

**Table 1.** Description of variables in the formula used (see Fig. 1) with updated estimates. Weights are in units dry matter. For source values and references beyond (31), see *Science Online* ([www.sciencemag.org/cgi/content/full/294/5551/2549/DC1](http://www.sciencemag.org/cgi/content/full/294/5551/2549/DC1)).

Source variable	Description	Prior estimate (1)	Contemporary mean	SD mean	Number of samples
$A_{ag}$ (m <sup>2</sup> )	Area of agricultural land (21, 33–43)	$1.6 \times 10^{13}$	$1.3 \times 10^{13}$	0.33	11
$A_{fc}$ (m <sup>2</sup> )	Area permanently cleared for population increase and colonization (26, 43–48)	$1.2 \times 10^{11}$	$1.3 \times 10^{11}$	0.23	7
$A_{gcp}$ (m <sup>2</sup> )	Area of forest converted to grazing for all time (21)	$7 \times 10^{12}$	$3.3 \times 10^{12}$	0.50	1
$A_{ho}$ (m <sup>2</sup> )	Area of human-occupied lands (38–40, 49)	$2 \times 10^{12}$	$1.8 \times 10^{12}$	1.2	4
$A_s$ (m <sup>2</sup> )	Area of savanna (39–40, 42, 44, 50–52, 215)	$1.5 \times 10^{13}$	$1.7 \times 10^{13}$	0.46	8
$A_{sctrf}$ (m <sup>2</sup> /year)	Area cleared in tropical virgin forests by shifting cultivation (1, 53, 54)	$1.0 \times 10^{10}$	$3.8 \times 10^{10}$	0.79	3
$A_{tp}$ (m <sup>2</sup> )	Area of tree plantations (12, 22–24, 47, 55–57)	$1.5 \times 10^{12}$	$1.2 \times 10^{12}$	0.18	6
$B_{fc}$ (Pg/m <sup>2</sup> )	Biomass of forest areas permanently cleared for population increase and colonization (1, 11–14, 27, 47, 48, 50, 58–109, 111–116, 214)	$2.2 \times 10^{13}$	$3.3 \times 10^{13}$	0.91	61
$B_{scs}$ (Pg/m <sup>2</sup> )	Biomass of savanna in shifting cultivation (including below-ground) (13, 39, 48–50, 54, 98, 109, 110, 113–129)	$8.5 \times 10^{12}$	$5.6 \times 10^{12}$	1.1	23
$B_{sh}$ (Pg/m <sup>2</sup> )	Biomass of above-ground grasses in burned savanna (1, 103, 104, 109, 130–141)	$3.9 \times 10^{11}$	$6.7 \times 10^{11}$	0.60	14
$B_{strf}$ (Pg/m <sup>2</sup> )	Biomass of secondary tropical forest (including below-ground) (11, 12, 48, 72–89, 109, 115, 116, 142, 143)	$1.8 \times 10^{13}$	$1.7 \times 10^{13}$	0.65	20
$B_{trf}$ (Pg/m <sup>2</sup> )	Biomass of tropical forests (including below-ground) (11, 13, 16, 27, 47, 48, 50, 84–103, 107–114, 143–150)	$3.9 \times 10^{13}$	$3.6 \times 10^{13}$	0.58	43
$CR_{sc}$ (m <sup>2</sup> person <sup>-1</sup> year <sup>-1</sup> )	Clearing rate of shifting cultivation (1, 53, 102, 151, 152)	$2.0 \times 10^3$	$1.7 \times 10^3$	0.16	5
$NPP_{fwd}$ (Pg/year)	NPP of firewood (27, 44, 54, 55, 152–159)	1.0	0.90	0.80	10
$NPP_{lse}$ (Pg/year)	NPP eaten by livestock (1, 8, 109, 160–164)	2.2	3.6	0.53	5
$P_{fb/mf}$	Proportion of forest biomass relative to merchantable fraction (1, 15, 16, 68–72, 89, 90, 104, 107, 115, 158, 166–171)	2.1	2.7	1.2	21
$P_{fwd/lc}$	Proportion of firewood that is met by land clearing and cultivation (102, 104)	0.30	0.65	0.75	2
$P_{gbnl}$	Proportion of burning on natural grazing lands (1)	0.43	0.43	0.50	1
$P_{ho}$	Proportion of productive human-occupied lands (13)	0.40	0.40	0.50	1
$P_{lgnp/gp}$	Proportion of natural pasture grazed by livestock relative to all grazed pasture lands (1)	0.50	0.50	0.50	1
$P_{lse/nl}$	Proportion of NPP eaten by livestock that comes from natural lands (172)	0.68	0.87	0.50	1
$P_{nhfwd}$	Proportion of firewood harvested but not used every year (1)	0.50	0.50	0.50	1
$POP_{sc}$	Population that uses shifting agriculture (25, 173)	$2.0 \times 10^8$	$4.5 \times 10^8$	0.15	2
$PR_{ag}$ (Pg m <sup>-2</sup> year <sup>-1</sup> )	Productivity of agricultural lands (1, 13, 14, 30, 31, 39, 42, 48, 91, 98, 105, 109–112, 116, 129, 174–178)	$9.4 \times 10^{13}$	$9.0 \times 10^{13}$	0.55	16
$PR_{gcp}$ (Pg m <sup>-2</sup> year <sup>-1</sup> )	Productivity of lands converted to pasture (1, 13, 14, 30, 31, 39, 48, 50, 101, 105, 109–112, 116, 129–132, 154, 178–196)	$1.4 \times 10^{12}$	$1.1 \times 10^{12}$	0.82	37
$PR_{ho}$ (Pg m <sup>-2</sup> year <sup>-1</sup> )	Productivity of human-occupied lands (39, 197)	$5.0 \times 10^{13}$	$3.5 \times 10^{13}$	0.60	2
$PR_{tp}$ (Pg m <sup>-2</sup> year <sup>-1</sup> )	Productivity of tree plantations (12, 13, 39, 55, 95, 96, 109, 198)	$1.75 \times 10^{12}$	$1.60 \times 10^{12}$	0.81	8
$P_{sb}$	Proportion of savanna burned annually (44, 54, 125, 157, 179, 199–202)	0.40	0.40	0.75	9
$P_{scs}$	Proportion of shifting cultivation in savannas (1, 72, 152, 203, 204)	0.43	0.46	0.41	5
$P_{sctrf}$	Proportion of shifting cultivation in secondary tropical forest (44, 53, 72, 87, 109, 152, 204)	0.57	0.64	0.42	6
$P_{tp}$	Proportion of wood that humans use of tree plantation origin (22, 55)	0.25	0.22	0.50	1
$\rho_w$ (Pg/m <sup>3</sup> )	Density of fiber/construction wood (1, 12, 15, 16, 89, 99, 106, 107, 115, 170, 205–213)	$6.0 \times 10^{-10}$	$5.6 \times 10^{-10}$	0.55	17
$V_{fhtc}$ (m <sup>3</sup> /year)	Volume of forest harvest for wood used for construction and fiber in temperate areas (26, 27, 36)	$1.65 \times 10^9$	$1.1 \times 10^9$	0.1	52
$V_{fhtcr}$ (m <sup>3</sup> /year)	Volume of forest harvest for wood used for construction and fiber in tropical areas (27)	$4.0 \times 10^8$	$3.9 \times 10^8$	0.50	1