

Table E1.7 Present Land Use Pattern Derived from Landsat Image

Unit:km<sup>2</sup>

District	Forest		Woodland		Bushland (Dense)		Bushland (Sparse)		Grassland		Barrenland		Swamp		Agriculture land		Plantation		Town		District Total	
	F1	F2	F2	F1	BUI	BUI	BUI	BUI	G	B1	B2	S	C1	C2	C3	T	T	T	T	T	T	T
110 Nairobi	31.1	0.0	0.0	0.0	0.0	0.0	100.6	0.0	0.0	0.0	0.0	0.0	33.2	0.5	245.4	273.2	684.0					
210 Kiambu	393.6	0.0	74.1	0.0	74.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,061.5	101.7	806.6	10.5	2,448.0					
220 Kirinyaga	332.0	0.5	76.6	0.0	76.6	0.0	0.0	0.0	0.0	62.1	0.0	0.0	870.2	0.0	95.6	0.0	1,437.0					
230 Muranga	262.2	15.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,569.8	174.0	450.1	4.4	2,476.0					
240 Nyandarua	661.9	9.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	188.5	0.0	22.4	1,833.3	667.1	138.8	5.8	3,528.0					
250 Nyeri	1,169.7	107.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	263.2	0.0	0.0	897.6	60.3	778.6	7.4	3,284.0					
310 Kilifi	499.1	2,151.2	6,159.4	0.0	6,159.4	0.0	90.7	0.0	0.0	0.0	0.0	12.0	1,342.1	1,864.4	295.0	0.0	12,413.9					
320 Kwale	207.5	583.7	5,201.0	93.9	5,201.0	93.9	8.7	0.0	0.0	0.0	0.0	0.0	366.9	1,661.5	114.3	19.5	8,257.0					
330 Lamu	154.6	2,378.7	3,803.4	22.3	3,803.4	22.3	76.0	0.0	0.0	0.0	0.0	0.0	31.0	0.0	40.1	0.0	6,506.1					
340 Mombasa	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	149.7	52.9	0.0	0.0	210.1					
350 Taita Taveta	107.2	767.5	13,950.2	1,193.3	13,950.2	1,193.3	71.3	0.0	0.0	91.7	0.0	131.3	107.7	426.0	112.9	0.0	16,959.1					
360 Tana River	91.0	2,554.6	27,037.3	7,113.3	27,037.3	7,113.3	1,527.7	0.0	0.0	0.0	0.0	118.3	41.3	0.0	210.4	0.0	38,693.9					
410 Embu	150.4	44.9	436.5	0.0	436.5	0.0	0.0	0.0	0.0	13.7	0.0	0.0	456.9	1,607.8	3.8	0.0	2,714.0					
420 Isiolo	0.0	725.9	12,867.9	7,039.6	12,867.9	7,039.6	2,252.9	420.3	0.0	1,529.1	0.0	705.0	0.0	60.9	0.0	3.5	25,605.1					
430 Kitui	57.0	1,778.0	17,150.8	654.9	17,150.8	654.9	10.1	0.0	0.0	50.9	0.0	0.0	0.0	9,687.4	0.0	0.0	29,389.1					
440 Machakos	154.9	620.6	2,469.7	16.3	2,469.7	16.3	4.6	0.0	0.0	88.0	0.0	2.1	1,248.6	7,464.8	2,098.2	10.3	14,178.1					
450 Marsabit	207.6	460.6	7,105.6	14,805.2	7,105.6	14,805.2	2,459.2	1,727.6	46,779.1	403.2	0.0	0.0	0.0	0.0	0.0	4.1	73,952.2					
460 Meru	898.3	205.4	2,487.4	264.7	2,487.4	264.7	9.9	2.3	554.7	0.0	0.0	0.0	1,572.4	3,505.7	417.4	3.8	9,922.0					
510 Garissa	0.0	3,424.9	33,055.8	6,055.5	33,055.8	6,055.5	1,339.3	0.0	0.0	0.0	0.0	55.5	0.0	0.0	0.0	0.0	43,931.0					
520 Mandera	0.0	51.3	19,301.4	5,023.4	19,301.4	5,023.4	317.1	0.0	1,766.3	0.0	0.0	0.0	0.0	0.0	0.0	10.4	26,469.9					
