and SBP	40.2	33.7
	Other Petroleum Products	40.2	33.7
Anthracite	26.7	21.6	32.2
Coking Coal	28.2	24.0	31.0
Other Bituminous Coal	25.8	19.9	30.5
Sub-Bituminous Coal	18.9	11.5	26.0
Lignite	11.9	5.50	21.6
Oil Shale and Tar Sands	8.9	7.1	11.1
Brown Coal Briquettes	20.7	15.1	32.0
Patent Fuel	20.7	15.1	32.0
Coke	Coke Oven Coke and Lignite Coke	28.2	25.1
	Gas Coke	28.2	25.1
Coal Tar ³	28.0	14.1	55.0
Derived Gases	Gas Works Gas ⁴	38.7	19.6
	Coke Oven Gas ⁵	38.7	19.6
	Blast Furnace Gas ⁶	2.47	1.20
	Oxygen Steel Furnace Gas ⁷	7.06	3.80
Natural Gas	48.0	46.5	50.4
Municipal Wastes (non-biomass fraction)	10	7	18
Industrial Wastes	NA	NA	NA
Waste Oil ⁸	40.2	20.3	80.0
Peat	9.76	7.80	12.5

出典：2006 IPCC Guidelines for National Greenhouse Gas Inventories, IPCC, Volume 2: Energy, Chapter 1: Introduction, Table 1.2

TABLE 1.2 (CONTINUED)				
DEFAULT NET CALORIFIC VALUES (NCVs) AND LOWER AND UPPER LIMITS OF THE 95% CONFIDENCE INTERVALS ¹				
Fuel type English description		Net calorific value (TJ/Gg)	Lower	Upper
Solid Biofuels	Wood/Wood Waste ⁹	15.6	7.90	31.0
	Sulphite lyes (black liquor) ¹⁰	11.8	5.90	23.0
	Other Primary Solid Biomass ¹¹	11.6	5.90	23.0
	Charcoal ¹²	29.5	14.9	58.0
Liquid Biofuels	Biogasoline ¹³	27.0	13.6	54.0
	Biodiesels ¹⁴	27.0	13.6	54.0
	Other Liquid Biofuels ¹⁵	27.4	13.8	54.0
Gas Biomass	Landfill Gas ¹⁶	50.4	25.4	100
	Sludge Gas ¹⁷	50.4	25.4	100
	Other Biogas ¹⁸	50.4	25.4	100
Other non-fossil fuels	Municipal Wastes (biomass fraction)	11.6	6.80	18.0

Notes:

¹ The lower and upper limits of the 95 percent confidence intervals, assuming lognormal distributions, fitted to a dataset, based on national inventory reports, IEA data and available national data. A more detailed description is given in section 1.5.

² Japanese data; uncertainty range: expert judgement

³ EFDB; uncertainty range: expert judgement

⁴ Coke Oven Gas; uncertainty range: expert judgement

⁵⁻⁷ Japan and UK small number data; uncertainty range: expert judgement

⁸ For waste oils the values of "Lubricants" are taken

⁹ EFDB; uncertainty range: expert judgement

¹⁰ Japanese data ; uncertainty range: expert judgement

¹¹ Solid Biomass; uncertainty range: expert judgement

¹² EFDB; uncertainty range: expert judgement

¹³⁻¹⁴ Ethanol theoretical number; uncertainty range: expert judgement;

¹⁵ Liquid Biomass; uncertainty range: expert judgement

¹⁶⁻¹⁸ Methane theoretical number uncertainty range: expert judgement;

出典 : 2006 IPCC Guidelines for National Greenhouse Gas Inventories, IPCC, Volume 2: Energy, Chapter 1: Introduction, Table 1.2

別表2 燃料iのCO₂排出係数

当該燃料の値を下表の“Effective CO₂ emission factor (kg/TJ)”の”Default value”より選択。

TABLE 1.4 DEFAULT CO ₂ EMISSION FACTORS FOR COMBUSTION ¹						
Fuel type English description	Default carbon content (kg/GJ)	Default carbon oxidation factor	Effective CO ₂ emission factor (kg/TJ) ²			
			Default value ³	95% confidence interval		
	A	B	$C=A*B*44/12*1000$	Lower	Upper	
Crude Oil	20.0	1	73 300	71 100	75 500	
Orimulsion	21.0	1	77 000	69 300	85 400	
Natural Gas Liquids	17.5	1	64 200	58 300	70 400	
Gasoline	Motor Gasoline	18.9	1	69 300	67 500	73 000
	Aviation Gasoline	19.1	1	70 000	67 500	73 000
	Jet Gasoline	19.1	1	70 000	67 500	73 000
Jet Kerosene	19.5	1	71 500	69 700	74 400	
Other Kerosene	19.6	1	71 900	70 800	73 700	
Shale Oil	20.0	1	73 300	67 800	79 200	
Gas/Diesel Oil	20.2	1	74 100	72 600	74 800	
Residual Fuel Oil	21.1	1	77 400	75 500	78 800	
Liquefied Petroleum Gases	17.2	1	63 100	61 600	65 600	
Ethane	16.8	1	61 600	56 500	68 600	
Naphtha	20.0	1	73 300	69 300	76 300	
Bitumen	22.0	1	80 700	73 000	89 900	
Lubricants	20.0	1	73 300	71 900	75 200	
Petroleum Coke	26.6	1	97 500	82 900	115 000	
Refinery Feedstocks	20.0	1	73 300	68 900	76 600	
Other Oil	Refinery Gas	15.7	1	57 600	48 200	69 000
	Paraffin Waxes	20.0	1	73 300	72 200	74 400
	White Spirit & SBP	20.0	1	73 300	72 200	74 400
Other Petroleum Products	20.0	1	73 300	72 200	74 400	
Anthracite	26.8	1	98 300	94 600	101 000	
Coking Coal	25.8	1	94 600	87 300	101 000	
Other Bituminous Coal	25.8	1	94 600	89 500	99 700	
Sub-Bituminous Coal	26.2	1	96 100	92 800	100 000	
Lignite	27.6	1	101 000	90 900	115 000	
Oil Shale and Tar Sands	29.1	1	107 000	90 200	125 000	
Brown Coal Briquettes	26.6	1	97 500	87 300	109 000	
Patent Fuel	26.6	1	97 500	87 300	109 000	
Coke	Coke oven coke and lignite Coke	29.2	1	107 000	95 700	119 000
	Gas Coke	29.2	1	107 000	95 700	119 000
Coal Tar	22.0	1	80 700	68 200	95 300	
Derived Gases	Gas Works Gas	12.1	1	44 400	37 300	54 100
	Coke Oven Gas	12.1	1	44 400	37 300	54 100
	Blast Furnace Gas ⁴	70.8	1	260 000	219 000	308 000
	Oxygen Steel Furnace Gas ⁵	49.6	1	182 000	145 000	202 000

出典：2006 IPCC Guidelines for National Greenhouse Gas Inventories, IPCC, Volume 2: Energy, Chapter 1: Introduction, Table 1.4

Fuel type English description	Default carbon content (kg/GJ)	Default carbon oxidation Factor	Effective CO ₂ emission factor (kg/TJ) ²			
			Default value	95% confidence interval		
				Lower	Upper	
	A	B	$C=A*B*44/12*1000$			
Natural Gas	15.3	1	56 100	54 300	58 300	
Municipal Wastes (non-biomass fraction)	25.0	1	91 700	73 300	121 000	
Industrial Wastes	39.0	1	143 000	110 000	183 000	
Waste Oil	20.0	1	73 300	72 200	74 400	
Peat	28.9	1	106 000	100 000	108 000	
Solid Biofuels	Wood/Wood Waste	30.5	1	112 000	95 000	132 000
	Sulphite lyes (black liquor) ⁵	26.0	1	95 300	80 700	110 000
	Other Primary Solid Biomass	27.3	1	100 000	84 700	117 000
	Charcoal	30.5	1	112 000	95 000	132 000
Liquid Biofuels	Biogasoline	19.3	1	70 800	59 800	84 300
	Biodiesels	19.3	1	70 800	59 800	84 300
	Other Liquid Biofuels	21.7	1	79 600	67 100	95 300
Gas biomass	Landfill Gas	14.9	1	54 600	46 200	66 000
	Sludge Gas	14.9	1	54 600	46 200	66 000
	Other Biogas	14.9	1	54 600	46 200	66 000
Other non-fossil fuels	Municipal Wastes (biomass fraction)	27.3	1	100 000	84 700	117 000

Notes:

¹ The lower and upper limits of the 95 percent confidence intervals, assuming lognormal distributions, fitted to a dataset, based on national inventory reports, IEA data and available national data. A more detailed description is given in section 1.5

² TJ = 1000GJ

³ The emission factor values for BFG includes carbon dioxide originally contained in this gas as well as that formed due to combustion of this gas.

⁴ The emission factor values for OSF includes carbon dioxide originally contained in this gas as well as that formed due to combustion of this gas

⁵ Includes the biomass-derived CO₂ emitted from the black liquor combustion unit and the biomass-derived CO₂ emitted from the kraft mill lime kiln.

出典：2006 IPCC Guidelines for National Greenhouse Gas Inventories, IPCC, Volume 2: Energy, Chapter 1: Introduction, Table 1.4

別表3 系統電力のCO₂排出係数

事業の種類を勘案し（水力・地熱等、太陽光・風力等、省エネ、電力の消費）、当該国の値を下表より選択する。IFI TWG (The Technical Working Group of the International Financial Institutions)より最新版が公表されている場合には、最新の値を用いる。

(t-CO₂/MWh)

Country / Territory / Island	Combined Margin Grid Emission Factor				Operating Margin Grid Emission Factor (including for use in PCAF GHG accounting)
	Firm Energy (e.g., Hydro, Geothermal)	Intermittent Energy (e.g., Solar, Wind, Tidal)	Energy Efficiency	Electricity Consumption	
Afghanistan	0.193	0.331	0.193	0.193	0.414
Albania	0.000	0.000	0.000	0.000	0.000
Algeria	0.397	0.479	0.397	0.397	0.528
American Samoa (U.S.)	0.516	0.664	0.516	0.516	0.753
Andorra	0.070	0.144	0.070	0.070	0.188
Angola	0.748	1.203	0.748	0.748	1.476
Anguilla (U.K.)	0.472	0.647	0.472	0.472	0.753
Antigua and Barbuda	0.489	0.654	0.489	0.489	0.753
Argentina	0.288	0.407	0.288	0.288	0.478
Armenia	0.205	0.321	0.205	0.205	0.390
Aruba	0.421	0.628	0.421	0.421	0.753
Australia	0.421	0.663	0.421	0.421	0.808
Austria	0.113	0.194	0.113	0.113	0.242
Azerbaijan	0.384	0.478	0.384	0.384	0.534
Azores (Portugal)	0.384	0.614	0.384	0.384	0.753
Bahamas	0.441	0.636	0.441	0.441	0.753
Bahrain	0.454	0.624	0.454	0.454	0.726
Bangladesh	0.412	0.484	0.412	0.412	0.528
Barbados	0.484	0.650	0.484	0.484	0.749
Belarus	0.292	0.359	0.292	0.292	0.400
Belgium	0.124	0.204	0.124	0.124	0.252
Belize	0.183	0.320	0.183	0.183	0.403
Benin	0.576	0.682	0.576	0.576	0.745
Bermuda (U.K.)	0.342	0.598	0.342	0.342	0.753
Bhutan	0.000	0.000	0.000	0.000	0.000
Bolivia, Plurinational State of	0.393	0.525	0.393	0.393	0.604
Bonaire (Netherland)	0.400	0.620	0.400	0.400	0.753
Bosnia and Herzegovina	0.739	1.025	0.739	0.739	1.197
Botswana	1.070	1.330	1.070	1.070	1.486
Brazil	0.150	0.234	0.150	0.150	0.284
British Virgin Islands (U.K.)	0.420	0.628	0.420	0.420	0.753
Brunei Darussalam	0.407	0.578	0.407	0.407	0.681
Bulgaria	0.495	0.755	0.495	0.495	0.911
Burkina Faso	0.539	0.672	0.539	0.539	0.753
Burundi	0.197	0.333	0.197	0.197	0.414
Cambodia	0.588	0.874	0.588	0.588	1.046
Cameroon	0.354	0.545	0.354	0.354	0.659
Canada	0.213	0.312	0.213	0.213	0.372
Canary Islands (Spain)	0.435	0.633	0.435	0.435	0.753
Cape Verde	0.505	0.660	0.505	0.505	0.753
Cayman Islands	0.373	0.610	0.373	0.373	0.753
Central African Republic	0.077	0.146	0.077	0.077	0.188
Chad	0.581	0.688	0.581	0.581	0.753
Channel Islands (U.K.)	0.389	0.616	0.389	0.389	0.753
Chile	0.235	0.499	0.235	0.235	0.657
China (PRC and Hong Kong)	0.485	0.744	0.485	0.485	0.899
Colombia	0.208	0.334	0.208	0.208	0.410
Comoros	0.589	0.691	0.589	0.589	0.753

