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Farmland Investments and Food Security

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Part 2:

Statistical Annex:

Farmland Investments and Food Security

Table 1: Potentially available good land (VS+S for at least one of wheat, maize, soybean, sugarcane, oil palm) in current grassland/woodland ecosystems by accessibility and population density

Region	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	593,276	31,649	19,648	6,001	5,928	72
Eastern Europe & Russia	543,414	69,406	42,833	7,987	18,546	40
Northern Europe	52,745	4,404	1,405	11	2,987	1
Southern Europe	27,710	3,241	714	34	2,486	7
Western Europe	28,492	7,971	1,265	5	6,697	3
Caribbean	6,567	2,189	330	73	1,779	7
Central America	91,804	10,992	4,798	2,102	3,986	106
South America	607,531	142,998	89,395	35,350	17,798	456
Australia & N Zealand	467,650	28,041	8,885	18,678	478	0
Melanesia	14,586	4,360	209	3,811	117	222
Eastern Africa	408,001	155,545	57,881	55,219	34,558	7,887
Middle Africa	197,664	72,962	20,891	43,438	7,204	1,429
Northern Africa	32,794	2,273	656	23	1,574	20
Southern Africa	150,085	7,411	3,253	969	2,688	501
Western Africa	184,147	41,195	13,007	7,393	18,506	2,289
Western Asia	55,818	5,566	2,001	48	3,515	1
South-Eastern Asia	93,390	20,148	1,980	10,234	5,741	2,192
Southern Asia	105,762	6,242	482	126	5,454	180
Eastern Asia	319,339	8,824	1,246	1,606	5,559	413
Central Asia	121,498	8,016	3,716	864	3,346	91

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 2: Potentially available good land (VS+S for at least one of wheat, maize, soybean, sugarcane, oil palm) in current forest land ecosystems by accessibility and population density

Region	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	562,237	136,425	85,595	20,666	30,001	163
Eastern Europe & Russia	763,485	154,694	102,366	36,952	15,324	52
Northern Europe	63,175	3,143	2,474	34	634	1
Southern Europe	30,923	2,503	1,026	97	1,359	21
Western Europe	26,131	4,155	1,098	12	3,041	4
Caribbean	4,153	1,278	343	41	890	4
Central America	77,329	17,053	7,134	4,671	5,065	183
South America	685,674	292,033	52,951	228,429	9,804	849
Australia & N Zealand	76,151	18,211	8,331	9,386	494	0
Melanesia	32,905	10,815	210	10,112	129	364
Eastern Africa	105,038	53,936	16,320	21,973	13,024	2,619
Middle Africa	275,134	132,177	28,742	92,983	8,073	2,379
Northern Africa	5,160	513	64	4	431	14
Southern Africa	11,711	2,201	874	343	803	181
Western Africa	48,768	13,829	4,036	3,415	5,655	723
Western Asia	11,329	796	188	12	595	1
South-Eastern Asia	170,690	43,330	4,599	27,570	7,223	3,938
Southern Asia	74,143	16,205	1,888	681	12,818	818
Eastern Asia	204,352	17,506	5,280	6,337	5,354	535
Central Asia	8,107	952	330	101	509	12

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 3: Potentially available good wheat land (VS+S for rain-fed wheat) in current grassland/woodland ecosystems by accessibility and population density

Region	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	593,276	32,903	21,120	5,819	5,946	17
Eastern Europe & Russia	543,414	69,514	42,915	7,999	18,560	40
Northern Europe	52,745	4,404	1,405	11	2,987	1
Southern Europe	27,710	3,260	721	34	2,499	7
Western Europe	28,492	8,016	1,277	5	6,731	3
Caribbean	6,567	8	3	1	4	0
Central America	91,804	2,851	1,336	197	1,305	13
South America	607,531	37,566	28,900	4,727	3,902	37
Australia & N Zealand	467,650	4,306	3,566	213	526	2
Melanesia	14,586	8	5	0	3	0
Eastern Africa	408,001	17,447	6,344	3,394	6,363	1,346
Middle Africa	197,664	1,059	447	226	370	16
Northern Africa	32,794	2,273	656	23	1,574	20
Southern Africa	150,085	2,800	1,244	234	1,108	214
Western Africa	184,147	3	0	0	0	3
Western Asia	55,818	5,570	2,002	48	3,519	1
South-Eastern Asia	93,390	171	80	22	66	3
Southern Asia	105,762	1,212	335	96	697	84
Eastern Asia	319,339	6,564	1,160	1,582	3,476	346
Central Asia	121,498	7,974	3,712	864	3,307	91

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 4: Potentially available good wheat land (VS+S for rain-fed wheat) in current forest land ecosystems by accessibility and population density

Region	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	562,237	140,066	89,138	20,688	30,106	134
Eastern Europe & Russia	763,485	154,819	102,457	36,979	15,332	52
Northern Europe	63,175	3,143	2,474	34	634	1
Southern Europe	30,923	2,521	1,031	97	1,372	21
Western Europe	26,131	4,246	1,119	12	3,111	4
Caribbean	4,153	8	4	1	3	0
Central America	77,329	4,313	2,053	549	1,674	37
South America	685,674	11,111	7,708	1,944	1,434	25
Australia & N Zealand	76,151	7,660	6,248	953	457	2
Melanesia	32,905	5	2	0	3	0
Eastern Africa	105,038	6,900	1,889	2,857	1,752	402
Middle Africa	275,134	858	295	285	261	17
Northern Africa	5,160	513	64	4	431	14
Southern Africa	11,711	835	363	104	306	62
Western Africa	48,768	1	0	0	0	1
Western Asia	11,329	803	187	12	602	1
South-Eastern Asia	170,690	308	171	70	60	7
Southern Asia	74,143	342	33	23	271	15
Eastern Asia	204,352	16,018	5,202	6,273	4,091	452
Central Asia	8,107	884	326	101	445	12

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 5: Potentially available good grain maize land (VS+S for rain-fed grain maize) in current grassland/woodland ecosystems by accessibility and population density

Region	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	593,276	13,223	8,762	472	3,972	17
Eastern Europe & Russia	543,414	10,155	4,580	323	5,246	6
Northern Europe	52,745	0	0	0	0	0
Southern Europe	27,710	1,002	137	6	854	4
Western Europe	28,492	1,110	397	1	711	1
Caribbean	6,567	3,064	483	91	2,481	9
Central America	91,804	6,159	2,938	568	2,631	22
South America	607,531	103,050	71,142	19,800	11,953	155
Australia & N Zealand	467,650	25,333	6,489	18,537	307	0
Melanesia	14,586	404	13	379	8	3
Eastern Africa	408,001	148,150	55,782	54,496	30,556	7,316
Middle Africa	197,664	40,768	12,418	24,265	3,548	537
Northern Africa	32,794	0	0	0	0	0
Southern Africa	150,085	4,614	1,686	744	1,796	388
Western Africa	184,147	38,749	12,666	6,618	17,415	2,050
Western Asia	55,818	12	0	0	12	0
South-Eastern Asia	93,390	3,331	331	501	2,114	385
Southern Asia	105,762	4,902	145	27	4,644	86
Eastern Asia	319,339	5,399	572	264	4,302	261
Central Asia	121,498	249	83	5	156	6

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 6: Potentially available good grain maize land (VS+S for rain-fed grain maize) in current forest land ecosystems by accessibility and population density

Region	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	562,237	74,695	48,441	3,389	22,749	116
Eastern Europe & Russia	763,485	9,773	5,349	692	3,726	6
Northern Europe	63,175	0	0	0	0	0
Southern Europe	30,923	1,010	360	33	603	13
Western Europe	26,131	664	181	2	479	2
Caribbean	4,153	1,474	422	49	998	5
Central America	77,329	10,026	5,057	1,713	3,212	44
South America	685,674	70,920	34,404	30,749	5,609	158
Australia & N Zealand	76,151	13,950	4,723	8,836	392	0
Melanesia	32,905	492	6	472	6	8
Eastern Africa	105,038	49,435	15,394	20,713	11,029	2,300
Middle Africa	275,134	26,579	7,924	16,683	1,369	603
Northern Africa	5,160	0	0	0	0	0
Southern Africa	11,711	1,687	612	276	648	150
Western Africa	48,768	10,279	3,486	2,216	4,065	512
Western Asia	11,329	19	0	0	19	0
South-Eastern Asia	170,690	3,186	789	885	1,203	310
Southern Asia	74,143	15,313	1,833	598	12,165	717
Eastern Asia	204,352	7,452	2,086	1,182	3,824	360
Central Asia	8,107	80	30	5	44	1

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 7: Potentially available good soybean land (VS+S for rain-fed soybean) in current grassland/woodland ecosystems by accessibility and population density

Region	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	593,276	18,451	12,595	775	5,024	57
Eastern Europe & Russia	543,414	9,362	4,185	365	4,806	6
Northern Europe	52,745	0	0	0	0	0
Southern Europe	27,710	1,530	188	8	1,329	5
Western Europe	28,492	1,082	385	0	695	1
Caribbean	6,567	1,595	261	61	1,263	9
Central America	91,804	5,230	2,482	810	1,894	44
South America	607,531	142,450	99,963	23,822	18,464	201
Australia & N Zealand	467,650	8,929	5,491	3,003	433	2
Melanesia	14,586	937	145	750	32	10
Eastern Africa	408,001	117,487	44,308	37,562	29,368	6,250
Middle Africa	197,664	63,609	20,698	36,091	5,495	1,325
Northern Africa	32,794	0	0	0	0	0
Southern Africa	150,085	7,387	3,158	845	2,908	477
Western Africa	184,147	28,042	9,611	4,849	11,966	1,616
Western Asia	55,818	91	10	0	81	0
South-Eastern Asia	93,390	5,062	974	1,438	2,253	398
Southern Asia	105,762	2,610	108	26	2,424	52
Eastern Asia	319,339	5,925	610	295	4,708	313
Central Asia	121,498	804	145	30	603	26

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 8: Potentially available good soybean land (VS+S for rain-fed soybean) in current forest land ecosystems by accessibility and population density

Region	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	562,237	96,595	65,055	4,433	26,963	145
Eastern Europe & Russia	763,485	9,677	5,418	887	3,365	6
Northern Europe	63,175	0	0	0	0	0
Southern Europe	30,923	1,230	405	37	770	18
Western Europe	26,131	800	240	1	557	2
Caribbean	4,153	1,077	315	34	724	4
Central America	77,329	7,204	3,136	1,871	2,121	76
South America	685,674	102,722	46,399	46,983	9,096	244
Australia & N Zealand	76,151	7,676	5,061	2,145	469	1
Melanesia	32,905	1,599	114	1,432	34	19
Eastern Africa	105,038	50,368	15,482	20,674	11,951	2,262
Middle Africa	275,134	87,092	24,709	54,622	5,761	2,000
Northern Africa	5,160	0	0	0	0	0
Southern Africa	11,711	1,978	702	275	828	173
Western Africa	48,768	9,199	2,961	2,130	3,475	633
Western Asia	11,329	106	8	1	97	0
South-Eastern Asia	170,690	7,857	2,026	3,148	2,193	490
Southern Asia	74,143	10,349	1,478	516	7,810	544
Eastern Asia	204,352	8,784	2,366	1,246	4,729	443
Central Asia	8,107	358	72	10	272	5

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 9: Potentially available good sugar cane land (VS+S for rain-fed sugarcane) in current grassland/woodland ecosystems by accessibility and population density

Region	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	593,276	3,621	2,376	241	949	55
Eastern Europe & Russia	543,414	0	0	0	0	0
Northern Europe	52,745	0	0	0	0	0
Southern Europe	27,710	0	0	0	0	0
Western Europe	28,492	0	0	0	0	0
Caribbean	6,567	1,293	230	62	998	3
Central America	91,804	2,969	834	1,400	666	69
South America	607,531	63,499	41,083	14,118	8,058	239
Australia & N Zealand	467,650	414	258	10	146	0
Melanesia	14,586	2,153	185	1,719	107	142
Eastern Africa	408,001	15,159	5,925	2,118	6,257	859
Middle Africa	197,664	28,897	7,814	17,039	3,319	725
Northern Africa	32,794	0	0	0	0	0
Southern Africa	150,085	45	4	1	39	1
Western Africa	184,147	2,602	485	855	1,053	209
Western Asia	55,818	0	0	0	0	0
South-Eastern Asia	93,390	8,467	873	4,702	1,925	967
Southern Asia	105,762	163	4	3	143	13
Eastern Asia	319,339	534	13	3	505	13
Central Asia	121,498	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 10: Potentially available good sugar cane land (VS+S for rain-fed sugar cane) in current forest land ecosystems by accessibility and population density