530 Wajir	0.0	290.9	39,544.3	13,657.0	39,544.3	13,657.0	1,927.0	0.0	679.2	388.3	0.0	0.0	0.0	0.0	0.0	14.4	56,501.1					
610 Kisii	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,149.3	2.4	44.3	0.0	2,196.0					
620 Kisumu	2.2	0.0	166.0	0.0	166.0	0.0	0.0	0.0	0.0	0.0	0.0	159.5	1,391.6	180.9	173.1	19.6	2,092.9					
630 Siaya	0.0	0.0	9.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	95.7	2,333.5	84.8	0.0	2,523.0						
640 South Nyanza	34.5	71.5	391.5	0.0	391.5	0.0	36.8	0.0	0.0	0.0	0.0	52.3	4,891.2	236.2	0.0	5,714.0						
710 Kajjado	97.1	884.7	13,985.7	1,739.4	13,985.7	1,739.4	435.4	0.0	201.7	1,233.2	0.0	0.0	266.1	432.0	1,676.3	11.3	20,962.9					
720 Kericho	761.9	28.8	237.8	0.0	237.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,382.7	187.8	291.1	0.0	4,890.1					
730 Laikipia	391.4	509.6	2,273.0	120.3	2,273.0	120.3	0.0	0.0	41.0	172.7	0.0	63.9	548.2	179.5	5,580.6	10.3	9,717.8					
740 Nakuru	1,018.5	135.4	1,676.5	86.7	1,676.5	86.7	0.0	0.0	89.1	0.0	0.0	93.7	2,724.2	525.3	558.4	32.5	7,023.9					
750 Narok	2,362.5	524.2	7,114.3	3,366.5	7,114.3	3,366.5	987.3	0.0	0.0	0.0	0.0	68.6	2,017.3	1,441.8	541.4	0.0	18,513.0					
760 Trans Nzoia	248.5	39.1	36.5	138.9	36.5	138.9	0.0	0.0	0.0	0.0	0.0	109.9	1,309.8	19.3	566.0	0.0	2,468.0					
770 Uasin Gishu	506.3	35.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.4	2,662.6	11.1	526.6	0.0	3,784.0					
810 Baringo	449.8	336.6	5,913.1	2,152.7	5,913.1	2,152.7	0.0	0.0	0.0	0.0	0.0	128.3	572.0	334.9	103.0	0.0	10,626.8					
820 Elg. Marakwet	680.0	220.1	763.3	233.6	763.3	233.6	0.0	0.0	0.0	0.0	0.0	39.9	287.2	492.5	5.5	0.0	2,722.1					
830 Nandi	331.8	6.8	70.1	0.0	70.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,148.2	42.4	145.8	0.0	2,745.1					
840 Samburu	962.7	1,215.9	12,708.2	1,834.3	12,708.2	1,834.3	232.5	9.6	3,621.6	0.0	0.0	0.0	0.0	0.0	224.2	0.0	20,809.0					
850 Turkana	0.0	826.3	7,711.5	38,072.8	7,711.5	38,072.8	111.6	2,474.0	15,658.0	2,550.8	0.0	0.0	0.0	0.0	0.0	0.0	67,405.0					
860 West Pokot	175.1	372.9	2,231.4	4,321.1	2,231.4	4,321.1	0.0	0.0	1,453.7	2.8	0.0	0.0	132.9	366.0	0.0	0.0	9,055.9					
910 Bungoma	413.7	1.6	209.1	0.0	209.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,415.9	33.8	0.0	0.0	3,074.1					
920 Busia	0.0	0.0	54.4	0.0	54.4	0.0	0.0	0.0	0.0	0.0	0.0	184.1	1,390.5	0.0	0.0	0.0	1,629.0					
930 Kakamega	187.6	33.3	2.3	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	1.2	3,281.1	4.7	9.9	0.0	3,520.1					
Total	14,009.2	21,413.0	246,275.5	108,005.7	246,275.5	108,005.7	11,998.7	4,633.8	73,940.7	6,664.4	45,486.5	31,910.4	441.0	16,253.4	441.0	581,032.3						