	Combined Margin Grid Emission Factor				Operating Margin Grid Emission Factor (including for use in PCAF GHG accounting)
	Firm Energy (e.g., Hydro, Geothermal)	Intermittent Energy (e.g., Solar, Wind, Tidal)	Energy Efficiency	Electricity Consumption	
Congo, Democratic Republic of	0.000	0.000	0.000	0.000	0.000
Congo, Republic of	0.405	0.564	0.405	0.405	0.659
Cook Islands	0.422	0.628	0.422	0.422	0.753
Costa Rica	0.039	0.082	0.039	0.039	0.108
Côte d'Ivoire	0.314	0.409	0.314	0.314	0.466
Croatia	0.168	0.247	0.168	0.168	0.294
Cuba	0.391	0.496	0.391	0.391	0.559
Curacao/Netherlands Antilles	0.506	0.737	0.506	0.506	0.876
Cyprus	0.438	0.633	0.438	0.438	0.751
Czech Republic	0.461	0.736	0.461	0.461	0.902
Denmark	0.155	0.284	0.155	0.155	0.362
Djibouti	0.575	0.686	0.575	0.575	0.753
Dominica	0.433	0.633	0.433	0.433	0.753
Dominican Republic	0.426	0.536	0.426	0.426	0.601
Ecuador	0.280	0.455	0.280	0.280	0.560
Egypt	0.406	0.498	0.406	0.406	0.554
El Salvador	0.275	0.445	0.275	0.275	0.547
Equatorial Guinea	0.361	0.531	0.361	0.361	0.632
Eritrea	0.704	0.836	0.704	0.704	0.915
Estonia	0.625	0.895	0.625	0.625	1.057
Eswatini	0.000	0.000	0.000	0.000	0.000
Ethiopia	0.000	0.000	0.000	0.000	0.000
Falkland Islands (U.K.)	0.316	0.589	0.316	0.316	0.753
Faroe Islands (Denmark)	0.320	0.590	0.320	0.320	0.753
Fiji	0.334	0.525	0.334	0.334	0.640
Finland	0.114	0.209	0.114	0.114	0.267
France	0.068	0.124	0.068	0.068	0.158
French Guiana	0.200	0.340	0.200	0.200	0.423
French Polynesia	0.412	0.625	0.412	0.412	0.753
Gabon	0.533	0.791	0.533	0.533	0.946
Gambia	0.591	0.692	0.591	0.591	0.753
Georgia	0.135	0.231	0.135	0.135	0.289
Germany	0.313	0.523	0.313	0.313	0.650
Ghana	0.276	0.413	0.276	0.276	0.495
Gibraltar (U.K.)	0.369	0.625	0.369	0.369	0.779
Greece	0.346	0.447	0.346	0.346	0.507
Greenland	0.105	0.204	0.105	0.105	0.264
Grenada	0.523	0.666	0.523	0.523	0.753
Guadeloupe (France)	0.433	0.633	0.433	0.433	0.753
Guam	0.428	0.631	0.428	0.428	0.753
Guatemala	0.427	0.659	0.427	0.427	0.798
Guinea	0.460	0.643	0.460	0.460	0.753
Guinea-Bissau	0.577	0.687	0.577	0.577	0.753
Guyana	0.616	0.760	0.616	0.616	0.847
Haiti	0.765	0.942	0.765	0.765	1.048
Honduras	0.359	0.548	0.359	0.359	0.662
Hungary	0.191	0.257	0.191	0.191	0.296
Iceland	0.000	0.000	0.000	0.000	0.000
India	0.608	0.822	0.608	0.608	0.951
Indonesia	0.675	0.743	0.675	0.675	0.783
Iran, Islamic Republic of	0.421	0.528	0.421	0.421	0.592
Iraq	0.788	0.971	0.788	0.788	1.080
Ireland	0.189	0.309	0.189	0.189	0.380
Isle of Man (U.K.)	0.204	0.349	0.204	0.204	0.436
Israel	0.258	0.343	0.258	0.258	0.394
Italy	0.224	0.343	0.224	0.224	0.414

	Combined Margin Grid Emission Factor				Operating Margin Grid Emission Factor (including for use in PCAF GHG accounting)
	Firm Energy (e.g., Hydro, Geothermal)	Intermittent Energy (e.g., Solar, Wind, Tidal)	Energy Efficiency	Electricity Consumption	
Jamaica	0.498	0.631	0.498	0.498	0.711
Japan	0.408	0.448	0.408	0.408	0.471
Jordan	0.382	0.474	0.382	0.382	0.529
Kazakhstan	0.532	0.698	0.532	0.532	0.797
Kenya	0.274	0.462	0.274	0.274	0.574
Kiribati	0.530	0.669	0.530	0.530	0.753
Korea (North), Democratic People's Republic of	0.359	0.606	0.359	0.359	0.754
Korea (South), Republic of	0.335	0.473	0.335	0.335	0.555
Kosovo	0.843	1.032	0.843	0.843	1.145
Kuwait	0.400	0.572	0.400	0.400	0.675
Kyrgyzstan	0.098	0.172	0.098	0.098	0.217
Lao People's Democratic Republic	0.555	0.876	0.555	0.555	1.069
Latvia	0.117	0.194	0.117	0.117	0.240
Lebanon	0.567	0.709	0.567	0.567	0.794
Lesotho	0.000	0.000	0.000	0.000	0.000
Liberia	0.374	0.564	0.374	0.374	0.677
Libya	0.493	0.602	0.493	0.493	0.668
Liechtenstein	0.052	0.114	0.052	0.052	0.151
Lithuania	0.102	0.170	0.102	0.102	0.211
Luxembourg	0.095	0.173	0.095	0.095	0.220
Madagascar	0.567	0.760	0.567	0.567	0.876
Madeira (Portugal)	0.369	0.552	0.369	0.369	0.663
Malawi	0.243	0.397	0.243	0.243	0.489
Malaysia	0.436	0.508	0.436	0.436	0.551
Maldives	0.524	0.667	0.524	0.524	0.753
Mali	0.623	0.906	0.623	0.623	1.076
Malta	0.295	0.435	0.295	0.295	0.520
Marshall Islands	0.561	0.681	0.561	0.561	0.753
Martinique (France)	0.406	0.623	0.406	0.406	0.753
Mauritania	0.513	0.663	0.513	0.513	0.753
Mauritius	0.543	0.641	0.543	0.543	0.700
Mayotte (France)	0.512	0.662	0.512	0.512	0.753
Mexico	0.359	0.467	0.359	0.359	0.531
Micronesia	0.557	0.679	0.557	0.557	0.753
Moldova, Republic of	0.399	0.488	0.399	0.399	0.541
Monaco	0.068	0.124	0.068	0.068	0.158
Mongolia	1.002	1.230	1.002	1.002	1.366
Montenegro	0.471	0.739	0.471	0.471	0.899
Montserrat	0.517	0.664	0.517	0.517	0.753
Morocco	0.547	0.660	0.547	0.547	0.729
Mozambique	0.111	0.188	0.111	0.111	0.234
Myanmar	0.407	0.602	0.407	0.407	0.719
Namibia	0.139	0.274	0.139	0.139	0.355
Nauru	0.521	0.666	0.521	0.521	0.753
Nepal	0.000	0.000	0.000	0.000	0.000
Netherlands	0.203	0.280	0.203	0.203	0.326
New Caledonia (France)	0.445	0.654	0.445	0.445	0.779
New Zealand	0.108	0.194	0.108	0.108	0.246
Nicaragua	0.372	0.562	0.372	0.372	0.675
Niger	0.718	0.752	0.718	0.718	0.772
Nigeria	0.358	0.463	0.358	0.358	0.526
Niue	0.459	0.642	0.459	0.459	0.753
North Macedonia, Republic of	0.563	0.743	0.563	0.563	0.851
Northern Mariana Islands (U.S.)	0.416	0.626	0.416	0.416	0.753
Norway	0.017	0.036	0.017	0.017	0.047
Oman	0.320	0.419	0.320	0.320	0.479

	Combined Margin Grid Emission Factor				Operating Margin Grid Emission Factor (including for use in PCAF GHG accounting)
	Firm Energy (e.g., Hydro, Geothermal)	Intermittent Energy (e.g., Solar, Wind, Tidal)	Energy Efficiency	Electricity Consumption	
Pakistan	0.386	0.515	0.386	0.386	0.592
Palau	0.497	0.657	0.497	0.497	0.753
Palestinian Authority	0.517	0.643	0.517	0.517	0.719
Panama	0.230	0.385	0.230	0.230	0.477
Papua New Guinea	0.315	0.491	0.315	0.315	0.597
Paraguay	0.000	0.000	0.000	0.000	0.000
Peru	0.252	0.390	0.252	0.252	0.473
Philippines	0.525	0.617	0.525	0.525	0.672
Poland	0.532	0.717	0.532	0.532	0.828
Portugal	0.228	0.329	0.228	0.228	0.389
Puerto Rico (U.S.)	0.362	0.508	0.362	0.362	0.596
Qatar	0.258	0.411	0.258	0.258	0.503
Reunion (France)	0.421	0.641	0.421	0.421	0.772
Romania	0.289	0.414	0.289	0.289	0.489
Russian Federation	0.360	0.432	0.360	0.360	0.476
Rwanda	0.416	0.601	0.416	0.416	0.712
Saint Helena (U.K.)	0.456	0.641	0.456	0.456	0.753
Saint Kitts and Nevis	0.477	0.649	0.477	0.477	0.753
Saint Lucia	0.521	0.666	0.521	0.521	0.753
Saint Martin (France)	0.484	0.652	0.484	0.484	0.753
Saint Pierre and Miquelon (France)	0.415	0.626	0.415	0.415	0.753
Saint Vincent and Grenadines	0.499	0.658	0.499	0.499	0.753
Samoa	0.434	0.633	0.434	0.434	0.753
San Marino	0.224	0.343	0.224	0.224	0.414
Sao Tomé & Príncipe	0.565	0.682	0.565	0.565	0.753
Saudi Arabia	0.374	0.510	0.374	0.374	0.592
Senegal	0.656	0.790	0.656	0.656	0.870
Serbia	0.678	0.933	0.678	0.678	1.086
Seychelles	0.479	0.650	0.479	0.479	0.753
Sierra Leone	0.246	0.398	0.246	0.246	0.489
Singapore	0.200	0.311	0.200	0.200	0.379
Sint Martin (Netherlands)	0.463	0.644	0.463	0.463	0.753
Slovak Republic	0.164	0.269	0.164	0.164	0.332
Slovenia	0.285	0.494	0.285	0.285	0.620
Solomon Islands	0.563	0.681	0.563	0.563	0.753
Somalia	0.582	0.689	0.582	0.582	0.753
South Africa	0.786	0.964	0.786	0.786	1.070
South Sudan	0.704	0.820	0.704	0.704	0.890
Spain	0.209	0.329	0.209	0.209	0.402
Sri Lanka	0.506	0.646	0.506	0.506	0.731
Sudan	0.398	0.609	0.398	0.398	0.736
Suriname	0.565	0.855	0.565	0.565	1.029
Sweden	0.025	0.052	0.025	0.025	0.068
Switzerland	0.020	0.038	0.020	0.020	0.048
Syrian Arab Republic	0.546	0.650	0.546	0.546	0.713
Taiwan (Chinese Taipei)	0.331	0.427	0.331	0.331	0.484
Tajikistan	0.106	0.199	0.106	0.106	0.255
Tanzania, United Republic of	0.336	0.458	0.336	0.336	0.531
Thailand	0.351	0.413	0.351	0.351	0.450
Timor-Leste	0.589	0.691	0.589	0.589	0.753
Togo	0.597	0.761	0.597	0.597	0.859
Tonga	0.533	0.670	0.533	0.533	0.753
Trinidad and Tobago	0.370	0.488	0.370	0.370	0.559
Tunisia	0.348	0.423	0.348	0.348	0.468
Turkey	0.309	0.351	0.309	0.309	0.376
Turkmenistan	0.676	0.833	0.676	0.676	0.927

	Combined Margin Grid Emission Factor				Operating Margin Grid Emission Factor (including for use in PCAF GHG accounting)
	Firm Energy (e.g., Hydro, Geothermal)	Intermittent Energy (e.g., Solar, Wind, Tidal)	Energy Efficiency	Electricity Consumption	
Turks and Caicos Islands (U.K.)	0.451	0.639	0.451	0.451	0.753
Tuvalu	0.497	0.657	0.497	0.497	0.753
Uganda	0.116	0.218	0.116	0.116	0.279
Ukraine	0.435	0.643	0.435	0.435	0.768
United Arab Emirates	0.310	0.464	0.310	0.310	0.556
United Kingdom	0.219	0.320	0.219	0.219	0.380
United States	0.246	0.352	0.246	0.246	0.416
Uruguay	0.065	0.133	0.065	0.065	0.174
Uzbekistan	0.467	0.558	0.467	0.467	0.612
Vanatu	0.504	0.659	0.504	0.504	0.753
Venezuela, Bolivarian Republic of	0.368	0.582	0.368	0.368	0.711
Viet Nam	0.381	0.493	0.381	0.381	0.560
Virgin Islands (U.S.)	0.373	0.546	0.373	0.373	0.650
Yemen	0.615	0.735	0.615	0.615	0.807
Zambia	0.197	0.334	0.197	0.197	0.416
Zimbabwe	0.880	1.315	0.880	0.880	1.575

Note 1: For methodology and sources used to derive the default emission factors, please refer to the document "[AHG-001: Methodological Approach for the Common Default Grid Emission Factor Dataset](#)".