Region	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	562,237	15,217	11,666	398	3,119	34
Eastern Europe & Russia	763,485	0	0	0	0	0
Northern Europe	63,175	0	0	0	0	0
Southern Europe	30,923	0	0	0	0	0
Western Europe	26,131	0	0	0	0	0
Caribbean	4,153	902	249	28	624	1
Central America	77,329	5,575	1,531	2,852	1,091	102
South America	685,674	110,626	22,168	83,689	4,395	374
Australia & N Zealand	76,151	1,439	1,128	85	225	0
Melanesia	32,905	5,222	179	4,686	115	243
Eastern Africa	105,038	7,839	1,680	1,805	3,772	582
Middle Africa	275,134	91,839	19,774	64,173	6,409	1,483
Northern Africa	5,160	0	0	0	0	0
Southern Africa	11,711	55	6	3	45	1
Western Africa	48,768	2,950	561	1,197	1,024	168
Western Asia	11,329	0	0	0	0	0
South-Eastern Asia	170,690	17,798	1,854	11,542	2,513	1,889
Southern Asia	74,143	856	47	64	632	113
Eastern Asia	204,352	485	22	12	429	22
Central Asia	8,107	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 11: Potentially available good oil palm land (VS+S for rain-fed oil palm) in current grassland/woodland ecosystems by accessibility and population density

Region	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	593,276	0	0	0	0	0
Eastern Europe & Russia	543,414	0	0	0	0	0
Northern Europe	52,745	0	0	0	0	0
Southern Europe	27,710	0	0	0	0	0
Western Europe	28,492	0	0	0	0	0
Caribbean	6,567	92	10	0	81	0
Central America	91,804	2,076	515	1,038	489	35
South America	607,531	19,385	3,801	14,360	982	241
Australia & N Zealand	467,650	0	0	0	0	0
Melanesia	14,586	3,660	116	3,312	71	161
Eastern Africa	408,001	340	108	64	116	52
Middle Africa	197,664	15,121	2,427	11,777	589	328
Northern Africa	32,794	0	0	0	0	0
Southern Africa	150,085	0	0	0	0	0
Western Africa	184,147	2,154	323	745	914	172
Western Asia	55,818	0	0	0	0	0
South-Eastern Asia	93,390	15,533	1,337	9,465	2,984	1,747
Southern Asia	105,762	95	1	2	89	3
Eastern Asia	319,339	0	0	0	0	0
Central Asia	121,498	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 12: Potentially available good oil palm land (VS+S for rain-fed oil palm) in current forest land ecosystems by accessibility and population density

Region	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	562,237	0	0	0	0	0
Eastern Europe & Russia	763,485	0	0	0	0	0
Northern Europe	63,175	0	0	0	0	0
Southern Europe	30,923	0	0	0	0	0
Western Europe	26,131	0	0	0	0	0
Caribbean	4,153	148	26	0	122	0
Central America	77,329	3,904	980	2,155	713	56
South America	685,674	209,220	12,341	194,762	1,501	617
Australia & N Zealand	76,151	0	0	0	0	0
Melanesia	32,905	9,894	144	9,383	87	281
Eastern Africa	105,038	247	45	48	85	69
Middle Africa	275,134	69,139	10,418	55,887	1,870	964
Northern Africa	5,160	0	0	0	0	0
Southern Africa	11,711	0	0	0	0	0
Western Africa	48,768	2,956	394	1,036	1,376	150
Western Asia	11,329	0	0	0	0	0
South-Eastern Asia	170,690	37,641	3,055	25,655	5,426	3,505
Southern Asia	74,143	131	3	16	102	10
Eastern Asia	204,352	0	0	0	0	0
Central Asia	8,107	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 13: Potentially available good land (VS+S for at least one of wheat, maize, soybean, sugarcane, oil palm, cassava, sorghum) in current grassland/woodland ecosystems by accessibility and population density

Region	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	593,276	37,627	24,585	6,625	6,343	73
Eastern Europe & Russia	543,414	69,871	43,259	7,997	18,575	40
Northern Europe	52,745	4,404	1,405	11	2,987	1
Southern Europe	27,710	3,241	714	34	2,486	7
Western Europe	28,492	7,971	1,265	5	6,697	3
Caribbean	6,567	2,268	346	74	1,837	11
Central America	91,804	12,224	5,665	2,256	4,183	119
South America	607,531	210,887	126,145	62,583	21,645	514
Australia & N Zealand	467,650	40,791	13,204	27,098	489	0
Melanesia	14,586	4,826	208	4,278	117	222
Eastern Africa	408,001	161,543	60,202	57,978	35,156	8,207
Middle Africa	197,664	91,412	26,704	53,871	8,943	1,894
Northern Africa	32,794	2,273	656	23	1,574	20
Southern Africa	150,085	12,496	6,506	1,980	3,437	573
Western Africa	184,147	46,127	13,889	7,850	21,893	2,495
Western Asia	55,818	5,566	2,001	48	3,515	1
South-Eastern Asia	93,390	22,260	2,546	11,059	6,386	2,269
Southern Asia	105,762	6,885	514	143	6,035	193
Eastern Asia	319,339	14,076	2,389	1,784	9,215	688
Central Asia	121,498	9,301	4,842	1,012	3,356	91

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 14: Potentially available good land (VS+S for at least one of wheat, maize, soybean, sugarcane, oil palm, cassava, sorghum) in current forest land ecosystems by accessibility and population density

Region	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	562,237	137,898	86,895	20,697	30,141	164
Eastern Europe & Russia	763,485	154,814	102,466	36,967	15,329	52
Northern Europe	63,175	3,143	2,474	34	634	1
Southern Europe	30,923	2,503	1,026	97	1,359	21
Western Europe	26,131	4,155	1,098	12	3,041	4
Caribbean	4,153	1,370	383	43	938	5
Central America	77,329	18,186	7,745	4,941	5,299	201
South America	685,674	349,921	72,812	264,004	12,171	934
Australia & N Zealand	76,151	21,048	9,259	11,293	496	0
Melanesia	32,905	11,705	209	11,003	129	364
Eastern Africa	105,038	52,555	16,227	20,556	13,115	2,657
Middle Africa	275,134	155,744	34,968	107,614	10,075	3,087
Northern Africa	5,160	513	64	4	431	14
Southern Africa	11,711	2,800	1,174	510	914	202
Western Africa	48,768	16,469	4,434	3,580	7,539	916
Western Asia	11,329	796	188	12	595	1
South-Eastern Asia	170,690	47,524	5,682	29,550	8,125	4,167
Southern Asia	74,143	16,782	1,917	741	13,256	869
Eastern Asia	204,352	18,339	5,433	6,390	5,940	576
Central Asia	8,107	1,032	401	111	509	12

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 15: Potentially available good sorghum land (VS+S for rain-fed sorghum) in current grassland/woodland ecosystems by accessibility and population density

Region	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	593,276	26,247	20,496	1,702	4,039	10
Eastern Europe & Russia	543,414	34,295	20,390	882	13,006	17
Northern Europe	52,745	0	0	0	0	0
Southern Europe	27,710	1,282	121	2	1,159	0
Western Europe	28,492	252	42	1	208	1
Caribbean	6,567	2,313	369	67	1,870	7
Central America	91,804	8,944	5,223	653	3,037	31
South America	607,531	93,887	67,617	16,791	9,413	66
Australia & N Zealand	467,650	45,446	12,674	32,416	356	0
Melanesia	14,586	299	5	289	3	3
Eastern Africa	408,001	155,982	58,476	58,957	30,769	7,780
Middle Africa	197,664	43,422	13,406	25,085	4,359	572
Northern Africa	32,794	0	0	0	0	0
Southern Africa	150,085	12,144	6,121	2,005	3,382	636
Western Africa	184,147	43,284	13,879	7,633	19,536	2,235
Western Asia	55,818	243	44	6	193	0
South-Eastern Asia	93,390	767	26	105	406	230
Southern Asia	105,762	9,733	211	41	9,301	180
Eastern Asia	319,339	13,139	1,865	512	10,148	614
Central Asia	121,498	4,286	2,662	284	1,291	49

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 16: Potentially available good sorghum land (VS+S for rain-fed sorghum) in current forest land ecosystems by accessibility and population density

Region	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	562,237	57,360	39,525	2,870	14,902	63
Eastern Europe & Russia	763,485	29,461	19,879	1,689	7,878	14
Northern Europe	63,175	0	0	0	0	0
Southern Europe	30,923	530	184	9	336	0
Western Europe	26,131	216	55	1	158	2
Caribbean	4,153	1,084	308	40	732	4
Central America	77,329	10,809	5,977	1,488	3,306	38
South America	685,674	59,105	29,689	25,350	3,980	86
Australia & N Zealand	76,151	19,949	6,710	12,861	378	0
Melanesia	32,905	346	1	335	3	6
Eastern Africa	105,038	49,413	15,766	21,218	10,198	2,231
Middle Africa	275,134	24,623	7,206	15,209	1,637	571
Northern Africa	5,160	0	0	0	0	0
Southern Africa	11,711	2,807	1,089	512	961	244
Western Africa	48,768	9,604	3,349	2,218	3,554	483
Western Asia	11,329	151	34	4	113	0
South-Eastern Asia	170,690	641	80	186	196	178
Southern Asia	74,143	21,711	1,976	619	18,220	896
Eastern Asia	204,352	9,360	2,595	1,491	4,822	453
Central Asia	8,107	419	187	30	192	9

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 17: Potentially available good cassava land (VS+S for rain-fed cassava) in current grassland/woodland ecosystems by accessibility and population density

Region	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	593,276	1,375	807	215	308	45
Eastern Europe & Russia	543,414	0	0	0	0	0
Northern Europe	52,745	0	0	0	0	0
Southern Europe	27,710	0	0	0	0	0
Western Europe	28,492	0	0	0	0	0
Caribbean	6,567	1,145	173	63	900	9
Central America	91,804	2,826	635	1,018	1,098	75
South America	607,531	123,168	63,788	47,514	11,574	292
Australia & N Zealand	467,650	996	642	269	85	0
Melanesia	14,586	2,958	98	2,726	31	103
Eastern Africa	408,001	47,440	18,284	13,687	13,001	2,469
Middle Africa	197,664	55,023	14,274	34,429	4,819	1,500
Northern Africa	32,794	0	0	0	0	0
Southern Africa	150,085	129	20	7	88	13
Western Africa	184,147	10,900	2,618	2,001	5,596	685
Western Asia	55,818	0	0	0	0	0
South-Eastern Asia	93,390	13,464	1,914	5,976	4,226	1,348
Southern Asia	105,762	615	16	10	568	21
Eastern Asia	319,339	283	9	1	267	6
Central Asia	121,498	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 18: Potentially available good cassava land (VS+S for rain-fed cassava) in current forest land ecosystems by accessibility and population density

Region	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Northern America	562,237	2,288	1,627	121	512	28
Eastern Europe & Russia	763,485	0	0	0	0	0
Northern Europe	63,175	0	0	0	0	0
Southern Europe	30,923	0	0	0	0	0
Western Europe	26,131	0	0	0	0	0
Caribbean	4,153	771	250	35	482	4
Central America	77,329	4,564	1,117	2,165	1,165	117
South America	685,674	256,412	46,652	201,727	7,390	643
Australia & N Zealand	76,151	1,777	1,182	479	116	0
Melanesia	32,905	7,359	118	6,999	40	203
Eastern Africa	105,038	25,326	7,273	9,670	6,894	1,490
Middle Africa	275,134	134,980	28,312	96,155	7,782	2,731
Northern Africa	5,160	0	0	0	0	0
Southern Africa	11,711	120	23	13	78	6
Western Africa	48,768	8,870	1,771	1,851	4,550	697
Western Asia	11,329	0	0	0	0	0
South-Eastern Asia	170,690	26,604	4,009	15,226	4,841	2,528
Southern Asia	74,143	2,066	117	95	1,723	131
Eastern Asia	204,352	230	14	9	196	11
Central Asia	8,107	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 19: Potentially available good land (VS+S for at least one of wheat, maize, soybean, sugarcane, oil palm) in current grassland/woodland ecosystems by accessibility and population density