Note 2: Partnership for Carbon Accounting Financials (PCAF) is a global partnership of financial institutions that work together to develop and implement a harmonized approach to assess and disclose the GHG emissions associated with their loans and investments.
<https://carbonaccountingfinancials.com/>

出典 : Harmonized IFI Default Grid Factors 2022 v3.2. IFI TWG (The Technical Working Group of the International Financial Institutions).
<https://unfccc.int/climate-action/sectoral-engagement/ifis-harmonization-of-standards-for-ghg-accounting/ifi-twg-list-of-methodologies>

別表4 自家発電の場合のCO₂排出係数のデフォルト値

Table 2. Emission factors for diesel generator systems (in kg CO₂e/kWh^(a)) for three different levels of load factors^(b)

Cases	Mini-grid with 24 hour service	(a) Mini-grid with temporary service (4-6 hr/day); (b) Productive applications; (c) Water pumps	Mini-grid with storage
Load factors [%]	25%	50%	100%
<15 kW	2.4	1.4	1.2
>=15 <35 kW	1.9	1.3	1.1
>=35 <135 kW	1.3	1.0	1.0
>=135<200 kW	0.9	0.8	0.8
> 200 kW ^(c)	0.8	0.8	0.8

^(a) A conversion factor of 3.2 kg CO₂ per kg of diesel has been used (following revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories);

^(b) Values derived from figures reported in RETScreen International's PV 2000 model retrieved from: <<http://retscreen.net/>>;

^(c) Default values.

出典：小規模 CDM 方法論 AMS I.F. ver.3

別表5 事業が実施されない場合のボイラーの効率

Table 1: Default baseline efficiency for different technologies

Technology of the energy generation system	Default efficiency
New natural gas fired boiler (w/o condenser)	92%
New oil fired boiler	90%
Old natural gas fired boiler (w/o condenser)	87%
New coal fired boiler	85%
Old oil fired boiler	85%
Old coal fired boiler	80%

出典：CDM Tool to determine the baseline efficiency of thermal or electric energy generation systems, ver.1

別表6 各交通機関のCO₂排出係数

1kmあたりのCO₂排出係数 (g-CO₂/km)

車種	値
乗用車	304.1
二輪バイク	45.9
三輪バイク	125.2
タクシー	290.6
バス	1337.9
ジープニ/RTV	420.5

出典：Manual for Calculating Greenhouse Gas Benefits of Global Environment Facility Transportation Projects (GEF, 2012)を基に作成

1人kmあたりのCO₂排出係数 (g-CO₂/passenger-km)

車種	値
自家用乗用車	130
航空	98
バス	57
鉄道	17
バイク	50

出典：国土交通省（2019年度）及び Sustainable Transport : A Sourcebook for Policy-makers in Developing Cities (GTZ, 2007)

別表7 車種iのトンキロあたりのCO₂排出係数 (g-CO₂/t-km)

車種		値
自動車	営業用普通車	173
	営業用小型車	808
	営業用軽自動車	1,951
	自家用普通車	394
	自家用小型車	3,443
鉄道		22
内航船舶		39
国内航空		1,490

出典：ロジスティクス分野におけるCO₂排出量算定方法共同ガイドライン Ver. 3.1、経済産業省、国土交通（平成28年7月）

Type of cargo transported	Emission factor (g CO ₂ /tonne.km)
Agricultural products and live animals	83
Beverage	61
Groceries	76
Perishable and semi-perishable foodstuff and canned food	94
Other food products and fodder	74
Solid mineral fuels and petroleum products	76
Ores and metal waste	90
Metal products	80
Mineral products	57
Other crude and manufactured minerals and building materials	70
Fertilizers	76
Chemicals	70
Transport equipment	100
Machinery and metal products	119
Glass and ceramic and porcelain products	84
Grouped goods	94
Other manufactured articles	113

出典：Approved baseline and monitoring methodology AM0090: Modal shift in transportation of cargo from road transportation to water or rail transportation. [Version 01.1.0]

別表 8 (1) 廃棄物種類別の分解性有機炭素の割合 (DOC_j)

Waste type <i>j</i>	DOC _j (% wet waste)
Wood and wood products	43
Pulp, paper and cardboard (other than sludge)	40
Food, food waste, beverages and tobacco (other than sludge)	15
Textiles	24
Garden, yard and park waste	20
Glass, plastic, metal, other inert waste	0

出典 : CDM Methodological Tool: Emissions from solid waste disposal sites [version 8.1] (原典 : 2006 IPCC Guidelines for National Greenhouse Gas Inventories, IPCC, Volume 5, Table 2.4 and 2.5)

別表 8 (2) 廃棄物種類別の分解可能な分解性有機炭素の割合 (DOC_{f,j})

TABLE 3.0 (NEW) FRACTION OF DEGRADABLE ORGANIC CARBON WHICH DECOMPOSES (DOC _f) FOR DIFFERENT WASTE TYPES		
Type of Waste	Recommended Default DOC _f Values	Remark
Less decomposable wastes e.g. wood, engineered wood products, tree branches (wood)	0.1	An average value of 0.088 was derived from DOC _f values for engineered wood products, sawn woods, tree branches reported in 3 references ¹⁻³
Moderately decomposable wastes e.g. paper, textile, nappies	0.5	An average value of 0.523 was derived from DOC _f values for paper products, textile and nappies reported in 4 references ⁴⁻⁷ .
Highly decomposable wastes, e.g. food wastes, grasses (garden and park waste excluding tree branches)	0.7	An average value of 0.706 was derived from DOC _f values for food wastes and grasses reported in 3 references ⁴⁻⁶
Bulk waste*	0.5	
¹ Wang <i>et al.</i> (2011); ² Wang and Barlaz (2016); ³ Ximenes <i>et al.</i> (2018); ⁴ Eleazer <i>et al.</i> (1997); ⁵ Bayard <i>et al.</i> (2017); ⁶ Jeong (2016); ⁷ Wang <i>et al.</i> (2015) * It is used when the fractions of less, moderately and highly decomposable wastes in MSW are not known.		

出典 : 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5, Table 3.0 (New)

別表 9 (1) メタン補正係数 (埋立処分場関連)

TABLE 3.1 (UPDATED) SWDS CLASSIFICATION AND METHANE CORRECTION FACTORS (MCF)		
Type of Site	Methane Correction Factor (MCF) Default Values	Remarks
Managed – anaerobic	1.0 ^a	These must have controlled placement of waste (i.e., waste directed to specific deposition areas, a degree of control of scavenging and a degree of control of fires) and will include at least one of the following: (i) cover material; (ii) mechanical compacting; or (iii) levelling of the waste.
Managed well – semi-aerobic	0.5 ^b	When semi-aerobic managed SWDS type is managed under one of the following condition, it is regarded as well management ; (i) permeable cover material; (ii) leachate drainage system without sunk; (iii) regulating pondage; and (iv) gas ventilation system without cap, (v) connection of leachate drainage system and gas ventilation system.
Managed poorly – semi-aerobic	0.7 ^c	When semi-aerobic managed SWDS type is managed under one of the following condition, it is regarded as poor management; (i) condition of sunk of leachate drainage system; (ii) closing of valve of drainage or atmosphere-unopening of drainage exit; (iii) capping of gas ventilation exit.
Managed well – active-aeration	0.4 ^{d,e,f}	Active aeration of managed landfills includes the technology of in-situ low pressure aeration, air sparging, bioventing, passive ventilation with extraction (suction). These must have controlled placement of waste and will include leachate drainage system to avoid the blockage of air penetration, and (i) cover material; (ii) air injection or gas extraction system without drying of waste.
Managed poorly – active-aeration	0.7 ^{g,h}	When SWDS, that is equipped as well as active aeration of managed SWDS, is managed under one of the following condition, it is judged as poor management; (i) blockage of aeration system due to failure of drainage; (ii) lack of available moisture for microorganisms due to high- pressure aeration.
Unmanaged – deep (>5 m waste) and /or high water table	0.8 ^a	All SWDS not meeting the criteria of managed SWDS and which have depths of greater than or equal to 5 metres and/or high water table at near ground level. Latter situation corresponds to filling inland water, such as pond, river or wetland, by waste.
Unmanaged – shallow (<5 m waste)	0.4 ^a	All SWDS not meeting the criteria of managed SWDS and which have depths of less than 5 metres.
Uncategorised SWDS	0.6 ^a	Only if countries cannot categorise their SWDS into above four categories of managed and unmanaged SWDS, the MCF for this category can be used.
Sources: ^a IPCC (2000); ^b Matsufuji <i>et al.</i> (1996); ^c Yamada <i>et al.</i> (2013); ^d Hrad <i>et al.</i> (2013); ^e Ishigaki <i>et al.</i> (2003); ^f Ritzkowski & Stegmann (2013); ^g Raga & Cossu (2014); ^h Ritzkowski <i>et al.</i> (2016)		

出典 : 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5, Table 3.1 (Updated)

別表 9 (2) メタン補正係数 (排水処理関連)

Type of wastewater treatment and discharge pathway or system	MCF value
Discharge of wastewater to sea, river or lake	0.1
Land application	0.1
Aerobic treatment, well managed	0.0
Aerobic treatment, poorly managed or overloaded	0.3
Anaerobic digester for sludge without methane recovery	0.8
Anaerobic reactor without methane recovery	0.8
Anaerobic shallow lagoon (depth less than 2 metres)	0.2
Anaerobic deep lagoon (depth more than 2 metres)	0.8
Septic system	0.5
Land application ^(a)	0.1

^(a) Please refer SSC_664, "Clarification on methane correction factors for treated water used for irrigation under AMS-III.H ver. 16".

出典 : CDM Methodology: AMS-III.H. Methane recovery in wastewater treatment [Version 19.0]

別表 10 廃棄物の分解速度

Waste type <i>j</i>		Boreal and Temperate (MAT≤20°C)		Tropical (MAT>20°C)	
		Dry (MAP/PET <1)	Wet (MAP/PET >1)	Dry (MAP< 1000mm)	Wet (MAP> 1000mm)
Slowly degrading	Pulp, paper, cardboard (other than sludge), textiles	0.04	0.06	0.045	0.07
	Wood, wood products and straw	0.02	0.03	0.025	0.035
Moderately degrading	Other (non-food) organic putrescible garden and park waste	0.05	0.10	0.065	0.17
Rapidly degrading	Food, food waste, sewage sludge, beverages and tobacco	0.06	0.185	0.085	0.40

出典：2006 IPCC Guidelines for National Greenhouse Gas Inventories, IPCC, Volume 5, Table 3.3

別表 11 DOCsのデフォルト値

Sludge type		Default DOC(-)	
		Wet matter	Dry matter
	Domestic sludge	0.05	0.50
Industrial sludge	Rough default	0.09	0.35
	Pulp and paper industry	-	0.27
	Food industry	-	0.30
	Chemical industry	-	0.52

出典：2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5: Waste, p.2.13

別表 12 W_y のデフォルト値

TABLE 2.1					
MSW GENERATION AND TREATMENT DATA - REGIONAL DEFAULTS					
Region	MSW Generation Rate^{1,2,3} (tonnes/cap/yr)	Fraction of MSW disposed to SWDS	Fraction of MSW incinerated	Fraction of MSW composted	Fraction of other MSW management, unspecified⁴
Asia					
Eastern Asia	0.37	0.55	0.26	0.01	0.18
South-Central Asia	0.21	0.74	-	0.05	0.21
South-East Asia	0.27	0.59	0.09	0.05	0.27
Africa⁵	0.29	0.69	-	-	0.31
Europe					
Eastern Europe	0.38	0.90	0.04	0.01	0.02
Northern Europe	0.64	0.47	0.24	0.08	0.20
Southern Europe	0.52	0.85	0.05	0.05	0.05
Western Europe	0.56	0.47	0.22	0.15	0.15
America					
Caribbean	0.49	0.83	0.02	-	0.15
Central America	0.21	0.50	-	-	0.50
South America	0.26	0.54	0.01	0.003	0.46
North America	0.65	0.58	0.06	0.06	0.29
Oceania⁶	0.69	0.85	-	-	0.15

¹ Data are based on weight of wet waste.

² To obtain the total waste generation in the country, the per-capita values should be multiplied with the population whose waste is collected. In many countries, especially developing countries, this encompasses only urban population.

³ The data are default data for the year 2000, although for some countries the year for which the data are applicable was not given in the reference, or data for the year 2000 were not available. The year for which the data are collected, where available, is given in the Annex 2A.1.

⁴ Other, unspecified, includes data on recycling for some countries.

⁵ A regional average is given for the whole of Africa as data are not available for more detailed regions within Africa.

⁶ Data for Oceania are based only on data from Australia and New Zealand.

出典：2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 5 Waste Table2.1

別表 A-1 バイオマス拡大係数(BEF)

TABLE 3A.1.10				
DEFAULT VALUES OF BIOMASS EXPANSION FACTORS (BEFs)				
(BEF ₂ to be used in connection with growing stock biomass data in Equation 3.2.3; and BEF ₁ to be used in connection with increment data in Equation 3.2.5)				
Climatic zone	Forest type	Minimum dbh (cm)	BEF₂ (overbark) to be used in connection to growing stock biomass data (Equation 3.2.3)	BEF₁ (overbark) to be used in connection to increment data (Equation 3.2.5)
Boreal	Conifers	0-8.0	1.35 (1.15-3.8)	1.15 (1-1.3)
	Broadleaf	0-8.0	1.3 (1.15-4.2)	1.1 (1-1.3)
Temperate	Conifers: Spruce-fir	0-12.5	1.3 (1.15-4.2)	1.15 (1-1.3)
	Pines	0-12.5	1.3 (1.15-3.4)	1.05 (1-1.2)
	Broadleaf	0-12.5	1.4 (1.15-3.2)	1.2 (1.1-1.3)
Tropical	Pines	10.0	1.3 (1.2-4.0)	1.2 (1.1-1.3)
	Broadleaf	10.0	3.4 (2.0-9.0)	1.5 (1.3-1.7)

Note: BEF₂s given here represent averages for average growing stock or age, the upper limit of the range represents young forests or forests with low growing stock; lower limits of the range approximate mature forests or those with high growing stock. The values apply to growing stock biomass (dry weight) including bark and for given minimum diameter at breast height; Minimum top diameters and treatment of branches is unspecified. Result is above-ground tree biomass.

Sources: Isaev *et al.*, 1993; Brown, 1997; Brown and Schroeder, 1999; Schoene, 1999; ECE/FAO TBFRA, 2000; Lowe *et al.*, 2000; please also refer to FRA Working Paper 68 and 69 for average values for developing countries (<http://www.fao.org/forestry/index.jsp>)

出典 : IPCC Good Practice Guidance for Land Use, Land Use Change, and Forestry (LULUCF) Table3A.1.10, 2003¹

¹ IPCC: http://www.ipcc-nggip.iges.or.jp/public/gpplulucf/gpplulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf

別表 A-2 容積密度 WD(1)(t-dry matter/m³)

TABLE 3A.1.9-1 BASIC WOOD DENSITIES OF STEMWOOD (tonnes dry matter/m³ fresh volume) FOR BOREAL AND TEMPERATE SPECIES (To be used for D in Equations 3.2.3., 3.2.5, 3.2.7, 3.2.8)		
Species or genus	Basic wood density m ₀ /V _{wet}	Source
Abies	0.40	1
Acer	0.52	1
Alnus	0.45	1
Betula	0.51	1
Carpinus betulus	0.63	3
Castanea sativa	0.48	3
Fagus sylvatica	0.58	1
Fraxinus	0.57	1
Juglans	0.53	3
Larix decidua	0.46	1
Larix kaempferi	0.49	3
Picea abies	0.40	1
Picea sitchensis	0.40	2
Pinus pinaster	0.44	5
Pinus strobus	0.32	1
Pinus sylvestris	0.42	1
Populus	0.35	1
Prunus	0.49	1
Pseudotsuga menziesii	0.45	1
Quercus	0.58	1
Salix	0.45	1
Thuja plicata	0.31	4
Tilia	0.43	1
Tsuga	0.42	4
Source: 1. Dietz, P. 1975: Dichte und Rindengehalt von Industrieholz. Holz Roh- Werkstoff 33: 135-141 2. Knigge, W.; Schulz, H. 1966: Grundriss der Forstbenutzung. Verlag Paul Parey, Hamburg, Berlin 3. EN 350-2 (1994): Durability of wood and wood products - Natural durability of solid wood - Part 2: Guide to the natural durability and treatability of selected wood species of importance in Europe 4. Forest Products Laboratory: Handbook of wood and wood-based materials. Hemisphere Publishing Corporation, New York, London 5. Rijdsdijk, J.F.; Laming, P.B. 1994: Physical and related properties of 145 timbers. Kluwer Academic Publishers, Dordrecht, Boston, London 6. Kollmann, F.F.P.; Coté, W.A. 1968: Principles of wood science and technology. Springer Verlag, Berlin, New York		

出典 : IPCC Good Practice Guidance for LULUCF , Table3A.1.9, 2003²

² IPCC: http://www.ipcc-nggip.iges.or.jp/public/gpگلulucf/gpگلulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf

別表 A-2 容積密度 WD (2) (t-dry matter/m³)

TABLE 3A.1.9-2 BASIC WOOD DENSITIES (D) OF STEMWOOD (tonnes dry matter/m ³ fresh volume) FOR TROPICAL TREE SPECIES (To be used for D in Equations 3.2.3., 3.2.5, 3.2.7, 3.2.8)					
TROPICAL ASIA	D	TROPICAL AMERICA	D	TROPICAL AFRICA	D
Acacia leucophloea	0.76	Albizia spp.	0.52	Azelia spp.	0.67
Adina cordifolia	0.58, 0.59+	Alcomea spp.	0.34	Aidia ochroleuca	0.78*
Aegle marmelo	0.75	Alexa grandiflora	0.6	Albizia spp.	0.52
Agathis spp.	0.44	Alnus ferruginea	0.38	Allanblackia floribunda	0.63*
Aglaia llanosiana	0.89	Anacardium excelsum	0.41	Allophylus africanus f. acuminatus	0.45
Alangium longiflorum	0.65	Anadenanthera macrocarpa	0.86	Alstonia congensis	0.33
Albizzia amara	0.70*	Andira retusa	0.67	Amphimas pterocarpoides	0.63*
Albizzia falcataria	0.25	Aniba riparia lduckeii	0.62	Anisophyllea obtusifolia	0.63*
Aleurites trisperma	0.43	Antiaris africana	0.38	Annonidium mannii	0.29*
Alnus japonica	0.43	Apeiba echinata	0.36	Anopyxis klaineana	0.74*
Alphitonia zizyphoides	0.5	Artocarpus comunis	0.7	Anthocleista keniensis	0.50*
Alphonsea arborea	0.69	Aspidosperma spp. (aracanga group)	0.75	Anthonotha macrophylla	0.78*
Alseodaphne longipes	0.49	Astronium lecointei	0.73	Anthostemma aubryanum	0.32*
Alstonia spp.	0.37	Bagassa guianensis	0.68,0.69+	Antiaris spp.	0.38
Amoora spp.	0.6	Banara guianensis	0.61	Antrocaryon klaineum	0.50*
Anisophyllea zeylanica	0.46*	Basiloxylon exelsum	0.58	Aucoumea klaineana	0.37
Anisoptera spp.	0.54	Beilschmiedia sp.	0.61	Austranella congolensis	0.78
Anogeissus latifolia	0.78, 0.79+	Bertholletia excelsa	0.59, 0.63+	Baillonella toxisperma	0.71
Anthocephalus chinensis	0.36,0.33+	Bixa arborea	0.32	Balanites aegyptiaca	0.63*
Antidesma pleuricum	0.59	Bombacopsis sepium	0.39	Baphia kirkii	0.93*
Aphanamiris perrottetiana	0.52	Borojoa patinoi	0.52	Beilschmiedia louisii	0.70*
Araucaria bidwillii	0.43	Bowdichia spp.	0.74	Beilschmiedia nitida	0.50*
Artocarpus spp.	0.58	Brosimum spp. (alicastrum group)	0.64, 0.66+	Berlinia spp.	0.58
Azadirachta spp.	0.52	Brosimum utile	0.41, 0.46+	Blighia welwitschii	0.74*
Balanocarpus spp.	0.76	Brysenia adenophylla	0.54	Bombax spp.	0.4
Barringtonia edulis *	0.48	Buchenauia capitata	0.61, 0.63+	Brachystegia spp.	0.52
Bauhinia spp.	0.67	Bucida buceras	0.93	Bridelia micrantha	0.47*
Beilschmiedia tawa	0.58	Bulnesia arborea	1	Calpocalyx klainei	0.63*
Berrya cordifolia	0.78*	Bursera simaruba	0.29, 0.34+	Canarium schweinfurthii	0.40*
Bischofia javanica	0.54,0.58,0.62+	Byrsonima coriacea	0.64	Canthium rubrocostratum	0.63*
Bleasdalea vitiensis	0.43	Cabrlea cangerana	0.55	Carapa procera	0.59
Bombax ceiba	0.33	Caesalpinia spp.	1.05	Casearia battiscombei	0.5
Bombycidendron vidalianum	0.53	Calophyllum sp.	0.65	Cassipourea euryoides	0.70*
Boswellia serrata	0.5	Camposperma panamensis	0.33,0.50+	Cassipourea malosana	0.59*
Bridelia squamosa	0.5	Carapa sp.	0.47	Ceiba pentandra	0.26
Buchanania latifolia	0.45	Caryocar spp.	0.69, 0.72+	Celtis spp.	0.59
Bursera serrata	0.59	Casearia sp.	0.62	Chlorophora ercelsa	0.55
Butea monosperma	0.48	Cassia moschata	0.71	Chrysophyllum albidum	0.56*
Calophyllum spp.	0.53	Casuarina equisetifolia	0.81	Cleistanthus mildbraedii	0.87*
Calycarpa arborea	0.53	Catostemma spp.	0.55	Cleistopholis patens	0.36*
Cananga odorata	0.29	Cecropia spp.	0.36	Coelocaryon preussii	0.56''
Canarium spp.	0.44	Cedrela spp.	0.40, 0.46+	Cola sp.	0.70''
Canthium monstrosum	0.42	Cedrelinga catenaeformis	0.41, 0.53+	Combretodendron macrocarpum	0.7
Carallia calycina	0.66*	Ceiba pentandra	0.23,0.24,0.25, 0.29+	Conopharyngia holstii	0.50*

+ The wood densities specified pertain to more than one bibliographic source.
* Wood density value is derived from the regression equation in Reyes *et al.* (1992).
Source: Reyes, Gisel; Brown, Sandra; Chapman, Jonathan; Lugo, Ariel E. 1992. Wood densities of tropical tree species. Gen. Tech. Rep. SO-88 New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 15pp.

別表 A-2 容積密度 WD (3) (t-dry matter/m³)

TABLE 3A.1.9-2 (CONTINUED)					
BASIC WOOD DENSITIES (D) OF STEMWOOD (tonnes dry matter/m ³ fresh volume) FOR TROPICAL TREE SPECIES (To be used for D in Equations 3.2.3., 3.2.5, 3.2.7, 3.2.8)					
TROPICAL ASIA	D	TROPICAL AMERICA	D	TROPICAL AFRICA	D
Cassia javanica	0.69	Centrolobium spp.	0.65	Copaifera religiosa .	0.50''
Castanopsis philippensis	0.51	Cespedesia macrophylla	0.63	Cordia millenii	0.34
Casuarina equisetifolia	0.83	Chaetocarpus schomburgkianus	0.8	Cordia platythyrsa	0.36''
Casuarina nodiflora	0.85	Chlorophora tinctoria	0.71,0.75+	Corynanthe pachyceras	0.63''
Cedrela odorata	0.38	Clarisia racemosa	0.53,0.57+	Coda edulis	0.78*
Cedrela spp.	0.42	Clusia rosea	0.67	Croton megalocarpus	0.57
Cedrela toona	0.43	Cochlospermum orinocensis	0.26	Cryptosepalum staudtii	0.70*
Ceiba pentandra	0.23	Copaifera spp.	0.46, 0.55+	Ctenolophon englerianus	0.78*
Celtis luzonica	0.49	Cordia spp. (gerascanthus group)	0.74	Cylicodiscus gabonensis	0.8
Chisocheton pentandrus	0.52	Cordia spp. (alliodora group)	0.48	Cynometra alexandri	0.74
Chloroxylon swietenia	0.76, 0.79, 0.80+	Couepia sp.	0.7	Dacryodes spp.	0.61
Chukrassia tabularis	0.57	Couma macrocarpa	0.50,0.53+	Daniellia ogea	0.40*
Citrus grandis	0.59	Couratari spp.	0.5	Desbordesia pierreana	0.87''
Cleidion speciflorum	0.5	Croton xanthochloros	0.48	Detarium senegalensis	0.63*
Cleistanthus eolinus	0.88	Cupressus lusitanica	0.43, 0.44+	Dialium excelsum	0.78*
Cleistocalyx spp.	0.76	Cyrilla racemiflora	0.53	Didelotia africana	0.78''
Cochlospermum gossypium+religiosum	0.27	Dactyodes colombiana	0.51	Didelotia letouzeyi	0.5
Cocos nucifera	0.5	Dacryodes excelsa	0.52, 0.53+	Diospyros spp.	0.82
Colona serratifolia	0.33	Dalbergia retusa.	0.89	Discoglypemma caloneura	0.32*
Combretodendron quadrialatum	0.57	Dalbergia stevensonii	0.82	Distemonanthus benthamianus	0.58
Cordia spp.	0.53	Declinanona calycina	0.47	Drypetes sp.	0.63*
Cotylelobium spp.	0.69	Dialium guianensis	0.87	Ehretia acuminata	0.51*
Crataeva religiosa	0.53*	Dialyanthera spp.	0.36, 0.48+	Enantia chlorantha	0.42''
Cratoxylon arborescens	0.4	Dicorynia paraensis	0.6	Endodesmia calophylloides	0.66''
Cryptocarya spp.	0.59	Didymopanax sp.	0.74	Entandrophragma utile	0.53
Cubilia cubili	0.49	Dimorphandra mora	0.99*	Eribroma oblongum	0.60*
Cullenia excelsa	0.53	Diplotropis purpurea	0.76, 0.77, 0.78+	Eriocoelum microspermum	0.50''
Cynometra spp.	0.8	Dipterix odorata	0.81,0.86,0.89+	Erisma delphus ensul	0.56*
Dacrycarpus imbricatus	0.45, 0.47+	Drypetes variabilis	0.69	Erythrina vogelii	0.25''
Dacrydium spp.	0.46	Dussia lehmannii	0.59	Erythrophleum ivorense	0.72
Dacryodes spp.	0.61	Ecclinusa guianensis	0.63	Erythroxyllum mannii	0.5
Dalbergia paniculata	0.64	Endlicheria cocvirey	0.39	Fagara macrophylla	0.69
Decussocarpus vitiensis	0.37	Enterolobium schomburgkii	0.82	Ficus iteophylla	0.40''
Degeneria vitiensis	0.35	Eperua spp.	0.78	Fumtunia latifolia	0.45*
Dehaasia triandra	0.64	Eriotheca sp.	0.4	Gambeya spp.	0.56*
Dialium spp.	0.8	Erisma uncinatum	0.42, 0.48+	Garcinia punctata	0.78''
Dillenia spp.	0.59	Erythrina sp.	0.23	Gilletiodendron mildbraedii	0.87''
Diospyros spp.	0.7	Eschweilera spp.	0.71,0.79,0.95+	Gossweileroendron balsamiferum	0.4
Diplodiscus paniculatus	0.63	Eucalyptus robusta	0.51	Guarea thompsonii	0.55''
Dipterocarpus caudatus	0.61	Eugenia stahlil	0.73	Guibourtia spp.	0.72
Dipterocarpus eurynchus	0.56	Euxylophora paraensis	0.68,0.70+	Hannoa klaineana	0.28''
Dipterocarpus gracilis	0.61	Fagara spp.	0.69	Harungana madagascariensis	0.45''
Dipterocarpus grandiflorus	0.62	Ficus sp.	0.32	Hexalobus crispiflorus	0.48''
Dipterocarpus kerrii	0.56	Genipa spp.	0.75	Holoptelea grandis	0.59''

+ The wood densities specified pertain to more than one bibliographic source.
* Wood density value is derived from the regression equation in Reyes *et al.* (1992).
Source: Reyes, Gisel; Brown, Sandra; Chapman, Jonathan; Lugo, Ariel E. 1992. Wood densities of tropical tree species. Gen. Tech. Rep. SO-88 New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 15pp.