Country	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	309,176	10,603	5,272	4,796	535	0
United States of America	273,815	21,046	14,375	1,206	5,394	71
Belarus	5,655	5,048	3,672	18	1,357	0
Russian Federation	509,264	49,163	34,683	7,948	6,501	31
Ukraine	12,924	9,210	3,465	14	5,721	9
Mexico	78,633	6,874	3,806	589	2,457	22
Argentina	170,240	31,532	24,366	5,148	2,001	17
Bolivia	32,255	9,329	3,169	5,829	303	27
Brazil	251,137	59,335	41,427	7,515	10,356	38
Colombia	36,050	7,711	1,830	4,553	1,157	171
Ecuador	7,519	1,478	266	550	616	46
French Guiana	109	65	7	57	1	0
Guyana	2,340	661	27	625	6	3
Paraguay	13,444	8,152	2,379	4,895	745	133
Peru	35,003	2,750	107	2,587	42	14
Suriname	145	33	5	27	1	0
Uruguay	13,496	9,614	7,526	1,745	343	0
Venezuela	28,671	10,209	7,357	1,772	1,080	0
Australia	457,146	26,707	7,743	18,659	305	0
Papua New Guinea	13,081	4,056	116	3,660	85	194
Ethiopia	61,755	11,751	267	4,462	3,185	3,837
Kenya	42,000	8,644	1,944	2,673	3,503	524
Madagascar	40,183	19,175	11,849	4,397	2,703	226
Mozambique	36,643	21,867	8,892	7,374	4,674	928
Sudan	99,237	49,584	21,331	24,695	2,967	591
United Republic of Tanzania	34,274	17,727	5,390	3,287	8,229	821
Zambia	22,173	15,479	5,559	7,521	2,083	316
Zimbabwe	16,199	6,173	2,298	315	3,285	275
Angola	48,093	11,131	2,582	7,184	950	415
Cameroon	13,224	5,591	2,738	1,919	888	46
Central African Republic	30,219	8,152	1,300	6,641	184	28
Chad	38,974	16,893	6,204	8,613	1,935	142
Congo	8,939	3,545	254	3,231	45	14
Dem Republic of the Congo	54,390	26,501	7,661	14,888	3,174	778
Gabon	3,318	983	59	916	2	6
South Africa	71,747	6,421	3,073	484	2,421	443
Burkina Faso	17,118	7,841	2,309	1,403	3,628	500
Mali	34,836	6,139	2,601	1,307	2,039	192
Turkey	37,559	4,214	1,599	41	2,573	1
Indonesia	36,406	14,450	1,136	9,370	2,214	1,730
Malaysia	2,204	693	136	387	137	33
Thailand	11,793	1,565	71	57	1,310	126
China	267,802	7,612	1,038	1,535	4,633	406
Kazakhstan	90,035	3,378	2,416	578	384	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 20: Potentially available good wheat land (VS+S for rain-fed wheat) in current grassland/woodland ecosystems by accessibility and population density

Country	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	309,176	10,603	5,272	4,796	535	0
United States of America	273,815	22,300	15,847	1,024	5,412	16
Belarus	5,655	5,048	3,672	18	1,357	0
Russian Federation	509,264	49,272	34,765	7,961	6,515	31
Ukraine	12,924	9,210	3,465	14	5,721	9
Mexico	78,633	2,803	1,331	197	1,263	12
Argentina	170,240	20,204	16,203	2,501	1,492	9
Bolivia	32,255	769	384	213	167	6
Brazil	251,137	4,314	3,717	46	552	0
Colombia	36,050	34	1	0	33	0
Ecuador	7,519	153	2	5	141	5
French Guiana	109	0	0	0	0	0
Guyana	2,340	0	0	0	0	0
Paraguay	13,444	294	115	154	16	8
Peru	35,003	29	4	9	14	2
Suriname	145	0	0	0	0	0
Uruguay	13,496	9,638	7,542	1,753	343	0
Venezuela	28,671	1	0	0	0	0
Australia	457,146	2,531	2,069	177	284	0
Papua New Guinea	13,081	0	0	0	0	0
Ethiopia	61,755	2,860	66	280	1,753	761
Kenya	42,000	3,000	641	580	1,580	199
Madagascar	40,183	2,993	2,332	121	534	6
Mozambique	36,643	2,355	838	730	592	195
Sudan	99,237	1	0	1	0	0
United Republic of Tanzania	34,274	3,200	1,279	694	1,102	125
Zambia	22,173	2,304	978	970	327	28
Zimbabwe	16,199	492	205	16	257	14
Angola	48,093	879	351	178	338	12
Cameroon	13,224	0	0	0	0	0
Central African Republic	30,219	0	0	0	0	0
Chad	38,974	0	0	0	0	0
Congo	8,939	0	0	0	0	0
Dem Republic of the Congo	54,390	180	96	49	32	3
Gabon	3,318	0	0	0	0	0
South Africa	71,747	2,622	1,234	210	1,012	166
Burkina Faso	17,118	0	0	0	0	0
Mali	34,836	0	0	0	0	0
Turkey	37,559	4,219	1,599	41	2,577	1
Indonesia	36,406	0	0	0	0	0
Malaysia	2,204	0	0	0	0	0
Thailand	11,793	12	3	0	9	0
China	267,802	5,339	954	1,511	2,530	343
Kazakhstan	90,035	3,378	2,416	578	384	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 21: Potentially available good grain maize land (VS+S for rain-fed grain maize) in current grassland/woodland ecosystems by accessibility and population density

Country	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	309,176	461	244	2	214	0
United States of America	273,815	12,762	8,518	469	3,758	17
Belarus	5,655	670	544	3	123	0
Russian Federation	509,264	3,315	2,398	314	603	0
Ukraine	12,924	4,669	1,437	4	3,223	6
Mexico	78,633	4,995	2,742	536	1,707	11
Argentina	170,240	28,922	22,511	4,492	1,906	13
Bolivia	32,255	6,665	2,181	4,281	175	27
Brazil	251,137	38,105	28,648	2,754	6,693	9
Colombia	36,050	1,382	709	9	664	0
Ecuador	7,519	639	154	28	451	6
French Guiana	109	0	0	0	0	0
Guyana	2,340	0	0	0	0	0
Paraguay	13,444	8,008	2,061	5,203	647	98
Peru	35,003	110	2	93	14	1
Suriname	145	0	0	0	0	0
Uruguay	13,496	9,636	7,541	1,752	343	0
Venezuela	28,671	9,583	7,334	1,188	1,061	0
Australia	457,146	25,148	6,345	18,535	268	0
Papua New Guinea	13,081	369	0	368	0	1
Ethiopia	61,755	11,037	241	4,326	2,948	3,523
Kenya	42,000	8,158	1,898	2,622	3,146	492
Madagascar	40,183	16,641	10,871	4,019	1,707	43
Mozambique	36,643	22,238	8,912	7,579	4,760	987
Sudan	99,237	50,984	22,238	25,107	3,046	594
United Republic of Tanzania	34,274	17,360	5,041	3,151	8,349	820
Zambia	22,173	14,159	4,972	6,945	1,936	306
Zimbabwe	16,199	3,527	1,304	252	1,742	229
Angola	48,093	8,864	1,786	6,212	595	271
Cameroon	13,224	2,357	1,222	584	536	15
Central African Republic	30,219	6,045	222	5,762	42	19
Chad	38,974	16,893	6,204	8,613	1,935	142
Congo	8,939	1	1	0	0	0
Dem Republic of the Congo	54,390	6,607	2,983	3,094	440	90
Gabon	3,318	0	0	0	0	0
South Africa	71,747	3,869	1,582	283	1,643	361
Burkina Faso	17,118	7,841	2,309	1,403	3,628	500
Mali	34,836	6,139	2,601	1,307	2,039	192
Turkey	37,559	12	0	0	12	0
Indonesia	36,406	555	7	307	101	140
Malaysia	2,204	0	0	0	0	0
Thailand	11,793	1,402	48	49	1,181	124
China	267,802	4,813	540	262	3,751	259
Kazakhstan	90,035	39	38	1	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 22: Potentially available good soybean land (VS+S for rain-fed soybean) in current grassland/woodland ecosystems by accessibility and population density

Country	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	309,176	475	260	3	213	0
United States of America	273,815	17,976	12,334	773	4,812	57
Belarus	5,655	404	333	2	70	0
Russian Federation	509,264	3,683	2,583	358	742	0
Ukraine	12,924	3,538	1,043	4	2,486	5
Mexico	78,633	3,169	1,908	289	969	4
Argentina	170,240	30,179	24,157	4,091	1,922	9
Bolivia	32,255	9,506	3,225	6,123	136	22
Brazil	251,137	75,364	55,880	6,068	13,406	9
Colombia	36,050	2,352	985	532	818	17
Ecuador	7,519	501	112	51	322	16
French Guiana	109	0	0	0	0	0
Guyana	2,340	449	67	382	0	0
Paraguay	13,444	6,260	2,157	3,252	728	123
Peru	35,003	578	28	526	21	3
Suriname	145	12	2	10	0	0
Uruguay	13,496	9,663	7,564	1,757	343	0
Venezuela	28,671	7,586	5,786	1,031	768	1
Australia	457,146	8,345	5,049	2,991	305	0
Papua New Guinea	13,081	735	40	684	9	2
Ethiopia	61,755	8,615	253	3,833	1,814	2,715
Kenya	42,000	4,860	1,153	1,300	2,122	285
Madagascar	40,183	16,382	10,410	3,450	2,385	137
Mozambique	36,643	21,507	8,559	7,381	4,594	973
Sudan	99,237	22,340	10,552	10,192	1,321	274
United Republic of Tanzania	34,274	17,482	5,351	3,137	8,080	914
Zambia	22,173	15,687	5,637	7,655	2,069	326
Zimbabwe	16,199	5,454	2,011	266	2,952	225
Angola	48,093	11,083	2,284	7,882	437	480
Cameroon	13,224	5,520	2,940	1,927	610	43
Central African Republic	30,219	10,805	1,995	8,576	211	23
Chad	38,974	10,453	4,112	5,149	1,112	80
Congo	8,939	1,914	294	1,552	60	8
Dem Republic of the Congo	54,390	23,624	9,058	10,816	3,060	689
Gabon	3,318	202	11	189	0	2
South Africa	71,747	6,567	2,994	477	2,644	452
Burkina Faso	17,118	4,275	1,571	699	1,761	244
Mali	34,836	4,038	1,682	888	1,314	153
Turkey	37,559	91	10	0	81	0
Indonesia	36,406	1,264	29	799	297	139
Malaysia	2,204	0	0	0	0	0
Thailand	11,793	341	28	36	262	15
China	267,802	5,024	562	293	3,861	308
Kazakhstan	90,035	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 23: Potentially available good sugarcane land (VS+S for rain-fed sugarcane) in current grassland/woodland ecosystems by accessibility and population density

Country	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	309,176	0	0	0	0	0
United States of America	273,815	3,621	2,376	241	949	55
Belarus	5,655	0	0	0	0	0
Russian Federation	509,264	0	0	0	0	0
Ukraine	12,924	0	0	0	0	0
Mexico	78,633	307	107	58	141	1
Argentina	170,240	11,782	8,982	2,014	775	11
Bolivia	32,255	4,139	1,471	2,644	25	0
Brazil	251,137	33,434	24,557	2,879	5,993	6
Colombia	36,050	2,379	417	1,584	318	59
Ecuador	7,519	524	85	384	30	25
French Guiana	109	3	0	3	0	0
Guyana	2,340	247	8	239	0	0
Paraguay	13,444	5,334	2,361	2,098	745	131
Peru	35,003	1,230	32	1,188	2	7
Suriname	145	16	3	13	0	0
Uruguay	13,496	3,646	2,864	732	50	0
Venezuela	28,671	765	304	342	119	0
Australia	457,146	414	258	10	146	0
Papua New Guinea	13,081	1,862	92	1,577	76	117
Ethiopia	61,755	146	4	12	56	74
Kenya	42,000	544	13	15	501	15
Madagascar	40,183	6,849	4,358	551	1,761	179
Mozambique	36,643	2,176	532	794	555	295
Sudan	99,237	795	380	266	137	12
United Republic of Tanzania	34,274	1,272	314	214	641	103
Zambia	22,173	0	0	0	0	0
Zimbabwe	16,199	0	0	0	0	0
Angola	48,093	55	1	51	1	2
Cameroon	13,224	3,018	1,372	1,283	332	31
Central African Republic	30,219	3,006	1,121	1,736	141	9
Chad	38,974	0	0	0	0	0
Congo	8,939	3,414	254	3,101	45	14
Dem Republic of the Congo	54,390	18,337	4,928	9,971	2,775	663
Gabon	3,318	918	58	852	2	6
South Africa	71,747	45	4	1	39	1
Burkina Faso	17,118	0	0	0	0	0
Mali	34,836	0	0	0	0	0
Turkey	37,559	0	0	0	0	0
Indonesia	36,406	6,746	469	4,382	1,030	864
Malaysia	2,204	142	33	75	27	8
Thailand	11,793	48	4	0	44	0
China	267,802	522	10	1	501	10
Kazakhstan	90,035	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 24: Potentially available good oil palm land (VS+S for rain-fed oil palm) in current grassland/woodland ecosystems by accessibility and population density