別表 A-2 容積密度 WD (4) (t-dry matter/m³)

TABLE 3A.1.9-2 (CONTINUED)					
BASIC WOOD DENSITIES (D) OF STEMWOOD (tonnes dry matter/m ³ fresh volume) FOR TROPICAL TREE SPECIES					
(To be used for D in Equations 3.2.3., 3.2.5, 3.2.7, 3.2.8)					
TROPICAL ASIA	D	TROPICAL AMERICA	D	TROPICAL AFRICA	D
<i>Dipterocarpus kunstlerii</i>	0.57	<i>Goupia glabra</i>	0.67, 0.72+	<i>Homalium</i> spp.	0.7
<i>Dipterocarpus</i> spp.	0.61	<i>Guarea chalde</i>	0.52	<i>Hylodendron gabonense</i> .	0.78"
<i>Dipterocarpus warburgii</i>	0.52	<i>Guarea</i> spp.	0.52	<i>Hymenostegia pellegrini</i>	0.78"
<i>Dracontomelon</i> spp.	0.5	<i>Guatteria</i> spp.	0.36	<i>Irvingia grandifolia</i>	0.78"
<i>Dryobalanops</i> spp.	0.61	<i>Guazuma ulmifolia</i>	0.52, 0.50+	<i>Julbernardia globiflora</i>	0.78
<i>Dtypetes bordenii</i>	0.75	<i>Guettarda scabra</i>	0.65	<i>Khaya ivorensis</i>	0.44
<i>Durio</i> spp.	0.53	<i>Guillielma gasipae</i>	0.95, 1.25+	<i>Klainedoxa gabonensis</i>	0.87
<i>Dyera costulata</i>	0.36	<i>Gwtavia</i> sp.	0.56	<i>Lanea welwitschii</i>	0.45"
<i>Dysoxylum quercifolium</i>	0.49	<i>Helicostylis tomentosa</i>	0.68, 0.72+	<i>Lecomtedoxa klainenna</i>	0.78"
<i>Elaeocarpus serratus</i>	0.40*	<i>Hernandia Sonora</i>	0.29	<i>Letestua durissima</i>	0.87"
<i>Embllica officinalis</i>	0.8	<i>Hevea brasiliense</i>	0.49	<i>Lophira alata</i>	0.87"
<i>Endiandra laxiflora</i>	0.54	<i>Himatanthus articulata</i>	0.40,0.54+	<i>Lovoa trichilioides</i>	0.45"
<i>Endospermum</i> spp.	0.38	<i>Hirtella davisii</i>	0.74	<i>Macaranga kilimandscharica</i>	0.40*
<i>Enterobium cyclocarpum</i>	0.35	<i>Humiria balsamifera</i>	0.66,0.67+	<i>Maesopsis eminii</i>	0.41
<i>Epicharis cumingiana</i>	0.73	<i>Humiriastrum procera</i>	0.7	<i>Malacantha</i> sp. aff. <i>alnifolia</i>	0.45"
<i>Erythrina subumbrans</i>	0.24	<i>Hura crepitans</i>	0.36, 0.37, 0.38+	<i>Mammea africana</i>	0.62
<i>Erythrophloeum densiflorum</i>	0.65	<i>Hyeronima alchorneoides</i>	0.60,0.64+	<i>Manilkara lacera</i>	0.78"
<i>Eucalyptus citriodora</i>	0.64	<i>Hyeronima laxiflora</i>	0.59	<i>Markhamia platycalyx</i>	0.45*
<i>Eucalyptus deglupta</i>	0.34	<i>Hymenaea davisii</i>	0.67	<i>Memecylon capitellatum</i>	0.77"
<i>Eugenia</i> spp.	0.65	<i>Hymenolobium</i> sp.	0.64	<i>Microberlinia brazzavillensis</i>	0.7
<i>Fagraea</i> spp.	0.73	<i>Inga</i> sp.	0.49,0.52,0.58, 0.64+	<i>Microcos coriaceus</i>	0.42"
<i>Ficus benjamina</i>	0.65	<i>Iryanthera</i> spp.	0.46	<i>Milletia</i> spp.	0.72
<i>Ficus</i> spp.	0.39	<i>Jacaranda</i> sp.	0.55	<i>Mitragyna stipulosa</i>	0.47
<i>Ganua obovatifolia</i>	0.59	<i>Joannesia heveoides</i>	0.39	<i>Monopetalanthus pellegrinii</i>	0.47"
<i>Garcinia myrtifolia</i>	0.65	<i>Lachmellea speciosa</i>	0.73	<i>Musanga cecropioides</i>	0.23
<i>Garcinia</i> spp.	0.75	<i>Laetia procera</i>	0.68	<i>Nauclea diderrichii</i>	0.63
<i>Gardenia turgida</i>	0.64	<i>Lecythis</i> spp.	0.77	<i>Neopoutonia macrocalyx</i>	0.32"
<i>Garuga pinnata</i>	0.51	<i>Licania</i> spp.	0.78	<i>Nesogordonia papaverifera</i>	0.65
<i>Gluta</i> spp.	0.63	<i>Licaria</i> spp.	0.82	<i>Ochtocosmus africanus</i>	0.78"
<i>Gmelina arborea</i>	0.41,0.45+	<i>Lindackeria</i> sp.	0.41	<i>Odyndea</i> spp.	0.32
<i>Gmelina vitiensis</i>	0.54	<i>Linociera domingensis</i>	0.81	<i>Oldfieldia africana</i>	0.78*
<i>Gonocaryum calleryanum</i>	0.64	<i>Lonchocarpus</i> spp.	0.69	<i>Ongokea gore</i>	0.72
<i>Gonystylus punctatus</i>	0.57	<i>Loxopterygium sagotii</i>	0.56	<i>Oxystigma oxyphyllum</i>	0.53
<i>Grewia tiliacifolia</i>	0.68	<i>Lucuma</i> spp.	0.79	<i>Pachyelasma tessmannii</i>	0.70"
<i>Hardwickia binata</i>	0.73	<i>Luehea</i> spp.	0.5	<i>Pachypodanthium staudtii</i>	0.58"
<i>Harpullia arborea</i>	0.62	<i>Lueheopsis duckeana</i>	0.64	<i>Paraberlinia bifoliolata</i>	0.56"
<i>Heritiera</i> spp.	0.56	<i>Mabea piriri</i>	0.59	<i>Parinari glabra</i>	0.87"
<i>Hevea brasiliensis</i>	0.53	<i>Machaerium</i> spp.	0.7	<i>Parkia bicolor</i>	0.36"
<i>Hibiscus tiliaceus</i>	0.57	<i>Macoubea guianensis</i>	0.40*	<i>Pausinystalia brachythyrsa</i>	0.56"
<i>Homalanthus populneus</i>	0.38	<i>Magnolia</i> spp.	0.52	<i>Pausinystalia</i> cf. <i>talbotii</i>	0.56"
<i>Homalium</i> spp.	0.76	<i>Maguira sclerophylla</i>	0.57	<i>Pentaclethra macrophylla</i>	0.78"
<i>Hopea acuminata</i>	0.62	<i>Mammea americana</i>	0.62	<i>Pentadesma butyracea</i>	0.78"
<i>Hopea</i> spp.	0.64	<i>Mangifera indica</i>	0.55	<i>Phyllanthus discoideus</i>	0.76"
<i>Intsia palembanica</i>	0.68	<i>Manilkara</i> sp.	0.89	<i>Pierreodendron africanum</i>	0.70;"
<i>Kayea garciae</i>	0.53	<i>Marila</i> sp.	0.63	<i>Piptadeniastrum africanum</i>	0.56

+ The wood densities specified pertain to more than one bibliographic source.
* Wood density value is derived from the regression equation in Reyes *et al.* (1992).
Source: Reyes, Gisel; Brown, Sandra; Chapman, Jonathan; Lugo, Ariel E. 1992. Wood densities of tropical tree species. Gen. Tech. Rep. SO-88 New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 15pp.

別表 A-2 容積密度 WD (5) (t-dry matter/m³)

TABLE 3A.1.9-2 (CONTINUED)					
BASIC WOOD DENSITIES (D) OF STEMWOOD (tonnes dry matter/m ³ fresh volume) FOR TROPICAL TREE SPECIES					
(To be used for D in Equations 3.2.3., 3.2.5, 3.2.7, 3.2.8)					
TROPICAL ASIA	D	TROPICAL AMERICA	D	TROPICAL AFRICA	D
Kingiodendron alternifolium	0.48	Marmaroxylon racemosum	0.78*	Plagiostyles africana	0.70''
Kleinhovia hospita	0.36	Matayba domingensis	0.7	Poga oleosa	0.36
Knema spp.	0.53	Matisia hirta	0.61	Polyalthia suaveolens	0.66''
Koompassia excelsa	0.63	Maytenus spp.	0.71	Premna angolensis	0.63''
Koordersiodendron pinnatum	0.65, 0.69+	Mezilaurus lindaviana	0.68	Pteleopsis hylodendron	0.63*
Kydia calycina	0.72	Michropholis spp.	0.61	Pterocarpus soyauxii	0.61
Lagerstroemia spp.	0.55	Minquartia guianensis	0.76,0.79+	Pterygota spp.	0.52
Lanea grandis	0.5	Mora sp.	0.71	Pycnanthus angolensis	0.4
Leucaena leucocephala	0.64	Mouriria sideroxylon	0.88	Randia cladantha	0.78*
Litchi chinensis ssp. philippinensis	0.88	Myrciaria floribunda	0.73	Rauwolfia macrophylla	0.47*
Lithocarpus soleriana	0.63	Myristica spp.	0.46	Ricinodendron heudelotii	0.2
Litsea spp.	0.4	Myroxylon balsamum	0.74, 0.76, 0.78+	Saccoglottis gabonensis	0.74''
Lophopetalum spp.	0.46	Nectandra spp.	0.52	Santiria trimera	0.53*
Macaranga denticulata	0.53	O c o t e a spp.	0.51	Sapium ellipticum	0.50*
Madhuca oblongifolia	0.53	Onychopetalum amazonicum	0.64	Schrebera arborea	0.63*
Mallotus philippensis	0.64	Ormosia spp.	0.59	Sclorodophloeus zenkeri	0.68*
Mangifera spp.	0.52	Ouratea sp.	0.66	Scottellia coriacea	0.56
Maniltoa minor	0.76	Pachira acuatica	0.43	Scyphocephalium ochocoa	0.48
Mastixia philippinensis	0.47	Paratecoma peroba	0.6	Scytopetalum tieghemii	0.56''
Melanorrhea spp.	0.63	Parinari spp.	0.68	Sindoropsis letestui	0.56*
Melia dubia	0.4	Parkia spp.	0.39	Staudtia stipitata	0.75
Melicope triphylla	0.37	Peltogyne spp.	0.79	Stemonocoleus micranthus	0.56''
Meliosma macrophylla	0.27	Pentaclethra macroloba	0.65,0.68+	Sterculia rhinopetala	0.64
Melochia umbellata	0.25	Peru glabrata	0.65	Strephonema pseudocola	0.56*
Me&a ferrea	0.83,0.85+	Peru schomburgkiana	0.59	Strombosiopsis tetrandra	0.63''
Metrosideros collina	0.70,0.76+	Persea spp.	0.40, 0.47,0.52+	Swartzia fistuloides	0.82
Michelia spp.	0.43	Petitia domingensis	0.66	Symphonia globulifera	0.58''
Microcos stylocarpa	0.4	Pinus caribaea	0.51	Syzygium cordatum	0.59*
Micromelum compressum	0.64	Pinus oocarpa	0.55	Terminalia superba	0.45
Milliusa velutina	0.63	Pinus patula	0.45	Tessmania africana	0.85''
Mimusops elengi	0.72*	Piptadenia sp.	0.58	Testulea gabonensis	0.6
Mitragyna parviflora	0.56	Piranhea longepedunculata	0.9	Tetraberlinia tubmaniana	0.60''
Myristica spp.	0.53	Piratinera guianensis	0.96	Tetrapleura tetraptera	0.50''
Neesia spp.	0.53	Pithecellobium guachapele (syn. Pseudosamea)	0.56	Tieghemella heckelii	0.55''
Neonuclea bernardoi	0.62	Platonia insignis	0.70''	Trema sp.	0.40*
Neotrewia cumingii	0.55	Platymiscium spp.	0.71, 0.84+	Trichilia prieureana	0.63''
Ochna foxworthyi	0.86	Podocarpus spp.	0.46	Trichoscypha arborea	0.59''
Ochroma pyramidale	0.3	Pourouma aff. melinonii	0.32	Triplochiton scleroxylon.	0.32
Octomeles sumatrana	0.27, 0.32+	Pouteria spp.	0.64, 0.67+	Uapaca spp.	0.6
Oroxylon indicum	0.32	Prioria copaifera	0.40,0.41+	Vepris undulata	0.70''
Ougenia dalbergiodes	0.7	Protium spp.	0.53,0.64+	Vitex doniana	0.4
Palaquium spp.	0.55	Pseudolmedia laevigata	0.64	Xylopia staudtii	0.36*
Pangium edule	0.5	Pterocarpus spp.	0.44		
Parashorea malaanonan	0.51	Pterogyne nitens	0.66		
Parashorea stellata	0.59	Qualea albiflora	0.5		
Paratrophis glabra	0.77	Qualea cf. lancifolia	0.58		
Parinari spp.	0.68	Qualea dinizii	0.58		

+ The wood densities specified pertain to more than one bibliographic source.
 * Wood density value is derived from the regression equation in Reyes *et al.* (1992).
 Source: Reyes, Gisel; Brown, Sandra; Chapman, Jonathan; Lugo, Ariel E. 1992. Wood densities of tropical tree species. Gen. Tech. Rep. SO-88 New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 15pp.