Country	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	309,176	0	0	0	0	0
United States of America	273,815	0	0	0	0	0
Belarus	5,655	0	0	0	0	0
Russian Federation	509,264	0	0	0	0	0
Ukraine	12,924	0	0	0	0	0
Mexico	78,633	67	27	0	40	0
Argentina	170,240	0	0	0	0	0
Bolivia	32,255	972	127	844	1	0
Brazil	251,137	7,268	1,902	4,828	509	29
Colombia	36,050	6,427	1,248	4,667	341	170
Ecuador	7,519	548	42	472	6	28
French Guiana	109	65	7	57	1	0
Guyana	2,340	665	31	625	6	3
Paraguay	13,444	1	0	1	0	0
Peru	35,003	2,632	100	2,508	15	10
Suriname	145	43	6	33	3	1
Uruguay	13,496	0	0	0	0	0
Venezuela	28,671	765	339	326	100	0
Australia	457,146	0	0	0	0	0
Papua New Guinea	13,081	3,544	111	3,234	59	140
Ethiopia	61,755	0	0	0	0	0
Kenya	42,000	0	0	0	0	0
Madagascar	40,183	340	108	64	116	52
Mozambique	36,643	0	0	0	0	0
Sudan	99,237	0	0	0	0	0
United Republic of Tanzania	34,274	0	0	0	0	0
Zambia	22,173	0	0	0	0	0
Zimbabwe	16,199	0	0	0	0	0
Angola	48,093	0	0	0	0	0
Cameroon	13,224	310	162	124	22	1
Central African Republic	30,219	36	12	20	4	0
Chad	38,974	0	0	0	0	0
Congo	8,939	2,842	5	2,823	0	13
Dem Republic of the Congo	54,390	11,289	2,163	8,271	544	311
Gabon	3,318	555	27	525	1	3
South Africa	71,747	0	0	0	0	0
Burkina Faso	17,118	0	0	0	0	0
Mali	34,836	0	0	0	0	0
Turkey	37,559	0	0	0	0	0
Indonesia	36,406	13,640	1,107	8,960	1,997	1,576
Malaysia	2,204	685	136	378	137	33
Thailand	11,793	159	21	8	127	2
China	267,802	0	0	0	0	0
Kazakhstan	90,035	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 25: Potentially available good land (VS+S for at least one of wheat, maize, soybean, sugarcane, oil palm, cassava, sorghum) in current grassland/woodland ecosystems by accessibility and population density

Country	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	309,176	10,611	5,280	4,796	535	0
United States of America	273,815	27,016	19,305	1,830	5,808	72
Belarus	5,655	5,048	3,672	18	1,357	0
Russian Federation	509,264	49,628	35,109	7,959	6,530	31
Ukraine	12,924	9,210	3,465	14	5,721	9
Mexico	78,633	7,740	4,543	626	2,549	22
Argentina	170,240	37,652	30,047	5,552	2,036	17
Bolivia	32,255	12,692	4,278	8,080	306	28
Brazil	251,137	101,119	67,453	20,143	13,461	62
Colombia	36,050	19,676	3,226	14,522	1,731	196
Ecuador	7,519	1,499	269	569	609	52
French Guiana	109	65	7	57	1	0
Guyana	2,340	1,260	216	1,035	6	3
Paraguay	13,444	8,197	2,379	4,940	745	133
Peru	35,003	2,824	108	2,660	42	14
Suriname	145	41	5	35	1	0
Uruguay	13,496	9,614	7,526	1,745	343	0
Venezuela	28,671	14,119	9,701	3,197	1,218	3
Australia	457,146	39,457	12,061	27,079	317	0
Papua New Guinea	13,081	4,522	116	4,127	85	194
Ethiopia	61,755	12,220	252	4,809	3,131	4,028
Kenya	42,000	10,776	1,983	4,803	3,462	528
Madagascar	40,183	19,085	11,799	4,401	2,653	232
Mozambique	36,643	22,663	9,116	7,778	4,780	990
Sudan	99,237	53,083	23,457	25,216	3,755	654
United Republic of Tanzania	34,274	17,720	5,405	3,342	8,123	850
Zambia	22,173	13,757	4,886	6,696	1,919	256
Zimbabwe	16,199	7,058	2,941	411	3,406	300
Angola	48,093	15,719	3,180	11,002	971	566
Cameroon	13,224	6,744	3,256	2,329	1,091	68
Central African Republic	30,219	11,900	2,143	9,515	213	29
Chad	38,974	17,739	6,628	8,966	1,996	149
Congo	8,939	3,831	405	3,331	77	18
Dem Republic of the Congo	54,390	34,317	10,940	17,754	4,565	1,058
Gabon	3,318	994	59	927	2	6
South Africa	71,747	9,967	5,593	783	3,079	512
Burkina Faso	17,118	8,195	2,365	1,520	3,755	555
Mali	34,836	7,110	2,919	1,442	2,530	219
Turkey	37,559	4,214	1,599	41	2,573	1
Indonesia	36,406	14,784	1,136	9,719	2,201	1,728
Malaysia	2,204	694	136	387	138	33
Thailand	11,793	1,442	94	78	1,170	100
China	267,802	12,863	2,179	1,712	8,290	682
Kazakhstan	90,035	4,663	3,542	726	394	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 26: Potentially available good sorghum land (VS+S for rain-fed sorghum) in current grassland/woodland ecosystems by accessibility and population density

Country	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	309,176	851	526	3	322	0
United States of America	273,815	25,396	19,971	1,699	3,717	10
Belarus	5,655	1,105	889	5	211	0
Russian Federation	509,264	19,974	15,127	862	3,979	7
Ukraine	12,924	9,623	3,825	14	5,775	9
Mexico	78,633	8,139	5,079	634	2,404	22
Argentina	170,240	37,548	30,980	4,435	2,119	14
Bolivia	32,255	4,712	1,674	2,808	203	27
Brazil	251,137	31,102	23,158	3,008	4,924	12
Colombia	36,050	1,049	637	6	406	0
Ecuador	7,519	583	167	33	376	7
French Guiana	109	0	0	0	0	0
Guyana	2,340	0	0	0	0	0
Paraguay	13,444	6,239	1,092	5,031	113	4
Peru	35,003	82	5	55	20	2
Suriname	145	0	0	0	0	0
Uruguay	13,496	5,059	3,989	762	309	0
Venezuela	28,671	7,511	5,914	654	943	0
Australia	457,146	45,432	12,661	32,416	355	0
Papua New Guinea	13,081	284	0	283	0	1
Ethiopia	61,755	12,329	274	5,044	3,104	3,907
Kenya	42,000	12,090	2,514	5,665	3,315	597
Madagascar	40,183	15,276	9,926	3,977	1,333	41
Mozambique	36,643	23,019	9,347	8,120	4,608	945
Sudan	99,237	52,804	23,654	24,612	3,862	676
United Republic of Tanzania	34,274	16,856	4,971	3,067	8,050	768
Zambia	22,173	15,059	5,187	7,619	1,948	305
Zimbabwe	16,199	5,167	2,374	395	2,135	263
Angola	48,093	13,356	3,098	8,618	1,331	309
Cameroon	13,224	2,079	1,010	432	620	17
Central African Republic	30,219	4,731	105	4,575	35	16
Chad	38,974	17,842	6,549	9,144	1,989	160
Congo	8,939	0	0	0	0	0
Dem Republic of the Congo	54,390	5,414	2,643	2,316	385	69
Gabon	3,318	0	0	0	0	0
South Africa	71,747	9,642	5,266	752	3,035	589
Burkina Faso	17,118	9,155	2,617	1,656	4,273	610
Mali	34,836	8,019	3,213	1,804	2,718	285
Turkey	37,559	243	44	6	193	0
Indonesia	36,406	249	4	58	45	141
Malaysia	2,204	0	0	0	0	0
Thailand	11,793	274	6	15	226	26
China	267,802	12,947	1,847	511	9,976	613
Kazakhstan	90,035	2,748	2,359	232	157	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 27: Potentially available good cassava land (VS+S for rain-fed cassava) in current grassland/woodland ecosystems by accessibility and population density

Country	Total Unprotected Grass/wood land	VS+S land in unprotected grass/woodland ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	309,176	0	0	0	0	0
United States of America	273,815	1,375	807	215	308	45
Belarus	5,655	0	0	0	0	0
Russian Federation	509,264	0	0	0	0	0
Ukraine	12,924	0	0	0	0	0
Mexico	78,633	126	42	56	28	0
Argentina	170,240	3,772	2,853	766	145	7
Bolivia	32,255	10,959	3,552	7,274	116	17
Brazil	251,137	73,224	46,215	18,339	8,627	42
Colombia	36,050	18,721	2,885	14,163	1,490	183
Ecuador	7,519	579	91	288	179	21
French Guiana	109	15	1	14	0	0
Guyana	2,340	1,001	207	790	1	2
Paraguay	13,444	1,521	518	913	84	6
Peru	35,003	2,601	95	2,483	13	10
Suriname	145	36	5	30	1	0
Uruguay	13,496	55	53	0	2	0
Venezuela	28,671	10,684	7,312	2,454	915	3
Australia	457,146	996	642	269	85	0
Papua New Guinea	13,081	2,851	83	2,657	27	85
Ethiopia	61,755	1,999	63	936	369	631
Kenya	42,000	2,452	636	476	1,216	123
Madagascar	40,183	7,755	5,199	904	1,499	153
Mozambique	36,643	11,117	3,617	3,479	3,232	789
Sudan	99,237	10,946	5,702	4,709	494	41
United Republic of Tanzania	34,274	7,032	1,895	1,710	3,033	395
Zambia	22,173	2,325	778	1,203	234	110
Zimbabwe	16,199	142	65	5	68	3
Angola	48,093	6,946	215	6,202	55	473
Cameroon	13,224	4,167	1,940	1,692	485	51
Central African Republic	30,219	8,640	1,998	6,423	206	13
Chad	38,974	9	0	9	0	0
Congo	8,939	3,825	470	3,245	92	18
Dem Republic of the Congo	54,390	30,327	9,518	15,924	3,945	940
Gabon	3,318	932	49	878	1	5
South Africa	71,747	94	16	6	62	10
Burkina Faso	17,118	12	3	8	0	0
Mali	34,836	0	0	0	0	0
Turkey	37,559	0	0	0	0	0
Indonesia	36,406	7,849	623	5,009	1,188	1,028
Malaysia	2,204	180	37	96	37	10
Thailand	11,793	1,139	92	58	922	68
China	267,802	276	7	1	264	4
Kazakhstan	90,035	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 28: Potentially available good land (VS+S for at least one of wheat, maize, soybean, sugarcane, oil palm) in current forest land ecosystems by accessibility and population density

Country	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	291,154	31,932	16,073	14,324	1,532	3
United States of America	271,018	104,494	69,521	6,342	28,470	160
Belarus	6,973	6,029	4,832	36	1,161	0
Russian Federation	731,367	138,484	93,478	36,877	8,086	43
Ukraine	8,691	6,032	2,820	22	3,182	8
Mexico	60,795	10,999	5,616	1,646	3,676	61
Argentina	33,269	17,578	11,470	5,658	432	18
Bolivia	41,928	21,366	5,165	15,965	186	51
Brazil	392,559	138,459	26,179	105,887	6,204	189
Colombia	57,647	32,509	1,843	29,497	870	299
Ecuador	9,397	3,978	364	3,302	231	81
French Guiana	7,300	3,570	108	3,446	16	0
Guyana	17,300	8,521	211	8,290	13	7
Paraguay	18,087	10,837	2,093	8,210	409	125
Peru	59,970	40,080	883	39,068	60	69
Suriname	11,916	5,335	176	5,142	16	1
Uruguay	1,342	1,118	820	229	68	0
Venezuela	22,667	6,961	2,789	3,627	545	0
Australia	71,848	17,843	8,014	9,363	466	0
Papua New Guinea	29,079	10,118	127	9,620	72	299
Ethiopia	5,207	1,556	25	681	305	546
Kenya	3,472	1,862	109	665	944	145
Madagascar	11,891	3,812	1,333	1,292	988	200
Mozambique	20,688	12,053	4,071	4,481	2,758	743
Sudan	9,862	5,998	2,596	3,108	253	41
United Republic of Tanzania	16,643	7,513	2,146	2,141	2,906	320
Zambia	20,795	14,481	4,387	9,173	715	206
Zimbabwe	9,616	3,542	1,412	234	1,766	130
Angola	56,624	13,160	2,180	9,480	889	611
Cameroon	20,629	10,049	4,054	4,979	953	64
Central African Republic	20,753	4,628	1,161	3,308	142	16
Chad	2,275	1,717	747	753	209	8
Congo	21,018	12,452	447	11,911	48	46
Dem Republic of the Congo	133,786	83,145	19,477	56,311	5,752	1,605
Gabon	18,557	6,510	390	6,079	11	29
South Africa	8,138	1,927	812	225	717	173
Burkina Faso	1,862	1,053	407	243	349	54
Mali	3,328	1,054	409	365	244	36
Turkey	9,980	635	162	12	460	1
Indonesia	76,951	31,662	1,955	22,828	3,708	3,172
Malaysia	18,721	5,923	1,050	3,546	1,085	241
Thailand	8,511	838	126	91	560	62
China	159,027	14,602	4,309	6,217	3,560	516
Kazakhstan	3,174	257	165	69	23	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 29: Potentially available good wheat land (VS+S for rain-fed wheat) in current forest land ecosystems by accessibility and population density

Country	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	291,154	31,932	16,073	14,324	1,532	3
United States of America	271,018	108,135	73,066	6,364	28,574	131
Belarus	6,973	6,029	4,832	36	1,161	0
Russian Federation	731,367	138,609	93,568	36,903	8,095	43
Ukraine	8,691	6,032	2,820	22	3,182	8
Mexico	60,795	4,283	2,047	549	1,651	36
Argentina	33,269	5,536	4,121	1,174	233	8
Bolivia	41,928	334	185	135	15	0
Brazil	392,559	1,993	1,624	32	337	0
Colombia	57,647	8	0	0	8	0
Ecuador	9,397	15	0	5	9	1
French Guiana	7,300	0	0	0	0	0
Guyana	17,300	0	0	0	0	0
Paraguay	18,087	364	105	245	8	6
Peru	59,970	19	1	16	1	1
Suriname	11,916	0	0	0	0	0
Uruguay	1,342	1,120	822	230	68	0
Venezuela	22,667	1	0	0	0	0
Australia	71,848	7,155	5,829	913	413	0
Papua New Guinea	29,079	0	0	0	0	0
Ethiopia	5,207	314	6	21	138	149
Kenya	3,472	562	37	104	353	68
Madagascar	11,891	110	49	38	20	4
Mozambique	20,688	1,764	555	718	392	99
Sudan	9,862	4	0	4	0	0
United Republic of Tanzania	16,643	964	279	299	341	45
Zambia	20,795	2,586	825	1,647	102	13
Zimbabwe	9,616	382	135	19	220	7
Angola	56,624	657	193	216	238	10
Cameroon	20,629	0	0	0	0	0
Central African Republic	20,753	0	0	0	0	0
Chad	2,275	0	0	0	0	0
Congo	21,018	0	0	0	0	0
Dem Republic of the Congo	133,786	201	101	69	24	7
Gabon	18,557	0	0	0	0	0
South Africa	8,138	824	360	102	301	60
Burkina Faso	1,862	0	0	0	0	0
Mali	3,328	0	0	0	0	0
Turkey	9,980	642	163	12	466	1
Indonesia	76,951	0	0	0	0	0
Malaysia	18,721	0	0	0	0	0
Thailand	8,511	5	3	0	2	0
China	159,027	13,128	4,241	6,159	2,285	443
Kazakhstan	3,174	257	165	69	23	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 30: Potentially available good grain maize land (VS+S for rain-fed grain maize) in current forest land ecosystems by accessibility and population density

Country	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	291,154	1,654	1,078	21	555	0
United States of America	271,018	73,041	47,364	3,368	22,193	116
Belarus	6,973	767	662	7	98	0
Russian Federation	731,367	3,573	2,397	668	508	0
Ukraine	8,691	4,195	1,918	11	2,260	6
Mexico	60,795	9,244	4,936	1,656	2,627	25
Argentina	33,269	17,160	11,238	5,501	408	13
Bolivia	41,928	16,453	4,017	12,209	174	53
Brazil	392,559	19,766	13,653	2,549	3,556	8
Colombia	57,647	913	525	12	376	0
Ecuador	9,397	267	42	37	184	4
French Guiana	7,300	0	0	0	0	0
Guyana	17,300	0	0	0	0	0
Paraguay	18,087	10,315	1,571	8,344	325	75
Peru	59,970	1,254	7	1,238	4	5
Suriname	11,916	0	0	0	0	0
Uruguay	1,342	1,120	821	230	68	0
Venezuela	22,667	3,672	2,529	628	515	0
Australia	71,848	13,923	4,701	8,835	387	0
Papua New Guinea	29,079	461	0	458	0	3
Ethiopia	5,207	1,385	20	642	279	444
Kenya	3,472	1,687	104	657	804	122
Madagascar	11,891	1,808	804	831	141	32
Mozambique	20,688	12,445	4,122	4,708	2,839	776
Sudan	9,862	6,858	3,172	3,344	299	43
United Republic of Tanzania	16,643	7,981	2,224	2,182	3,224	351
Zambia	20,795	12,640	3,815	7,988	636	201
Zimbabwe	9,616	2,286	938	200	1,048	99
Angola	56,624	10,077	1,375	7,694	567	441
Cameroon	20,629	598	330	222	45	1
Central African Republic	20,753	2,222	128	2,068	19	7
Chad	2,275	1,717	747	753	209	8
Congo	21,018	5	5	0	0	0
Dem Republic of the Congo	133,786	11,962	5,341	5,946	529	146
Gabon	18,557	0	0	0	0	0
South Africa	8,138	1,460	564	162	592	142
Burkina Faso	1,862	1,053	407	243	349	54
Mali	3,328	1,054	409	365	244	36
Turkey	9,980	19	0	0	19	0
Indonesia	76,951	517	9	363	84	61
Malaysia	18,721	0	0	0	0	0
Thailand	8,511	674	104	78	433	59
China	159,027	6,147	1,816	1,171	2,807	353
Kazakhstan	3,174	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 31: Potentially available good soybean land (VS+S for rain-fed soybean) in current forest land ecosystems by accessibility and population density

Country	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	291,154	1,755	1,160	21	574	0
United States of America	271,018	94,840	63,895	4,412	26,389	145
Belarus	6,973	463	404	4	55	0
Russian Federation	731,367	4,642	3,113	869	660	0
Ukraine	8,691	3,341	1,557	9	1,770	6
Mexico	60,795	4,196	2,192	717	1,273	14
Argentina	33,269	14,799	9,819	4,634	335	11
Bolivia	41,928	17,033	4,754	12,060	168	51
Brazil	392,559	44,146	25,759	11,383	6,979	24
Colombia	57,647	1,840	808	478	539	14
Ecuador	9,397	374	59	142	159	14
French Guiana	7,300	0	0	0	0	0
Guyana	17,300	3,977	20	3,957	0	0
Paraguay	18,087	7,609	1,892	5,204	399	114
Peru	59,970	6,275	195	6,060	7	14
Suriname	11,916	2,339	31	2,304	3	1
Uruguay	1,342	1,123	824	230	68	0
Venezuela	22,667	3,208	2,238	529	440	2
Australia	71,848	7,530	4,953	2,135	442	0
Papua New Guinea	29,079	1,367	39	1,315	9	4
Ethiopia	5,207	1,240	22	674	164	379
Kenya	3,472	798	72	155	535	36
Madagascar	11,891	2,252	812	676	663	100
Mozambique	20,688	11,812	3,888	4,553	2,640	731
Sudan	9,862	5,194	2,457	2,514	197	26
United Republic of Tanzania	16,643	7,942	2,212	2,191	3,153	386
Zambia	20,795	15,075	4,618	9,534	713	210
Zimbabwe	9,616	2,945	1,147	174	1,519	105
Angola	56,624	16,183	2,025	13,014	449	695
Cameroon	20,629	8,440	3,717	3,784	865	73
Central African Republic	20,753	6,529	1,618	4,731	165	15
Chad	2,275	1,128	486	503	135	4
Congo	21,018	5,881	509	5,262	83	27
Dem Republic of the Congo	133,786	47,836	16,281	26,320	4,058	1,177
Gabon	18,557	1,083	67	1,007	0	9
South Africa	8,138	1,745	651	180	749	166
Burkina Faso	1,862	685	310	163	183	29
Mali	3,328	801	317	288	167	29
Turkey	9,980	106	8	1	97	0
Indonesia	76,951	1,822	63	1,312	355	92
Malaysia	18,721	0	0	0	0	0
Thailand	8,511	333	62	59	196	16
China	159,027	6,820	1,962	1,227	3,204	427
Kazakhstan	3,174	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 32: Potentially available good sugarcane land (VS+S for rain-fed sugarcane) in current forest land ecosystems by accessibility and population density

Country	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	291,154	0	0	0	0	0
United States of America	271,018	15,217	11,666	398	3,119	34
Belarus	6,973	0	0	0	0	0
Russian Federation	731,367	0	0	0	0	0
Ukraine	8,691	0	0	0	0	0
Mexico	60,795	759	269	148	339	2
Argentina	33,269	3,813	2,666	1,008	130	9
Bolivia	41,928	8,602	2,005	6,563	34	1
Brazil	392,559	50,511	13,733	33,281	3,452	45
Colombia	57,647	15,104	490	14,281	235	98
Ecuador	9,397	2,932	270	2,573	35	54
French Guiana	7,300	361	3	356	2	0
Guyana	17,300	3,143	75	3,066	2	0
Paraguay	18,087	5,406	2,028	2,844	409	125
Peru	59,970	16,612	251	16,312	8	41
Suriname	11,916	2,749	74	2,669	5	1
Uruguay	1,342	423	309	109	5	0
Venezuela	22,667	970	266	626	77	0
Australia	71,848	1,439	1,128	85	225	0
Papua New Guinea	29,079	4,622	97	4,273	63	188
Ethiopia	5,207	64	1	19	12	32
Kenya	3,472	229	3	1	219	6
Madagascar	11,891	2,113	590	484	878	161
Mozambique	20,688	1,883	382	895	426	180
Sudan	9,862	478	254	141	77	6
United Republic of Tanzania	16,643	1,008	239	105	593	71
Zambia	20,795	0	0	0	0	0
Zimbabwe	9,616	1	0	0	0	0
Angola	56,624	124	3	115	1	6
Cameroon	20,629	9,118	3,503	4,674	880	61
Central African Republic	20,753	2,980	1,062	1,786	122	10
Chad	2,275	0	0	0	0	0
Congo	21,018	12,035	447	11,494	48	46
Dem Republic of the Congo	133,786	61,136	14,128	40,396	5,280	1,332
Gabon	18,557	5,978	388	5,550	11	29
South Africa	8,138	55	6	3	45	1
Burkina Faso	1,862	0	0	0	0	0
Mali	3,328	0	0	0	0	0
Turkey	9,980	0	0	0	0	0
Indonesia	76,951	14,266	797	10,177	1,600	1,691
Malaysia	18,721	1,022	168	676	136	42
Thailand	8,511	46	6	1	40	0
China	159,027	452	15	4	421	12
Kazakhstan	3,174	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 33: Potentially available good oil palm land (VS+S for rain-fed oil palm) in current forest land ecosystems by accessibility and population density

Country	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	291,154	0	0	0	0	0
United States of America	271,018	0	0	0	0	0
Belarus	6,973	0	0	0	0	0
Russian Federation	731,367	0	0	0	0	0
Ukraine	8,691	0	0	0	0	0
Mexico	60,795	199	79	0	120	0
Argentina	33,269	0	0	0	0	0
Bolivia	41,928	4,626	596	4,022	8	0
Brazil	392,559	109,384	8,238	100,098	867	182
Colombia	57,647	31,747	1,417	29,607	429	294
Ecuador	9,397	3,318	161	3,080	10	67
French Guiana	7,300	3,570	108	3,446	16	0
Guyana	17,300	8,505	212	8,273	13	7
Paraguay	18,087	2	0	2	0	0
Peru	59,970	39,155	865	38,169	58	63
Suriname	11,916	5,498	216	5,254	24	4
Uruguay	1,342	0	0	0	0	0
Venezuela	22,667	3,415	527	2,811	77	0
Australia	71,848	0	0	0	0	0
Papua New Guinea	29,079	9,428	124	9,022	53	229
Ethiopia	5,207	0	0	0	0	0
Kenya	3,472	0	0	0	0	0
Madagascar	11,891	246	45	49	85	67
Mozambique	20,688	0	0	0	0	0
Sudan	9,862	0	0	0	0	0
United Republic of Tanzania	16,643	0	0	0	0	0
Zambia	20,795	0	0	0	0	0
Zimbabwe	9,616	0	0	0	0	0
Angola	56,624	0	0	0	0	0
Cameroon	20,629	1,417	670	654	88	4
Central African Republic	20,753	173	56	96	21	0
Chad	2,275	0	0	0	0	0
Congo	21,018	10,532	7	10,488	0	37
Dem Republic of the Congo	133,786	52,670	9,348	40,704	1,714	904
Gabon	18,557	4,108	183	3,900	7	18
South Africa	8,138	0	0	0	0	0
Burkina Faso	1,862	0	0	0	0	0
Mali	3,328	0	0	0	0	0
Turkey	9,980	0	0	0	0	0
Indonesia	76,951	30,450	1,897	22,000	3,473	3,080
Malaysia	18,721	5,818	1,049	3,442	1,086	241
Thailand	8,511	145	20	11	112	2
China	159,027	0	0	0	0	0
Kazakhstan	3,174	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 34: Potentially available good land (VS+S for at least one of wheat, maize, soybean, sugarcane, oil palm, cassava, sorghum) in current forest land ecosystems by accessibility and population density