別表 A-2 容積密度 WD (6) (t-dry matter/m³)

TABLE 3A.1.9-2 (CONTINUED)					
BASIC WOOD DENSITIES (D) OF STEMWOOD (tonnes dry matter/m ³ fresh volume) FOR TROPICAL TREE SPECIES					
(To be used for D in Equations 3.2.3., 3.2.5, 3.2.7, 3.2.8)					
TROPICAL ASIA	D	TROPICAL AMERICA	D	TROPICAL AFRICA	D
<i>Parkia roxburghii</i>	0.34	<i>Qualea</i> spp.	0.55		
<i>Payena</i> spp.	0.55	<i>Quararibaea guianensis</i>	0.54		
<i>Peltophorum pterocarpum</i>	0.62	<i>Quercus alata</i>	0.71		
<i>Pentace</i> spp.	0.56	<i>Quercus costaricensis</i>	0.61		
<i>Phacanthus ebracteolatus</i>	0.56	<i>Quercus eugeniaefolia</i>	0.67		
<i>Phyllocladus hypophyllus</i>	0.53	<i>Quercus</i> spp.	0.7		
<i>Pinus caribaea</i>	0.48	<i>Raputia</i> sp.	0.55		
<i>Pinus insularis</i>	0.47,0.48+	<i>Rheedia</i> spp.	0.72		
<i>Pinus merkusii</i>	0.54	<i>Rollinia</i> spp.	0.36		
<i>Pisonia umbellifera</i>	0.21	<i>Saccoglottis cydonioides</i>	0.72		
<i>Pittosporum pentandrum</i>	0.51	<i>Sapium</i> spp.	0.47,0.72+		
<i>Planchonia</i> spp.	0.59	<i>Schinopsis</i> spp.	1		
<i>Podocarpus</i> spp.	0.43	<i>Sclerobium</i> spp.	0.47		
<i>Polyalthia flava</i>	0.51	<i>Sickingia</i> spp.	0.52		
<i>Polyscias nodosa</i>	0.38	<i>Simaba multiflora</i>	0.51		
<i>Pometia</i> spp.	0.54	<i>Simarouba amara</i>	0.32, 0.34,0.38+		
<i>Pouteria villamilii</i>	0.47	<i>Sloanea guianensis</i>	0.79		
<i>Premna tomentosa</i>	0.96	<i>Spondias mombin</i>	0.30, 0.40,0.41+		
<i>Pterocarpus marsupium</i>	0.67	<i>Sterculia</i> spp.	0.55		
<i>Pterocymbium tinctorium</i>	0.28	<i>Stylogyne</i> spp.	0.69		
<i>Pyge'um vulgare</i>	0.57	<i>Swartzia</i> spp.	0.95		
<i>Quercus</i> spp.	0.7	<i>Swietenia macrophylla</i>	0.42,0.45,0.46, 0.54+		
<i>Radermachera pinnata</i>	0.51	<i>Symphonia globulifera</i>	0.68		
<i>Salmalia malabarica</i>	0.32,0.33+	<i>Tabebuia</i> spp. (lapacho group)	0.91		
<i>Samanea saman</i>	0.45, 0.46+	<i>Tabebuia</i> spp. (roble)	0.52		
<i>Sandoricum vidalii</i>	0.43	<i>Tabebuia</i> spp. (white cedar)	0.57		
<i>Sapindus saponaria</i>	0.58	<i>Tabebuia stenocalyx</i>	0.55,0.57+		
<i>Sapium luzontcum</i>	0.4	<i>Tachigalia myrmecophylla</i>	0.56		
<i>Schleichera oleosa</i>	0.96	<i>Talisia</i> sp.	0.84		
<i>Schrebera swietenoides</i>	0.82	<i>Tapirira guianensis</i>	0.47*		
<i>Semicarpus anacardium</i>	0.64	<i>Terminalia</i> sp.	0.50, 0.51, 0.58+		
<i>Serialbizia acle</i>	0.57	<i>Tetragastris altissima</i>	0.61		
<i>Serianthes melanesica</i>	0.48	<i>Toluidfera balsamum</i>	0.74		
<i>Sesbania grandiflora</i>	0.4	<i>Torrubia</i> sp.	0.52		
<i>Shorea assamica forma philippinensis</i>	0.41	<i>Toulicia pulvinata</i>	0.63		
<i>Shorea astylosa</i>	0.73	<i>Tovomita guianensis</i>	0.6		
<i>Shorea ciliata</i>	0.75	<i>Trattinickia</i> sp.	0.38		
<i>Shorea contorta</i>	0.44	<i>Trichilia propingua</i>	0.58		
<i>Shorea gisok</i>	0.76	<i>Trichosperma mexicanum</i>	0.41		
<i>Shorea guiso</i>	0.68	<i>Triplaris</i> spp.	0.56		
<i>Shorea hopeifolia</i>	0.44	<i>Trophis</i> sp.	0.54		
<i>Shorea malibato</i>	0.78	<i>Vatairea</i> spp.	0.6		
<i>Shorea negrosensis</i>	0.44	<i>Virola</i> spp.	0.40, 0.44, 0.48+		
<i>Shorea palosapis</i>	0.39	<i>Vismia</i> spp.	0.41		
<i>Shorea plagata</i>	0.7	<i>Vitex</i> spp.	0.52,0.56, 0.57+		

+ The wood densities specified pertain to more than one bibliographic source.
* Wood density value is derived from the regression equation in Reyes *et al.* (1992).
Source: Reyes, Gisel; Brown, Sandra; Chapman, Jonathan; Lugo, Ariel E. 1992. Wood densities of tropical tree species. Gen. Tech. Rep. SO-88 New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 15pp.

別表 A-2 容積密度 WD (7) (t-dry matter/m³)

TABLE 3A.1.9-2 (CONTINUED)					
BASIC WOOD DENSITIES (D) OF STEMWOOD (tonnes dry matter/m ³ fresh volume) FOR TROPICAL TREE SPECIES					
(To be used for D in Equations 3.2.3., 3.2.5, 3.2.7, 3.2.8)					
TROPICAL ASIA	D	TROPICAL AMERICA	D	TROPICAL AFRICA	D
Shorea polita	0.47	Vitex stahelii	0.6		
Shorea polysperma	0.47	Vochysia spp.	0.40,0.47, 0.79+		
Shorea robusta	0.72	Vouacapoua americana	0.79		
Shorea spp. balau group	0.7	Warszewicia coccinea	0.56		
Shorea spp. dark red meranti	0.55	Xanthoxylum martinicensis	0.46		
Shorea spp. light red meranti	0.4	Xanthoxylum spp.	0.44		
Shorea spp. white meranti	0.48	Xylopia frutescens	0.64 ⁺		
Shorea spp. yellow meranti	0.46				
Shorea virescens	0.42				
Sloanea javanica	0.53				
Soymida febrifuga	0.97				
Spathodea campanulata	0.25				
Stemonurus luzoniensis	0.37				
Sterculia vitiensis	0.31				
Stereospermum suaveolens	0.62				
Strombosia philippinensis	0.71				
Strychnos potatorum	0.88				
Swietenia macrophylla	0.49,0.53+				
Swintonia foxworthyi	0.62				
Swintonia spp.	0.61				
Sycopsis dunni	0.63				
Syzygium spp.	0.69, 0.76+				
Tamarindus indica	0.75				
Tectona grandis	0.50,0.55+				
Teijsmanniodendron ahernianum	0.9				
Terminalia citrina	0.71				
Terminalia copelandii	0.46				
Terminalia foetidissima	0.55				
Terminalia microcarpa	0.53				
Terminalia nitens	0.58				
Terminalia pterocarpa	0.48				
Terminalia tomentosa	0.73,0.76, 0.77+				
Ternstroemia megacarpa	0.53				
Tetrameles nudiflora	0.3				
Tetramerista glabra	0.61				
Thespesia populnea	0.52				
Toona calantas	0.29				
Trema orientalis	0.31				

+ The wood densities specified pertain to more than one bibliographic source.
* Wood density value is derived from the regression equation in Reyes *et al.* (1992).
Source: Reyes, Gisel; Brown, Sandra; Chapman, Jonathan; Lugo, Ariel E. 1992. Wood densities of tropical tree species. Gen. Tech. Rep. SO-88 New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 15pp.

別表 A-3 樹木の炭素含有率 (CF)

TABLE 4.3 CARBON FRACTION OF ABOVEGROUND FOREST BIOMASS			
Domain	Part of tree	Carbon fraction, (CF) [tonne C (tonne d.m.) ⁻¹]	References
Default value	All	0.47	McGroddy <i>et al.</i> , 2004
Tropical and Subtropical	All	0.47 (0.44 - 0.49)	Andrae and Merlet, 2001; Chambers <i>et al.</i> , 2001; McGroddy <i>et al.</i> , 2004; Lasco and Pulhin, 2003
	wood	0.49	Feldpausch <i>et al.</i> , 2004
	wood, tree d < 10 cm	0.46	Hughes <i>et al.</i> , 2000
	wood, tree d ≥ 10 cm	0.49	Hughes <i>et al.</i> , 2000
	foliage	0.47	Feldpausch <i>et al.</i> , 2004
	foliage, tree d < 10 cm	0.43	Hughes <i>et al.</i> , 2000
	foliage, tree d ≥ 10 cm	0.46	Hughes <i>et al.</i> , 2000
Temperate and Boreal	All	0.47 (0.47 - 0.49)	Andrae and Merlet, 2001; Gayoso <i>et al.</i> , 2002; Matthews, 1993; McGroddy <i>et al.</i> , 2004
	broad-leaved	0.48 (0.46 - 0.50)	Lamlom and Savidge, 2003
	conifers	0.51 (0.47 - 0.55)	Lamlom and Savidge, 2003

出典：2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4, Agriculture, Forestry and Other Land Use, Table 4.3.

³ IPCC: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_04_Ch4_Forest_Land.pdf

別表 A-4 天然生林におけるカテゴリ別樹木地上部バイオマス量 (TT) (t/ha)

TABLE 3A.1.2						
ABOVEGROUND BIOMASS STOCK IN NATURALLY REGENERATED FORESTS BY BROAD CATEGORY (tonnes dry matter/ha)						
(To be used for B_w in Equation 3.2.9, for $L_{conversion}$ in Equation 3.3.8 in Cropland section and for $L_{conversion}$ in Equation 3.4.13. in Grassland section, etc. Not to be applied for C_2 or C_1 in Forest section Equation 3.2.3)						
Tropical Forests¹						
	Wet	Moist with Short Dry Season	Moist with Long Dry Season	Dry	Montane Moist	Montane Dry
Africa	310 (131 - 513)	260 (159 - 433)	123 (120 - 130)	72 (16 - 195)	191	40
Asia & Oceania:						
Continental	275 (123 - 683)	182 (10 - 562)	127 (100 - 155)	60	222 (81 - 310)	50
Insular	348 (280 - 520)	290	160	70	362 (330 - 505)	50
America	347 (118 - 860)	217 (212 - 278)	212 (202 - 406)	78 (45 - 90)	234 (48 - 348)	60
Temperate Forests						
Age Class	Coniferous		Broadleaf	Mixed Broadleaf-Coniferous		
Eurasia & Oceania						
≤20 years	100 (17 - 183)		17	40		
>20 years	134 (20 - 600)		122 (18 - 320)	128 (20-330)		
America						
≤20 years	52 (17-106)		58 (7-126)	49 (19-89)		
>20 years	126 (41-275)		132 (53-205)	140 (68-218)		
Boreal Forests						
Age Class	Mixed Broadleaf-Coniferous		Coniferous	Forest-Tundra		
Eurasia						
≤20 years	12		10	4		
>20 years	50		60 (12.3-131)	20 (21 - 81)		
America						
≤20 years	15		7	3		
>20 years	40		46	15		
Note: Data are given in mean value and as range of possible values (in parentheses).						
¹ The definition of forest types and examples by region are illustrated in Box 2 and Tables 5-1, p 5.7-5.8 of the <i>IPCC Guidelines</i> (1996).						