Country	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	291,154	31,937	16,078	14,324	1,532	3
United States of America	271,018	105,961	70,818	6,374	28,609	161
Belarus	6,973	6,029	4,832	36	1,161	0
Russian Federation	731,367	138,604	93,578	36,892	8,091	43
Ukraine	8,691	6,032	2,820	22	3,182	8
Mexico	60,795	11,529	6,008	1,672	3,788	61
Argentina	33,269	18,180	12,042	5,688	432	18
Bolivia	41,928	28,853	7,363	21,235	201	54
Brazil	392,559	179,911	41,462	130,102	8,109	238
Colombia	57,647	35,215	2,485	31,178	1,233	320
Ecuador	9,397	4,083	387	3,377	234	85
French Guiana	7,300	3,570	108	3,446	16	0
Guyana	17,300	10,229	253	9,956	13	7
Paraguay	18,087	10,897	2,093	8,270	409	125
Peru	59,970	41,101	899	40,070	62	70
Suriname	11,916	6,250	203	6,030	16	1
Uruguay	1,342	1,118	820	229	68	0
Venezuela	22,667	8,794	3,848	4,316	623	7
Australia	71,848	20,679	8,941	11,270	468	0
Papua New Guinea	29,079	11,008	127	10,510	72	299
Ethiopia	5,207	1,483	24	627	298	535
Kenya	3,472	1,879	109	698	928	144
Madagascar	11,891	3,938	1,390	1,328	1,013	207
Mozambique	20,688	12,601	4,203	4,791	2,837	770
Sudan	9,862	6,133	2,830	2,973	288	43
United Republic of Tanzania	16,643	7,674	2,141	2,172	2,993	369
Zambia	20,795	11,581	3,426	7,408	589	157
Zimbabwe	9,616	4,117	1,812	330	1,833	142
Angola	56,624	20,591	2,421	16,468	886	816
Cameroon	20,629	11,791	4,815	5,632	1,250	94
Central African Republic	20,753	7,235	1,792	5,257	169	17
Chad	2,275	1,740	756	764	211	8
Congo	21,018	13,050	704	12,168	118	60
Dem Republic of the Congo	133,786	94,246	23,805	61,019	7,359	2,063
Gabon	18,557	6,575	390	6,144	11	29
South Africa	8,138	2,213	967	252	802	192
Burkina Faso	1,862	1,063	409	246	353	55
Mali	3,328	1,107	425	375	270	37
Turkey	9,980	635	162	12	460	1
Indonesia	76,951	32,124	1,954	23,297	3,700	3,173
Malaysia	18,721	5,933	1,050	3,546	1,096	241
Thailand	8,511	984	154	117	646	67
China	159,027	15,435	4,462	6,270	4,146	557
Kazakhstan	3,174	337	234	79	24	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 35: Potentially available good sorghum land (VS+S for rain-fed sorghum) in current forest land ecosystems by accessibility and population density

Country	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	291,154	3,062	2,107	29	926	0
United States of America	271,018	54,299	37,418	2,841	13,976	63
Belarus	6,973	1,199	1,026	10	163	0
Russian Federation	731,367	20,831	15,619	1,659	3,548	6
Ukraine	8,691	5,632	2,681	13	2,930	8
Mexico	60,795	10,302	5,893	1,457	2,929	23
Argentina	33,269	17,865	12,110	5,318	422	15
Bolivia	41,928	10,935	3,110	7,599	173	53
Brazil	392,559	16,477	11,027	2,920	2,522	8
Colombia	57,647	533	323	6	203	0
Ecuador	9,397	192	37	32	118	5
French Guiana	7,300	0	0	0	0	0
Guyana	17,300	0	0	0	0	0
Paraguay	18,087	9,148	749	8,357	37	4
Peru	59,970	745	20	718	5	2
Suriname	11,916	0	0	0	0	0
Uruguay	1,342	585	440	84	61	0
Venezuela	22,667	2,626	1,873	315	438	0
Australia	71,848	19,946	6,707	12,861	378	0
Papua New Guinea	29,079	329	0	327	0	2
Ethiopia	5,207	1,260	20	557	274	409
Kenya	3,472	1,877	131	802	817	128
Madagascar	11,891	1,725	785	812	97	31
Mozambique	20,688	12,573	4,214	4,785	2,759	815
Sudan	9,862	6,261	2,865	3,060	293	43
United Republic of Tanzania	16,643	7,091	1,980	2,064	2,762	285
Zambia	20,795	13,517	4,022	8,642	654	199
Zimbabwe	9,616	3,247	1,564	335	1,235	113
Angola	56,624	12,085	1,912	8,671	1,024	479
Cameroon	20,629	351	168	133	48	1
Central African Republic	20,753	1,311	48	1,244	14	5
Chad	2,275	1,712	727	767	210	8
Congo	21,018	0	0	0	0	0
Dem Republic of the Congo	133,786	9,163	4,350	4,395	341	77
Gabon	18,557	0	0	0	0	0
South Africa	8,138	2,203	884	241	848	230
Burkina Faso	1,862	1,160	449	262	391	58
Mali	3,328	1,235	461	437	291	46
Turkey	9,980	151	34	4	113	0
Indonesia	76,951	159	5	70	26	57
Malaysia	18,721	0	0	0	0	0
Thailand	8,511	196	27	24	127	18
China	159,027	8,777	2,454	1,483	4,391	449
Kazakhstan	3,174	152	126	15	11	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 36: Potentially available good cassava land (VS+S for rain-fed cassava) in current forest land ecosystems by accessibility and population density

Country	Total Unprotected Forest land	VS+S land in unprotected forest land ecosystems (1000 ha)				
		Total 1000 ha	Pop.dens. <25 pers/km2		Pop.dens. >25 pers/km2	
			< 6 hours	> 6 hours	< 6 hours	> 6 hours
Canada	291,154	0	0	0	0	0
United States of America	271,018	2,288	1,627	121	512	28
Belarus	6,973	0	0	0	0	0
Russian Federation	731,367	0	0	0	0	0
Ukraine	8,691	0	0	0	0	0
Mexico	60,795	361	123	171	68	0
Argentina	33,269	2,792	1,817	910	61	4
Bolivia	41,928	26,885	6,779	19,878	181	47
Brazil	392,559	134,030	30,854	97,725	5,280	172
Colombia	57,647	30,831	2,252	27,182	1,105	292
Ecuador	9,397	2,424	218	2,066	100	40
French Guiana	7,300	972	16	956	1	0
Guyana	17,300	6,976	195	6,769	6	6
Paraguay	18,087	1,882	433	1,399	44	6
Peru	59,970	38,089	799	37,173	52	65
Suriname	11,916	5,629	159	5,458	10	2
Uruguay	1,342	8	7	0	1	0
Venezuela	22,667	5,893	3,123	2,213	549	7
Australia	71,848	1,777	1,182	479	116	0
Papua New Guinea	29,079	6,994	96	6,705	27	166
Ethiopia	5,207	442	8	258	46	130
Kenya	3,472	380	36	32	294	18
Madagascar	11,891	1,858	563	459	679	157
Mozambique	20,688	7,783	2,119	2,941	2,111	612
Sudan	9,862	3,580	1,745	1,703	122	10
United Republic of Tanzania	16,643	5,063	1,428	1,607	1,751	277
Zambia	20,795	3,873	1,126	2,504	137	106
Zimbabwe	9,616	129	35	6	79	9
Angola	56,624	14,526	492	13,225	106	703
Cameroon	20,629	10,899	4,393	5,273	1,136	97
Central African Republic	20,753	6,381	1,649	4,548	171	13
Chad	2,275	1	0	1	0	0
Congo	21,018	12,599	769	11,640	129	61
Dem Republic of the Congo	133,786	83,658	20,413	55,277	6,139	1,828
Gabon	18,557	6,347	323	5,990	5	29
South Africa	8,138	100	20	11	64	5
Burkina Faso	1,862	5	1	4	0	0
Mali	3,328	0	0	0	0	0
Turkey	9,980	0	0	0	0	0
Indonesia	76,951	16,792	1,063	11,798	1,953	1,979
Malaysia	18,721	1,396	272	846	224	54
Thailand	8,511	830	136	98	550	47
China	159,027	210	10	3	191	5
Kazakhstan	3,174	0	0	0	0	0

Source: GAEZ 2009 model simulations, IIASA, 2010.

Table 37: Estimated aggregate 'yield gap' in year 2000 calculated by comparing average yield over six major crop groups (cereals, roots & tubers, sugar crops, pulses, oil crops, vegetables) to potential attainable yield for mixed input level

Region	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Northern America	91,600	120,120	763	1,222	0.62
Eastern Europe & Russia	44,822	103,581	433	1,336	0.32
Northern Europe	10,579	11,770	899	1,051	0.85
Southern Europe	21,555	26,160	824	1,628	0.51
Western Europe	31,804	24,320	1,308	1,461	0.90
Caribbean	2,232	3,344	667	2,190	0.30
Central America	10,197	17,733	575	1,285	0.45
South America	51,647	80,531	641	1,397	0.46
Australia & N Zealand	8,255	22,018	375	528	0.71
Melanesia	634	835	759	1,667	0.46
Eastern Africa	13,241	49,982	265	1,370	0.19
Middle Africa	4,407	13,280	332	1,448	0.23
Northern Africa	10,351	16,119	642	1,771	0.36
Southern Africa	3,291	7,186	458	1,224	0.37
Western Africa	21,440	69,366	309	1,220	0.25
Western Asia	15,702	27,728	566	1,163	0.49
South-Eastern Asia	57,724	81,363	709	1,180	0.60
Southern Asia	104,651	205,890	508	1,153	0.44
Eastern Asia	183,318	150,906	1,215	1,450	0.84
Central Asia	5,874	18,277	321	1,033	0.31

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 38: Estimated aggregate 'yield gap' in year 2000 calculated by comparing average yield over cereal crops to potential attainable cereal yield for mixed input level

Region	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Northern America	50,982	75,238	678	1,132	0.60
Eastern Europe & Russia	23,228	78,128	297	1,136	0.26
Northern Europe	6,279	9,333	673	847	0.79
Southern Europe	8,177	16,205	505	864	0.58
Western Europe	16,436	17,397	945	1,148	0.82
Caribbean	341	937	364	1,394	0.26
Central America	4,296	12,531	343	966	0.36
South America	15,498	35,184	440	1,059	0.42
Australia & N Zealand	5,355	17,416	307	422	0.73
Melanesia	6	13	486	907	0.54
Eastern Africa	4,595	29,222	157	999	0.16
Middle Africa	670	5,721	117	946	0.12
Northern Africa	4,050	11,229	361	1,001	0.36
Southern Africa	1,595	5,469	292	963	0.30
Western Africa	5,786	37,498	154	998	0.15
Western Asia	5,695	21,138	269	769	0.35
South-Eastern Asia	32,814	51,910	632	912	0.69
Southern Asia	58,954	139,446	423	1,012	0.42
Eastern Asia	74,582	91,562	815	895	0.91
Central Asia	3,628	16,553	219	763	0.29

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 39: Estimated aggregate 'yield gap' in year 2000 calculated by comparing average yield over six major crop groups (cereals, roots & tubers, sugar crops, pulses, oil crops, vegetables) to potential attainable yield for low input level

Region	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Northern America	91,600	120,120	763	414	1.84
Eastern Europe & Russia	44,822	103,581	433	447	0.97
Northern Europe	10,579	11,770	899	282	3.19
Southern Europe	21,555	26,160	824	664	1.24
Western Europe	31,804	24,320	1,308	453	2.88
Caribbean	2,232	3,344	667	813	0.82
Central America	10,197	17,733	575	500	1.15
South America	51,647	80,531	641	451	1.42
Australia & N Zealand	8,255	22,018	375	238	1.58
Melanesia	634	835	759	519	1.46
Eastern Africa	13,241	49,982	265	404	0.66
Middle Africa	4,407	13,280	332	401	0.83
Northern Africa	10,351	16,119	642	622	1.03
Southern Africa	3,291	7,186	458	465	0.99
Western Africa	21,440	69,366	309	360	0.86
Western Asia	15,702	27,728	566	523	1.08
South-Eastern Asia	57,724	81,363	709	359	1.98
Southern Asia	104,651	205,890	508	431	1.18
Eastern Asia	183,318	150,906	1,215	684	1.77
Central Asia	5,874	18,277	321	406	0.79

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 40: Estimated aggregate 'yield gap' in year 2000 calculated by comparing average yield over cereal crops to potential attainable cereal yield for low input level

Region	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Northern America	50,982	75,238	678	349	1.94
Eastern Europe & Russia	23,228	78,128	297	321	0.93
Northern Europe	6,279	9,333	673	197	3.41
Southern Europe	8,177	16,205	505	285	1.77
Western Europe	16,436	17,397	945	290	3.26
Caribbean	341	937	364	421	0.87
Central America	4,296	12,531	343	302	1.13
South America	15,498	35,184	440	381	1.16
Australia & N Zealand	5,355	17,416	307	197	1.56
Melanesia	6	13	486	276	1.76
Eastern Africa	4,595	29,222	157	267	0.59
Middle Africa	670	5,721	117	246	0.48
Northern Africa	4,050	11,229	361	267	1.35
Southern Africa	1,595	5,469	292	332	0.88
Western Africa	5,786	37,498	154	255	0.61
Western Asia	5,695	21,138	269	262	1.03
South-Eastern Asia	32,814	51,910	632	255	2.48
Southern Asia	58,954	139,446	423	313	1.35
Eastern Asia	74,582	91,562	815	307	2.65
Central Asia	3,628	16,553	219	259	0.85

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 41: Estimated aggregate 'yield gap' in year 2005 calculated by comparing average yield over six major crop groups (cereals, roots & tubers, sugar crops, pulses, oil crops, vegetables) to potential attainable yield for mixed input level

Region	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Northern America	98,121	116,661	841	1,216	0.69
Eastern Europe & Russia	52,949	106,827	496	1,291	0.38
Northern Europe	10,509	11,376	924	1,020	0.91
Southern Europe	21,729	24,847	875	1,623	0.54
Western Europe	32,293	24,222	1,333	1,434	0.93
Caribbean	2,139	2,891	740	2,424	0.31
Central America	11,083	17,474	634	1,313	0.48
South America	65,035	97,205	669	1,392	0.48
Australia & N Zealand	7,052	22,853	309	514	0.60
Melanesia	647	824	784	1,688	0.46
Eastern Africa	15,551	58,688	265	1,361	0.19
Middle Africa	5,070	15,751	322	1,415	0.23
Northern Africa	13,382	19,297	693	1,723	0.40
Southern Africa	3,204	6,146	521	1,258	0.41
Western Africa	26,134	77,138	339	1,222	0.28
Western Asia	17,777	28,156	631	1,187	0.53
South-Eastern Asia	70,548	86,957	811	1,185	0.68
Southern Asia	110,160	211,794	520	1,146	0.45
Eastern Asia	208,305	148,932	1,399	1,573	0.89
Central Asia	7,493	21,075	356	1,022	0.35

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 42: Estimated aggregate 'yield gap' in year 2005 calculated by comparing average yield over cereal crops to potential attainable cereal yield for mixed input level

Region	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Northern America	54,820	71,474	767	1,143	0.67
Eastern Europe & Russia	27,519	79,045	348	1,137	0.31
Northern Europe	6,354	8,954	710	842	0.84
Southern Europe	8,311	15,368	541	857	0.63
Western Europe	17,014	17,544	970	1,148	0.84
Caribbean	316	874	361	1,394	0.26
Central America	4,601	12,179	378	971	0.39
South America	17,550	36,125	486	1,062	0.46
Australia & N Zealand	4,535	19,359	234	422	0.56
Melanesia	6	14	454	910	0.50
Eastern Africa	5,836	36,512	160	1,009	0.16
Middle Africa	811	7,037	115	943	0.12
Northern Africa	5,377	13,011	413	973	0.42
Southern Africa	1,587	4,462	356	956	0.37
Western Africa	7,152	41,221	174	998	0.17
Western Asia	7,075	21,699	326	770	0.42
South-Eastern Asia	37,962	53,806	706	913	0.77
Southern Asia	61,637	139,014	443	1,007	0.44
Eastern Asia	75,149	86,824	866	895	0.97
Central Asia	4,375	18,851	232	762	0.30

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 43: Estimated aggregate 'yield gap' in year 2005 calculated by comparing average yield over six major crop groups (cereals, roots & tubers, sugar crops, pulses, oil crops, vegetables) to potential attainable yield for low input level

Region	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Northern America	98,121	116,661	841	411	2.04
Eastern Europe & Russia	52,949	106,827	496	433	1.14
Northern Europe	10,509	11,376	924	269	3.43
Southern Europe	21,729	24,847	875	665	1.32
Western Europe	32,293	24,222	1,333	440	3.03
Caribbean	2,139	2,891	740	944	0.78
Central America	11,083	17,474	634	510	1.24
South America	65,035	97,205	669	435	1.54
Australia & N Zealand	7,052	22,853	309	234	1.32
Melanesia	647	824	784	531	1.48
Eastern Africa	15,551	58,688	265	399	0.66
Middle Africa	5,070	15,751	322	395	0.82
Northern Africa	13,382	19,297	693	606	1.14
Southern Africa	3,204	6,146	521	482	1.08
Western Africa	26,134	77,138	339	360	0.94
Western Asia	17,777	28,156	631	532	1.19
South-Eastern Asia	70,548	86,957	811	358	2.27
Southern Asia	110,160	211,794	520	432	1.20
Eastern Asia	208,305	148,932	1,399	773	1.81
Central Asia	7,493	21,075	356	402	0.88

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 44: Estimated aggregate 'yield gap' in year 2005 calculated by comparing average yield over cereal crops to potential attainable cereal yield for low input level

Region	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Northern America	54,820	71,474	767	352	2.18
Eastern Europe & Russia	27,519	79,045	348	322	1.08
Northern Europe	6,354	8,954	710	196	3.61
Southern Europe	8,311	15,368	541	284	1.91
Western Europe	17,014	17,544	970	291	3.34
Caribbean	316	874	361	421	0.86
Central America	4,601	12,179	378	304	1.24
South America	17,550	36,125	486	373	1.30
Australia & N Zealand	4,535	19,359	234	197	1.19
Melanesia	6	14	454	277	1.64
Eastern Africa	5,836	36,512	160	270	0.59
Middle Africa	811	7,037	115	243	0.48
Northern Africa	5,377	13,011	413	266	1.55
Southern Africa	1,587	4,462	356	331	1.08
Western Africa	7,152	41,221	174	256	0.68
Western Asia	7,075	21,699	326	259	1.26
South-Eastern Asia	37,962	53,806	706	255	2.77
Southern Asia	61,637	139,014	443	313	1.42
Eastern Asia	75,149	86,824	866	307	2.82
Central Asia	4,375	18,851	232	258	0.90

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 45: Estimated aggregate 'yield gap' in year 2000 calculated by comparing average yield over six major crop groups (cereals, roots & tubers, sugar crops, pulses, oil crops, vegetables) to potential attainable yield for mixed[1] input level

Country	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Canada	12,211	27,015	452	526	0.86
United States of America	79,389	93,105	853	1,424	0.60
Belarus	1,747	3,571	489	1,873	0.26
Russian Federation	16,889	51,116	330	1,004	0.33
Ukraine	8,320	19,164	434	1,561	0.28
Mexico	8,149	14,085	579	1,233	0.47
Argentina	14,096	24,484	576	1,543	0.37
Bolivia	815	1,938	421	2,036	0.21
Brazil	27,416	43,043	637	1,224	0.52
Colombia	2,323	2,273	1,022	1,344	0.76
Ecuador	685	1,341	510	1,113	0.46
French Guiana	11	12	889	819	1.09
Guyana	191	213	900	1,032	0.87
Paraguay	1,412	2,377	594	1,758	0.34
Peru	2,017	1,999	1,009	1,509	0.67
Suriname	43	54	805	1,615	0.50
Uruguay	426	653	652	1,890	0.35
Venezuela	973	1,255	776	1,640	0.47
Australia	7,829	21,798	359	508	0.71
Papua New Guinea	442	546	809	1,672	0.48
Ethiopia	2,307	10,055	229	1,155	0.20
Kenya	1,167	3,777	309	1,494	0.21
Madagascar	989	2,235	442	1,631	0.27
Mozambique	878	3,800	231	1,660	0.14
Sudan	1,891	11,369	166	961	0.17
United Republic of Tanzania	1,736	5,596	310	1,833	0.17
Zambia	327	1,135	289	1,820	0.16
Zimbabwe	542	2,293	236	1,218	0.19
Angola	546	1,876	291	1,116	0.26
Cameroon	1,015	2,268	448	2,022	0.22
Central African Republic	227	684	332	1,575	0.21
Chad	492	2,715	181	915	0.20
Congo	111	216	512	1,590	0.32
Dem Republic of the Congo	1,933	5,331	363	1,564	0.23
Gabon	61	127	480	1,635	0.29
South Africa	3,066	6,283	488	1,269	0.38
Burkina Faso	697	3,953	176	1,181	0.15
Mali	671	3,104	216	1,047	0.21
Turkey	10,884	18,277	596	1,148	0.52
Indonesia	20,321	24,834	818	1,273	0.64
Malaysia	4,940	4,177	1,183	1,580	0.75
Thailand	9,496	15,016	632	1,175	0.54
China	172,119	143,501	1,199	1,394	0.86
Kazakhstan	2,636	12,763	207	574	0.36

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

[1] For the mixed input level is assumed in AEZ yield potential estimation that land that is very suitable or suitable (yield potential >60% of maximum attainable yield) is managed with adequate high inputs of nutrients and management, moderately suitable land is cultivated at an intermediate input level, and marginal land at low input level.

Table 46: Estimated aggregate 'yield gap' in year 2000 calculated by comparing average yield over cereal crops to potential attainable cereal yield for mixed[2] input level

Country	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Canada	6,763	17,819	380	522	0.73
United States of America	44,218	57,419	770	1,322	0.58
Belarus	517	2,348	220	1,404	0.16
Russian Federation	9,261	40,424	229	885	0.26
Ukraine	3,996	12,809	312	1,359	0.23
Mexico	3,746	10,380	361	912	0.40
Argentina	5,125	10,958	468	1,118	0.42
Bolivia	189	777	244	1,336	0.18
Brazil	7,166	17,609	407	1,025	0.40
Colombia	663	1,104	601	883	0.68
Ecuador	320	863	371	753	0.49
French Guiana	5	8	573	657	0.87
Guyana	101	132	766	922	0.83
Paraguay	176	607	289	1,411	0.21
Peru	606	1,132	535	661	0.81
Suriname	36	47	758	1,650	0.46
Uruguay	337	518	652	1,323	0.49
Venezuela	402	842	478	1,277	0.37
Australia	5,238	17,275	303	420	0.72
Papua New Guinea	2	3	532	801	0.66
Ethiopia	1,166	7,550	154	828	0.19
Kenya	378	1,968	192	1,101	0.17
Madagascar	538	1,408	382	1,231	0.31
Mozambique	227	1,821	125	1,275	0.10
Sudan	533	7,372	72	891	0.08
United Republic of Tanzania	580	2,368	245	1,252	0.20
Zambia	137	718	191	1,312	0.15
Zimbabwe	272	1,736	157	1,099	0.14
Angola	74	901	82	762	0.11
Cameroon	168	714	236	1,077	0.22
Central African Republic	24	169	139	1,146	0.12
Chad	174	1,900	92	988	0.09
Congo	3	23	118	934	0.13
Dem Republic of the Congo	223	1,996	112	927	0.12
Gabon	3	17	196	965	0.20
South Africa	1,538	4,757	323	1,003	0.32
Burkina Faso	391	2,944	133	1,266	0.10
Mali	424	2,460	172	1,056	0.16
Turkey	4,297	13,925	309	780	0.40
Indonesia	11,391	15,166	751	882	0.85
Malaysia	426	714	597	764	0.78
Thailand	5,683	11,325	502	991	0.51
China	70,028	86,871	806	893	0.90
Kazakhstan	2,059	12,070	171	519	0.33

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

[2] For the mixed input level is assumed in AEZ yield potential estimation that land that is very suitable or suitable (yield potential >60% of maximum attainable yield) is managed with adequate high inputs of nutrients and management, moderately suitable land is cultivated at an intermediate input level, and marginal land at low input level.

Table 47: Estimated aggregate 'yield gap' in year 2000 calculated by comparing average yield over six major crop groups (cereals, roots & tubers, sugar crops, pulses, oil crops, vegetables) to potential attainable yield for low input level

Country	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Canada	12,211	27,015	452	202	2.24
United States of America	79,389	93,105	853	476	1.79
Belarus	1,747	3,571	489	460	1.06
Russian Federation	16,889	51,116	330	366	0.90
Ukraine	8,320	19,164	434	562	0.77
Mexico	8,149	14,085	579	500	1.16
Argentina	14,096	24,484	576	569	1.01
Bolivia	815	1,938	421	654	0.64
Brazil	27,416	43,043	637	342	1.86
Colombia	2,323	2,273	1,022	450	2.27
Ecuador	685	1,341	510	493	1.04
French Guiana	11	12	889	267	3.33
Guyana	191	213	900	330	2.73
Paraguay	1,412	2,377	594	428	1.39
Peru	2,017	1,999	1,009	685	1.47
Suriname	43	54	805	281	2.87
Uruguay	426	653	652	748	0.87
Venezuela	973	1,255	776	532	1.46
Australia	7,829	21,798	359	229	1.57
Papua New Guinea	442	546	809	526	1.54
Ethiopia	2,307	10,055	229	379	0.61
Kenya	1,167	3,777	309	519	0.59
Madagascar	989	2,235	442	473	0.93
Mozambique	878	3,800	231	424	0.54
Sudan	1,891	11,369	166	273	0.61
United Republic of Tanzania	1,736	5,596	310	544	0.57
Zambia	327	1,135	289	521	0.55
Zimbabwe	542	2,293	236	353	0.67
Angola	546	1,876	291	363	0.80
Cameroon	1,015	2,268	448	669	0.67
Central African Republic	227	684	332	385	0.86
Chad	492	2,715	181	236	0.77
Congo	111	216	512	426	1.20
Dem Republic of the Congo	1,933	5,331	363	384	0.95
Gabon	61	127	480	449	1.07
South Africa	3,066	6,283	488	484	1.01
Burkina Faso	697	3,953	176	302	0.58
Mali	671	3,104	216	282	0.77
Turkey	10,884	18,277	596	515	1.16
Indonesia	20,321	24,834	818	370	2.21
Malaysia	4,940	4,177	1,183	357	3.32
Thailand	9,496	15,016	632	356	1.78
China	172,119	143,501	1,199	667	1.80
Kazakhstan	2,636	12,763	207	233	0.89