出典：IPCC Good Practice Guidance for LULUCF Annex 3A.1, Table 3A.1.2⁴

⁴ IPCC: http://www.ipcc-nggip.iges.or.jp/public/gpplulucf/gpplulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf

別表 A-5 植林におけるカテゴリ別樹木地上部バイオマス量 (T) (t/ha)

TABLE 3A.1.3 ABOVEGROUND BIOMASS STOCK IN PLANTATION FORESTS BY BROAD CATEGORY (tonnes dry matter/ha)							
(To be used for B_w in Equation 3.2.9, for $L_{conversion}$ in equation in Equation 3.3.8 in Cropland section and for $L_{conversion}$ in Equation 3.4.13. in Grassland section, etc. Not to be applied for C_2 or C_1 in Forest section Equation 3.2.3)							
Tropical and sub-tropical Forests							
	Age Class	Wet	Moist with Short Dry Season	Moist with Long Dry Season	Dry	Montane Moist	Montane Dry
		R > 2000	2000>R>1000		R<1000	R>1000	R<1000
Africa							
Broadleaf spp	≤20 years	100	80	30	20	100	40
	>20 years	300	150	70	20	150	60
Pinus sp	≤20 years	60	40	20	15	40	10
	>20 years	200	120	60	20	100	30
Asia:							
Broadleaf	All	220	180	90	40	150	40
other species	All	130	100	60	30	80	25
America							
Pinus	All	300	270	110	60	170	60
Eucalyptus	All	200	140	110	60	120	30
Tectona	All	170	120	90	50	130	30
other broadleaved	All	150	100	60	30	80	30
Temperate Forests							
	Age class	Pine		Other coniferous	Broadleaf		
Eurasia							
Maritime	≤20 years	40		40	30		
	>20 years	150		250	200		
Continental	≤20 years	25		30	15		
	>20 years	150		200	200		
Mediterranean & steppe	≤20 years	17		20	10		
	>20 years	100		120	80		
S. America	All	100		120	90		
N America	All	175 (50-275)		300	-		
Boreal Forests							
	Age class	Pine		Other coniferous	Broadleaf		
Eurasia							
	≤20 years	5		5	5		
	>20 years	40		40	25		
N. America	All	50		40	25		

出典：IPCC Good Practice Guidance for LULUCF Annex 3A.1, Table 3A.1.3

別表 A-6 天然生林におけるカテゴリ別樹木地上部バイオマス平均年間増加量 (TT) (t/ha/year)

TABLE 3A.1.5 AVERAGE ANNUAL INCREMENT IN ABOVEGROUND BIOMASS IN NATURAL REGENERATION BY BROAD CATEGORY (tonnes dry matter/ha/year) (To be used for G_w in Equation 3.2.5)						
Tropical and Sub-Tropical Forests						
Age Class	Wet	Moist with Short Dry Season	Moist with Long Dry Season	Dry	Montane Moist	Montane Dry
	R > 2000	2000>R>1000		R<1000	R>1000	R<1000
Africa						
≤20 years	10.0	5.3	2.4 (2.3 – 2.5)	1.2 (0.8 – 1.5)	5.0	2.0 (1.0 – 3.0)
>20 years	3.1 (2.3 – 3.8)	1.3	1.8 (0.6 – 3.0)	0.9 (0.2 – 1.6)	1.0	1.5 (0.5 – 4.5)
Asia & Oceania						
Continental						
≤20 years	7.0 (3.0 – 11.0)	9.0	6.0	5.0	5.0	1.0
>20 years	2.2 (1.3 – 3.0)	2.0	1.5	1.3 (1.0 – 2.2)	1.0	0.5
Insular						
≤20 years	13.0	11.0	7.0	2.0	12.0	3.0
>20 years	3.4	3.0	2.0	1.0	3.0	1.0
America						
≤20 years	10.0	7.0	4.0	4.0	5.0	1.8
>20 years	1.9 (1.2 – 2.6)	2.0	1.0	1.0	1.4 (1.0 – 2.0)	0.4
Temperate Forests						
Age Class		Coniferous			Broadleaf	
≤20 years		3.0 (0.5 – 6.0)			4.0 (0.5 – 8.0)	
>20 years		3.0 (0.5 – 6.0)			4.0 (0.5 – 7.5)	
Boreal forests						
Age Class	Mixed Broadleaf-Coniferous	Coniferous	Forest-Tundra	Broadleaf		
Eurasia						
≤20 years	1.0	1.5	0.4 (0.2 – 0.5)	1.5 (1.0 – 2.0)		
>20 years	1.5	2.5	0.4 (0.2 – 0.5)	1.5		
America						
≤20 years	1.1 (0.7 – 1.5)	0.8 (0.5 – 1.0)	0.4 (0.2 – 0.5)	1.5 (1.0 – 2.0)		
>20 years	1.1 (0.7 – 1.5)	1.5 (0.5 – 2.5)	0.4 (0.2 – 0.5)	1.3 (1.0 – 1.5)		
Note: R= annual rainfall in mm/yr Note: Data are given as mean value and as the range of possible values.						

出典：IPCC Good Practice Guidance for LULUCF Annex 3A.1, Table 3A.1.5

別表 A-7 植林におけるカテゴリ別樹木地上部バイオマス平均年間増加量 (T) (t/ha/year)

Table 3A.1.6 ANNUAL AVERAGE ABOVEGROUND BIOMASS INCREMENT IN PLANTATIONS BY BROAD CATEGORY (tonnes dry matter/ha/year) (To be used for G_W in Equation 3.2.5. In case of missing values it is preferred to use stemwood volume increment data I_V from Table 3A.1.7)							
Tropical and sub-tropical Forests							
	Age Class	Wet	Moist with Short Dry Season	Moist with Long Dry Season	Dry	Montane Moist	Montane Dry
		R >2000	2000 > R > 1000		R < 1000	R > 1000	R < 1000
Africa							
Eucalyptus spp	≤20 years	-	20.0	12.6	5.1 (3.0-7.0)	-	-
	>20 years	-	25.0	-	8.0 (4.9-13.6)	-	-
Pinus sp	≤20 years	18.0	12.0	8.0	3.3 (0.5-6.0)	-	-
	>20 years		15.0	11.0	2.5	-	-
others	≤20 years	6.5 (5.0-8.0)	9.0 (3.0-15.0)	10.0 (4.0-16.0)	15.0	11.0	-
	>20 years	-	-	-	11.0	-	-
Asia							
Eucalyptus spp	All	5.0 (3.6-8.0)	8.0	15.0 (5.0-25.0)	-	3.1	-
other species	-	5.2 (2.4-8.0)	7.8 (2.0-13.5)	7.1 (1.6-12.6)	6.45 (1.2-11.7)	5.0 (1.3-10.0)	-
America							
Pinus	-	18.0	14.5 (5.0 - 19.0)	7.0 (4.0 - 10.3)	5.0	14.0	-
Eucalyptus	-	21.0 (6.4 - 38.4)	16.0 (6.4 - 32.0)	16.0 (6.4 - 32.0)	16.0	13.0 (8.5 - 17.5)	-
Tectona	-	15.0	8.0 (3.8 - 11.5)	8.0 (3.8 - 11.5)	-	2.2	-
other broadleaved	-	17.0 (5.0 - 35.0)	18.0 (8.0 - 40.0)	10.5 (3.2 - 11.8)	-	4.0	-
Note 1 : R= annual rainfall in mm/yr Note 2 : Data are given as mean value and as the range of possible values. Note 3 : Some Boreal data were calculated from original values in Zakharov <i>et al.</i> (1962), Zagreev <i>et al.</i> (1993), Isaev <i>et al.</i> (1993) using 0.23 as belowground/aboveground biomass ratio and assuming a linear increase in annual increment from 0 to 20 years. Note 4 : For plantations in temperate and boreal zones, it is good practice to use stemwood volume increment data (I_V in Equation 3.2.5) instead of above ground biomass increment as given in above table.							

出典 : IPCC Good Practice Guidance for LULUCF Annex 3A.1, Table 3A.1.6⁵

⁵ IPCC: http://www.ipcc-nggip.iges.or.jp/public/gpplulucf/gpplulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf

別表 A-8 植林における種別樹木地上部バイオマス平均年間増加量

TABLE 3A.1.7 AVERAGE ANNUAL ABOVE GROUND NET INCREMENT IN VOLUME IN PLANTATIONS BY SPECIES (m ³ /ha/yr) (To be used for I _v in Equation 3.2.5)		
Species	I _v (m ³ ha ⁻¹ yr ⁻¹)	
	Range	Mean [±]
<i>E. deglupta</i>	14 - 50	32
<i>E. globulus</i>	10 - 40	25
<i>E. grandis</i>	15 - 50	32.5
<i>E. saligna</i>	10 - 55	32.5
<i>E. camaldulensis</i>	15 - 30	22.5
<i>E. urophylla</i>	20 - 60	40
<i>E. robusta</i>	10 - 40	25
<i>Pinus caribaea</i> var. <i>caribaea</i>	10 - 28	19
<i>Pinus caribaea</i> var. <i>hondurensis</i>	20 - 50	35
<i>Pinus patula</i>	8 - 40	24
<i>Pinus radiata</i>	12 - 35	23.5
<i>Pinus oocarpa</i>	10 - 40	25
<i>Araucaria angustifolia</i>	8 - 24	16
<i>A. cunninghamii</i>	10 - 18	14
<i>Gmelina arborea</i>	12 - 50	31
<i>Swietenia macrophylla</i>	7 - 30	18.5
<i>Tectona grandis</i>	6 - 18	12
<i>Casuarina equisetifolia</i>	6 - 20	13
<i>C. junghuhniana</i>	7 - 11	9
<i>Cupressus lusitanica</i>	8 - 40	24
<i>Cordia alliodora</i>	10 - 20	15
<i>Leucaena leucocephala</i>	30 - 55	42.5
<i>Acacia auriculiformis</i>	6 - 20	13
<i>Acacia mearnsii</i>	14 - 25	19.5
<i>Terminalia superba</i>	10 - 14	12
<i>Terminalia ivorensis</i>	8 - 17	12.5
<i>Dalbergia sissoo</i>	5 - 8	6.5

* For those parties that have reason to believe that their plantations are located on more than average fertile sites it is suggested to use the mean value + 50%, for those Parties that have reason to believe their plantations are located on poor sites, it is suggested to use the mean value -50%

Source: Ugalde, L. and Prez, O. Mean annual volume increment of selected industrial forest plantation species. Forest Plantation Thematic Papers, Working paper 1. FAO (2001)
Available at <http://www.fao.org/DOCREP/004/AC121E/AC121E00.HTM>

別表 A-9 地上部バイオマス量に対する地下部の比率：地下部／地上部 (R)

	Vegetation type	Aboveground biomass (t/ha)	Mean	SD	lower range	upper range	References
Tropical/sub-tropical forest	Secondary tropical/sub-tropical forest	<125	0.42	0.22	0.14	0.83	5, 7, 13, 25, 28, 31, 48, 71
	Primary tropical/sub-tropical moist forest	NS	0.24	0.03	0.22	0.33	33, 57, 63, 67, 69
	Tropical/sub-tropical dry forest	NS	0.27	0.01	0.27	0.28	65
Conifer forest/plantation	Conifer forest/plantation	<50	0.46	0.21	0.21	1.06	2, 8, 43, 44, 54, 61, 75
	Conifer forest/plantation	50-150	0.32	0.08	0.24	0.50	6, 36, 54, 55, 58, 61
	Conifer forest/plantation	>150	0.23	0.09	0.12	0.49	1, 6, 20, 40, 53, 61, 67, 77, 79
Temperate broadleaf forest/plantation	Oak forest	>70	0.35	0.25	0.20	1.16	15, 60, 64, 67
	Eucalypt plantation	<50	0.45	0.15	0.29	0.81	9, 51, 59
	Eucalypt plantation	50-150	0.35	0.23	0.15	0.81	4, 9, 59, 66, 76
	Eucalypt forest/plantation	>150	0.20	0.08	0.10	0.33	4, 9, 16, 66
	Other broadleaf forest	<75	0.43	0.24	0.12	0.93	30, 45, 46, 62
	Other broadleaf forest	75-150	0.26	0.10	0.13	0.52	30, 36, 45, 46, 62, 77, 78, 81
	Other broadleaf forest	>150	0.24	0.05	0.17	0.30	3, 26, 30, 37, 67, 78, 81
Grassland	Steppe/tundra/prairie grassland	NS	3.95	2.97	1.92	10.51	50, 56, 70, 72
	Temperate/sub-tropical/ tropical grassland	NS	1.58	1.02	0.59	3.11	22, 23, 32, 52
	Semi-arid grassland	NS	2.80	1.33	1.43	4.92	17-19, 34
Other	Woodland/savanna	NS	0.48	0.19	0.26	1.01	10-12, 21, 27, 49, 65, 73, 74
	Shrubland	NS	2.83	2.04	0.34	6.49	14, 29, 35, 38, 41, 42, 47, 67
	Tidal marsh	NS	1.04	0.21	0.74	1.23	24, 39, 68, 80