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 48: Estimated aggregate 'yield gap' in year 2000 calculated by comparing average yield over cereal crops to potential attainable cereal yield for low input level

Country	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Canada	6,763	17,819	380	182	2.08
United States of America	44,218	57,419	770	400	1.92
Belarus	517	2,348	220	276	0.80
Russian Federation	9,261	40,424	229	287	0.80
Ukraine	3,996	12,809	312	391	0.80
Mexico	3,746	10,380	361	282	1.28
Argentina	5,125	10,958	468	513	0.91
Bolivia	189	777	244	428	0.57
Brazil	7,166	17,609	407	312	1.30
Colombia	663	1,104	601	275	2.19
Ecuador	320	863	371	302	1.23
French Guiana	5	8	573	260	2.20
Guyana	101	132	766	222	3.46
Paraguay	176	607	289	437	0.66
Peru	606	1,132	535	227	2.36
Suriname	36	47	758	253	2.99
Uruguay	337	518	652	561	1.16
Venezuela	402	842	478	364	1.31
Australia	5,238	17,275	303	197	1.54
Papua New Guinea	2	3	532	297	1.79
Ethiopia	1,166	7,550	154	231	0.67
Kenya	378	1,968	192	336	0.57
Madagascar	538	1,408	382	373	1.02
Mozambique	227	1,821	125	350	0.36
Sudan	533	7,372	72	193	0.37
United Republic of Tanzania	580	2,368	245	348	0.71
Zambia	137	718	191	351	0.54
Zimbabwe	272	1,736	157	285	0.55
Angola	74	901	82	201	0.41
Cameroon	168	714	236	267	0.88
Central African Republic	24	169	139	315	0.44
Chad	174	1,900	92	219	0.42
Congo	3	23	118	272	0.44
Dem Republic of the Congo	223	1,996	112	278	0.40
Gabon	3	17	196	268	0.73
South Africa	1,538	4,757	323	345	0.94
Burkina Faso	391	2,944	133	285	0.47
Mali	424	2,460	172	248	0.69
Turkey	4,297	13,925	309	287	1.08
Indonesia	11,391	15,166	751	225	3.34
Malaysia	426	714	597	203	2.94
Thailand	5,683	11,325	502	289	1.74
China	70,028	86,871	806	308	2.62
Kazakhstan	2,059	12,070	171	202	0.85

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 49: Estimated aggregate 'yield gap' in year 2005 calculated by comparing average yield over six major crop groups (cereals, roots & tubers, sugar crops, pulses, oil crops, vegetables) to potential attainable yield for mixed[3] input level

Country	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Canada	13,280	25,662	517	525	0.99
United States of America	84,841	90,999	932	1,411	0.66
Belarus	2,275	3,200	711	1,826	0.39
Russian Federation	20,638	53,154	388	995	0.39
Ukraine	10,910	21,747	502	1,495	0.34
Mexico	8,647	13,485	641	1,253	0.51
Argentina	17,074	27,027	632	1,605	0.39
Bolivia	1,033	2,290	451	1,965	0.23
Brazil	35,894	54,763	655	1,202	0.55
Colombia	2,555	2,316	1,103	1,332	0.83
Ecuador	874	1,429	612	1,356	0.45
French Guiana	10	13	776	812	0.96
Guyana	181	188	963	1,024	0.94
Paraguay	1,907	3,688	517	1,703	0.30
Peru	2,240	1,980	1,131	1,483	0.76
Suriname	42	52	803	1,622	0.50
Uruguay	649	989	657	1,863	0.35
Venezuela	1,174	1,544	760	1,587	0.48
Australia	6,601	22,660	291	495	0.59
Papua New Guinea	449	535	838	1,703	0.49
Ethiopia	3,266	12,190	268	1,155	0.23
Kenya	1,328	4,041	329	1,463	0.22
Madagascar	1,195	2,394	499	1,618	0.31
Mozambique	984	4,397	224	1,667	0.13
Sudan	1,989	12,085	165	1,002	0.16
United Republic of Tanzania	2,257	8,549	264	1,660	0.16
Zambia	403	1,153	350	1,841	0.19
Zimbabwe	427	2,599	164	1,211	0.14
Angola	995	3,008	331	1,068	0.31
Cameroon	1,146	3,175	361	1,945	0.19
Central African Republic	252	741	341	1,537	0.22
Chad	607	3,177	191	915	0.21
Congo	126	232	544	1,582	0.34
Dem Republic of the Congo	1,860	5,224	356	1,564	0.23
Gabon	62	130	478	1,627	0.29
South Africa	2,964	5,343	555	1,306	0.42
Burkina Faso	827	4,444	186	1,168	0.16
Mali	811	3,947	205	1,042	0.20
Turkey	11,969	17,622	679	1,184	0.57
Indonesia	24,696	26,335	938	1,290	0.73
Malaysia	6,300	4,646	1,356	1,601	0.85
Thailand	10,675	15,069	708	1,194	0.59
China	197,401	141,813	1,392	1,528	0.91
Kazakhstan	2,949	14,954	197	569	0.35

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

[3] For the mixed input level is assumed in AEZ yield potential estimation that land that is very suitable or suitable (yield potential >60% of maximum attainable yield) is managed with adequate high inputs of nutrients and management, moderately suitable land is cultivated at an intermediate input level, and marginal land at low input level.

Table 50: Estimated aggregate 'yield gap' in year 2005 calculated by comparing average yield over cereal crops to potential attainable cereal yield for mixed[4] input level

Country	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Canada	6,876	15,985	430	522	0.82
United States of America	47,944	55,489	864	1,322	0.65
Belarus	732	2,187	335	1,404	0.24
Russian Federation	10,716	40,729	263	885	0.30
Ukraine	5,060	14,139	358	1,359	0.26
Mexico	4,024	9,926	405	912	0.44
Argentina	5,023	9,346	537	1,118	0.48
Bolivia	245	842	291	1,336	0.22
Brazil	8,532	19,424	439	1,025	0.43
Colombia	736	1,114	660	883	0.75
Ecuador	419	835	501	753	0.67
French Guiana	4	9	437	657	0.66
Guyana	93	112	833	922	0.90
Paraguay	305	935	327	1,411	0.23
Peru	667	1,122	595	661	0.90
Suriname	35	46	751	1,650	0.45
Uruguay	417	566	738	1,323	0.56
Venezuela	548	1,112	493	1,277	0.39
Australia	4,425	19,244	230	420	0.55
Papua New Guinea	1	3	477	801	0.60
Ethiopia	1,692	9,018	188	828	0.23
Kenya	465	2,113	220	1,101	0.20
Madagascar	714	1,526	468	1,231	0.38
Mozambique	251	2,133	118	1,275	0.09
Sudan	709	8,882	80	891	0.09
United Republic of Tanzania	843	4,912	172	1,252	0.14
Zambia	175	735	238	1,312	0.18
Zimbabwe	233	2,148	109	1,099	0.10
Angola	101	1,442	70	762	0.09
Cameroon	207	1,109	187	1,077	0.17
Central African Republic	32	200	160	1,146	0.14
Chad	247	2,265	109	988	0.11
Congo	3	27	118	934	0.13
Dem Republic of the Congo	216	1,974	109	927	0.12
Gabon	4	20	209	965	0.22
South Africa	1,542	3,876	398	1,003	0.40
Burkina Faso	490	3,127	157	1,266	0.12
Mali	535	3,232	165	1,056	0.16
Turkey	4,948	13,575	364	780	0.47
Indonesia	12,320	15,292	806	882	0.91
Malaysia	460	692	665	764	0.87
Thailand	6,436	11,375	566	991	0.57
China	70,662	82,298	859	893	0.96
Kazakhstan	2,126	13,930	153	519	0.29

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

[4] For the mixed input level is assumed in AEZ yield potential estimation that land that is very suitable or suitable (yield potential >60% of maximum attainable yield) is managed with adequate high inputs of nutrients and management, moderately suitable land is cultivated at an intermediate input level, and marginal land at low input level.

Table 51: Estimated aggregate 'yield gap' in year 2005 calculated by comparing average yield over six major crop groups (cereals, roots & tubers, sugar crops, pulses, oil crops, vegetables) to potential attainable yield for low input level

Country	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Canada	13,280	25,662	517	202	2.56
United States of America	84,841	90,999	932	470	1.98
Belarus	2,275	3,200	711	447	1.59
Russian Federation	20,638	53,154	388	365	1.06
Ukraine	10,910	21,747	502	532	0.94
Mexico	8,647	13,485	641	512	1.25
Argentina	17,074	27,027	632	570	1.11
Bolivia	1,033	2,290	451	611	0.74
Brazil	35,894	54,763	655	330	1.99
Colombia	2,555	2,316	1,103	450	2.45
Ecuador	874	1,429	612	672	0.91
French Guiana	10	13	776	267	2.91
Guyana	181	188	963	325	2.96
Paraguay	1,907	3,688	517	402	1.29
Peru	2,240	1,980	1,131	668	1.69
Suriname	42	52	803	282	2.85
Uruguay	649	989	657	645	1.02
Venezuela	1,174	1,544	760	510	1.49
Australia	6,601	22,660	291	225	1.29
Papua New Guinea	449	535	838	544	1.54
Ethiopia	3,266	12,190	268	378	0.71
Kenya	1,328	4,041	329	505	0.65
Madagascar	1,195	2,394	499	469	1.06
Mozambique	984	4,397	224	426	0.53
Sudan	1,989	12,085	165	282	0.58
United Republic of Tanzania	2,257	8,549	264	483	0.55
Zambia	403	1,153	350	530	0.66
Zimbabwe	427	2,599	164	346	0.47
Angola	995	3,008	331	337	0.98
Cameroon	1,146	3,175	361	622	0.58
Central African Republic	252	741	341	377	0.90
Chad	607	3,177	191	235	0.81
Congo	126	232	544	422	1.29
Dem Republic of the Congo	1,860	5,224	356	387	0.92
Gabon	62	130	478	447	1.07
South Africa	2,964	5,343	555	502	1.10
Burkina Faso	827	4,444	186	302	0.62
Mali	811	3,947	205	276	0.74
Turkey	11,969	17,622	679	535	1.27
Indonesia	24,696	26,335	938	371	2.53
Malaysia	6,300	4,646	1,356	359	3.77
Thailand	10,675	15,069	708	363	1.95
China	197,401	141,813	1,392	762	1.83
Kazakhstan	2,949	14,954	197	231	0.85

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010

Table 52: Estimated aggregate 'yield gap' in year 2005 calculated by comparing average yield over cereal crops to potential attainable cereal yield for low input level

Country	Production million GK$ of 2000	Harvested Area 1000 ha	Actual Yield GK$/ha	Potential Yield GK$/ha	Ratio Actual/Potential Yield
Canada	6,876	15,985	430	182	2.36
United States of America	47,944	55,489	864	400	2.16
Belarus	732	2,187	335	276	1.21
Russian Federation	10,716	40,729	263	287	0.92
Ukraine	5,060	14,139	358	391	0.92
Mexico	4,024	9,926	405	282	1.44
Argentina	5,023	9,346	537	513	1.05
Bolivia	245	842	291	428	0.68
Brazil	8,532	19,424	439	312	1.41
Colombia	736	1,114	660	275	2.40
Ecuador	419	835	501	302	1.66
French Guiana	4	9	437	260	1.68
Guyana	93	112	833	222	3.76
Paraguay	305	935	327	437	0.75
Peru	667	1,122	595	227	2.62
Suriname	35	46	751	253	2.96
Uruguay	417	566	738	561	1.31
Venezuela	548	1,112	493	364	1.36
Australia	4,425	19,244	230	197	1.17
Papua New Guinea	1	3	477	297	1.61
Ethiopia	1,692	9,018	188	231	0.81
Kenya	465	2,113	220	336	0.66
Madagascar	714	1,526	468	373	1.25
Mozambique	251	2,133	118	350	0.34
Sudan	709	8,882	80	193	0.41
United Republic of Tanzania	843	4,912	172	348	0.49
Zambia	175	735	238	351	0.68
Zimbabwe	233	2,148	109	285	0.38
Angola	101	1,442	70	201	0.35
Cameroon	207	1,109	187	267	0.70
Central African Republic	32	200	160	315	0.51
Chad	247	2,265	109	219	0.50
Congo	3	27	118	272	0.43
Dem Republic of the Congo	216	1,974	109	278	0.39
Gabon	4	20	209	268	0.78
South Africa	1,542	3,876	398	345	1.15
Burkina Faso	490	3,127	157	285	0.55
Mali	535	3,232	165	248	0.67
Turkey	4,948	13,575	364	287	1.27
Indonesia	12,320	15,292	806	225	3.59
Malaysia	460	692	665	203	3.28
Thailand	6,436	11,375	566	289	1.96
China	70,662	82,298	859	308	2.79
Kazakhstan	2,126	13,930	153	202	0.76

Source: Potential yield: GAEZ 2009 model simulations, 2010; Actual yield: FAOSTAT, accessed April 2010