NS = Not specified

出典：IPCC Good Practice Guidance for LULUCF Annex 3A.1, Table 3A.1.8⁶

⁶ IPCC: http://www.ipcc-nggip.iges.or.jp/public/gpplulucf/gpplulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf

別表 A-10 肥料使用による CO₂ 排出量およびリーケージと GHG 削減効果量の比較⁷

Project	Host Parties	fertilizer (tonnes of CO ₂ e)	Estimation of baseline net GHG removals by sinks (tonnes of CO ₂ e)	Estimation of actual net GHG removals by sinks (tonnes of CO ₂ e)	Estimation of leakage (tonnes of CO ₂ e) [A]	Estimation of net anthropogenic GHG removals by sinks (tonnes of CO ₂ e) [B]	Ratio of leakage [A]/[B]
CARBON SEQUESTRATION THROUGH REFORESTATION IN THE BOLIVIAN TROPICS BY SMALLHOLDERS OF "The Federación de	ボリビア	zero	0	11,529	24,124	91,165	26%
Reforestation of croplands and grasslands in low income communities of Paraguari Department, Paraguay	パラグアイ	3	8,737	58,188	18,983	30,468	62%
Facilitating Reforestation for Guangxi Watershed Management in Pearl River Basin	中国	zero	531	794,225	19,852	773,842	3%
The International Small Group and Tree Planting Program (TIST), Tamil Nadu, India	インド	zero	0	107,810	0	107,810	0%
Moldova Soil Conservation Project	モルドバ	zero	109,962	3,702,513	7,705	3,584,846	0%
Southern Nicaragua CDM Reforestation Project	ニカラグア	zero	0	237,448	0	237,448	0%
Uganda Nile Basin Reforestation Project No 3	ウガンダ	zero	0	111,798	0	111,798	0%
Reforestation, sustainable production and carbon sequestration project in José Ignacio Távara's dry forest, Piura, Peru	ペルー	zero	171,545	1,145,332	0	973,788	0%
Reforestation on Degraded Lands in Northwest Guangxi	中国	zero	15,394	1,761,552	0	1,746,158	0%
Reforestation of grazing Lands in Santo Domingo, Argentina	アルゼンチン	zero	21,366	1,342,140	0	1,320,775	0%
Assisted Natural Regeneration of Degraded Lands in Albania	アルバニア	zero	6,250	465,537	0	459,287	0%
"Posco Uruguay" afforestation on degraded extensive grazing land	ウルグアイ	zero	0	659	0	659	0%
Forestry Project for the Basin of the Chinchiná River, an Environmental and Productive Alternative for the City and the Region	コロンビア	zero	0	755,678	0	755,678	0%
Ibi Batéké degraded savannah afforestation project for fuelwood	コンゴ	zero	0	1,635,338	0	1,635,338	0%
AES Tietê Afforestation/Reforestation Project in the State of São	ブラジル	—	59,257	4,788,332	0	4,729,074	0%
Humbo Ethiopia Assisted Natural Regeneration Project	エチオピア	zero	0	880,296	0	880,296	0%
Cao Phong Reforestation Project	ベトナム	22	0	53,735	11,090	42,645	26%
India: Himachal Pradesh Reforestation Project – Improving Livelihoods	インド	zero	0	828,016	0	828,016	0%
Improving Rural Livelihoods Through Carbon Sequestration By Adopting Environment Friendly Technology based Agroforestry Practices	インド	—	0	146,888	0	146,888	0%
Reforestation as Renewable Source of Wood Supplies for Industrial Use in Brazil	ブラジル	—	751,894	30,409,091	15,522	2,273,493	1%
Argos CO ₂ Offset Project, through reforestation activities for commercial use.	コロンビア	—	133,021	1,079,384	23,100	923,263	3%
Small Scale Cooperative Afforestation CDM Pilot Project Activity on Private Lands Affected by Shifting Sand Dunes in Sirsa, Haryana.	インド	zero	43	29,785	0	231,920	0%
Nerquiñhue Small-Scale CDM Afforestation Project using Mycorrhizal Inoculation in Chile	チリ	zero	0	185,836	0	185,836	0%
Forestry Project in Strategic Ecological Areas of the Colombian Caribbean Savannas	コロンビア	zero	279	1,999,849	0	1,999,571	0%

⁷ UNFCCC CDM <http://cdm.unfccc.int/Projects/projsearch.html>

別表 A-11 サブカテゴリーの設定例 (CDM プロジェクトの例) ⁸

国名： パラグアイ
 実施主体： Japan International Research Center for Agricultural Sciences
 Instituto Forestal Nacional (Public entity)
 プロジェクト名： Reforestation of croplands and grasslands in low income communities of Paraguari Department, Paraguay
 <https://cdm.unfccc.int/Projects/DB/TUEV-SUED1245074838.6/view>
 CDM 認証年 2009 年

階層	樹種	植林間隔(m)	植樹年	植林面積(ha)
S1	<i>Eucalyptus grandis</i>	3.0×2.5	2007	30.05
S2	<i>Eucalyptus grandis</i>	3.0×2.5	2008	31.17
S3	<i>Eucalyptus camaldulensis</i>	3.0×2.5	2007	16.36
S4	<i>Eucalyptus camaldulensis</i>	3.0×2.5	2008	64.48
S5	<i>Grevillea robusta</i>	3.0×2.5	2007	5.59
S6	<i>Grevillea robusta</i>	3.0×2.5	2008	15.16
S7	<i>Grevillea robusta</i>	5.0×4.0	2007	14.05
S8	<i>Grevillea robusta</i>	5.0×4.0	2008	38.30
計				215.16

国名： インド
 実施主体： Haryana CDM Variksh Kisan Samiti, Ellenabad, Sirsa
 プロジェクト名： Small Scale Cooperative Afforestation CDM Pilot Project Activity on Private Lands Affected by Shifting Sand
 Dunes in Sirsa, Haryana.
 <https://cdm.unfccc.int/Projects/DB/TUEV-SUED1229620290.53/view>
 CDM 認証年 2008 年

階層	樹種	植林間隔(m)	植樹年	植林面積(ha)
S1	<i>Eucalyptus hybrid</i>		2007	26.30
S2	<i>Ailanthus excelsa</i>		2007	57.86
S3	<i>Acacia tortilis</i>		2007	61.65
S4	<i>Dalbergia sissoo</i>		2007	53.65
S5	<i>Acacia nilotica</i>		2007	60.75
S6	<i>Prosopis cineraria</i>		2007	74.20
S7	<i>Zizyphus mauritiana</i>		2007	35.46
計				369.87

⁸ UNFCCC: <http://cdm.unfccc.int/Projects/projsearch.html>

国名： ボリビア
 実施主体： FECAR (community organization), (Private entity)
 Foundation Centro Tecnico Forestal (CETEFOR) (Private entity)
 Asociación Accidental Cetefor-Sicirec (Private entity)
 Vlaams Gewest (Public entry)
 プロジェクト名： CARBON SEQUESTRATION THROUGH REFORESTATION IN THE BOLIVIAN TROPICS BY
 SMALLHOLDERS OF “The Federación de Comunidades Agropecuarias de Rurrenabaque (FECAR)” Version
 2.03
<https://cdm.unfccc.int/Projects/DB/JACO1239802765.75/view>
 CDM 認証年 2009 年

階層	樹種	植林間隔 (m)	植樹年	植林面積(ha)
S1	<i>Fast growing/ plantation</i>	—	—	—
S2	<i>Fast growing/Agroforestry System</i>	—	—	—
S3	<i>Fast growing/ Silvipastoral System</i>	—	—	—
S4	<i>Midium growing/ plantation</i>	—	—	—
S5	<i>Midiumgrowing/AgroforestrySystem</i>	—	—	—
S6	<i>Midium growing/ Silvipastoral System</i>	—	—	—
S7	<i>Slow growing/ plantation</i>	—	—	—
S8	<i>Slow growing/Agroforestry System</i>	—	—	—
S9	<i>Slow growing/ Silvipastoral System</i>	—	—	—
計				317ha

別表 A-12 サブカテゴリの設定例 (森林減少・劣化対策案件の例)

土地利用区分の比較 (インドネシア林業省の定義と IPCC2006 ガイドラインにおける区分)

林業省土地区分	IPCC 土地区分対応
23 土地区分	6 土地区分
<p>1. Forest (7 categories):</p> <p>①) Primary Dry land Forest</p> <p>②) Secondary Dry land Forest</p> <p>③) Primary Mangrove Forest</p> <p>④) Secondary Mangrove Forest</p> <p>⑤) Primary Swamp Forest</p> <p>⑥) Secondary Swamp Forest</p> <p>7) Plantation Forest</p> <p>2. Non-forest (14 categories) :</p> <p>8) Agriculture dry land</p> <p>9) Dry land Agriculture and shrubs</p> <p>10) Plantation</p> <p>11) Rice</p> <p>12) shrub / scrub</p> <p>13) Savanna</p> <p>14) Kingfisher swamp</p> <p>15) Swamp</p> <p>16) Transmigration</p> <p>17) Settlement</p> <p>18) Pond</p> <p>19) Land open</p> <p>20) Mining</p> <p>21) Port of air / sea</p> <p>3. No data (category 2),</p> <p>22) Cloud</p> <p>23) No data</p>	<p>1. Forest land (4 sub categories)</p> <p>①) 1) Dry land Forest</p> <p>②) 2) Mangrove Forest</p> <p>③) 3) Swamp Forest</p> <p>④) 4) Forest Plantation</p> <p>⑤) 2. Crop land (3 subcategories),</p> <p>⑥) 5) Dry land Agriculture</p> <p>6) Plantation</p> <p>7) Rice</p> <p>3. Grass Land (1 sub categories),:</p> <p>8) Grass Land</p> <p>4. Wetlands (1 sub categories),</p> <p>9) Swamp</p> <p>5. Settlements (1 sub categories),</p> <p>10) Settlement</p> <p>6. Other Lands (1 sub categories),</p> <p>11) Pond, Cloud</p>

出典：インドネシアにおける森林保全（REDD+）事業性調査
（経済産業省、平成22年度地球温暖化対策技術普及等推進事業）。

土地利用・土地利用変化と階層

Class Identifier		Average carbon density (tCO ₂ .ha-1)		
ID	Name	CD _{AB}	CD _{BB}	Total average carbon density
Native1	Floresta Arbórea Densa	90,99	379,13	470,13
Native2	Floresta Arbórea Aberta	91,16	42,91	134,08
Native3	Vegetação gramíneo-lenhosa	51,87	16,03	67,90
Antrop1	Área cultivada	N.A.	N.A.	17,23
Antrop2	Pastagem	N.A.	N.A.	27,75

Note:
CD_{AB} – Average Carbon Density in the above-ground biomass carbon pool; tCO₂.ha-1
CD_{BB} – Average Carbon Density in the below-ground biomass carbon pool; tCO₂.ha-1
N.A. – denotes Not Available
Sources:
Native1 to Native4 - Castro and Kauffman, 1998
Antrop1 and Antrop2 - IPCC, 2006

レファレンスリジョン、リーケージ・ベルト、プロジェクトエリアは、それぞれ6階層に分けられていた。表は、各階層区分と地表上部、下部の炭素貯留量推計データである。

出典：ブラジル・マトグロッソ州における森林減少・劣化からの排出削減（REDD）事業調査（平成21年度CDM/JICA事業調査）。



Arrangement of the national forest inventory data Results (Mean AGB+BGB par Regions and F.Types)

(CO₂t/ha)

※1	※2	1	2	3	4	5	6	7	8	9	10	11	12
1				181	157								75
2		604	282	144	157	178		279					
3											115		104
4		798	299										
5		508	275	158	131		78	219	92				67
6		516	272	135	94		66	118				165	103
7		417	272	171	116		82	181	146				70
8													
9			271	110	115		86	122		105	4		85
10		465	282	158	148	196	138	249					94
11		502	291	162	135	153	91	199	253	292			163
12		511	280	120	128	189	104	240		271			106
14													102

※1 (Bio-ecoregions): 1=Cardamom Mountains rain forests, 2=Central Indochina dry forests, 3=Indochina mangroves, 4=Luang Prabang montane rain forests, 5=Northern Annamites rain forests, 6=Northern Indochina subtropical forests, 7=Northern Vietnam lowland rain forests, 8=Red River freshwater swamp forests, 9=South China-Vietnam subtropical evergreen forests, 10=Southeastern Indochina dry evergreen forests, 11=Southern Annamites montane rain forests, 12=Southern Vietnam lowland dry forests, 14=Tonle Sap-Mekong peat swamp forests

※2 (Forest types): 1=Evergreen broadleaf forest (rich forest), 2=Evergreen broadleaf forest (medium forest), 3=Evergreen broadleaf forest (poor forest), 4=Evergreen broadleaf forest (rehabilitation forest), 5=Deciduous forest, 6=Bamboo forest, 7=Mixed timber and bamboo forest, 8=Coniferous forest, 9=Mixed broadleaf and coniferous forest, 10=Mangrove forest, 11=Limestone forest, 12=Plantation

上段の1～12番は、森林のタイプで、1～3番が常緑林のrich、medium、poorである。例えば、2番目のBio-ecoregionsの常緑林 (rich) は、平均604 CO₂t/haを有していることが分かる。

出典：ベトナムにおける参照排出レベルの開発（日本森林技術協会）。