Note : this table was made from Landsat image taken at during Jan-Mar 1987 ,see detail Sector Report R

Table E1.8 Present District Land Use Pattern (1/3)

District Name	810 Baringo	910 Bungoma	920 Busia	820 Elg. Marakwet	410 Embu	510 Garissa	420 Isiolo
Land Use	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)
1. Agricultural Land	718500			160000	271400	770000	
1.1 Cultivated land	107775	254000	45450	132800	239800	1200	21995
1.2 Fallow land	21555	138033	-	27200	19000	768800	921
1.3 Managed pasture		-	-	N.A	19241	N.A	N.A
1.4 Field border		1270	227	N.A	7000	N.A	1780
2. Natural Vegetation				103700			
2.1 Forest	32500	54700	-	78600	22571	N.A	N.A
2.2 Woodland	175923	-	11180	10040	19000	N.A	6200
2.3 Bush	571750	-		9538	19000	N.A	12700
2.4 Grassland	131942	200	78270	N.A	19200	N.A	6400
2.5 Marsh land		-	5000	5522	8000	N.A	N.A
2.6 Other vegetation		-	-	N.A		N.A	N.A
3. Infrastructure (Transnetwork, Homestead land, Hedgings)	21254	33400	15900	8500		N.A	N.A
4. Miscellaneous (Open Water Other)	16300					3630000	N.A
	16300	2100	7100				
Total	756054	483703	163127	272200	372812	4400000	49996

District Name	450 Marsabit	460 Meru	340 Monbasa	230 Muranga	110 Nairobi	740 Nakuru	830 Nandi
Land Use	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)
1. Agricultural Land	N.A	644600	11333	180000	12000	482900	
1.1 Cultivated land	8480	N.A	5890	119991	5318	412200	17067
1.2 Fallow land	1272	N.A	N.A	19244		N.A	452
1.3 Managed pasture	N.A	532200	N.A	15222		N.A	15378
1.4 Field border	43	NA	30	N.A		N.A	N.A
2. Natural Vegetation	N.A		N.A				
2.1 Forest	61010	63464	3059	329	1913	N.A	54487
2.2 Woodland	1457071	31566		20606		N.A	N.A
2.3 Bush	2185607	12447	N.A	9834		N.A	N.A
2.4 Grassland	2914142	19211	N.A	19391		N.A	N.A
2.5 Marsh land	-	N.A	N.A	N.A		N.A	N.A
2.6 Other vegetation	728536	8810	N.A	N.A		N.A	N.A
3. Infrastructure (Transnetwork, Homestead land, Hedgings)	39039	N.A	9241	16146		64000	N.A N.A
4. Miscellaneous (Open Water, Barren Area, etc.)	412600	N.A	6500	2344		7800	N.A 61960
Total	7807800	667697	24720	248650	7231	484000	149344

Source : Ref. E.45

Table E1.8 Present District Land Use Pattern (2/3)

District Name	710 Kajiado	930 Kakamega	720 Kericho	210 Kiambu	310 Kilifi	220 Kirinyaga	610 Kisii
Land Use	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)
1. Agricultural Land	176600		428500		N.A	104400	102600
1.1 Cultivated land	175719	254800	233000	140885	N.A	81475.25	58500
1.2 Fallow land	N.A	-		2034	N.A	22889.7	44100
1.3 Managed pasture	N.A	3543	2560	35949	N.A	35	
1.4 Field border	883	-		N.A	N.A	407	292
2. Natural Vegetation		1290					
2.1 Forest	16422	32700	95900	44800	20921	19763	N.A
2.2 Woodland	675346	-		N.A	78160	N.A	N.A
2.3 Bush	201805	10		N.A	13882	2300	N.A
2.4 Grassland	250225	93	107125	N.A	6961	3276	N.A
2.5 Marsh land	20100	-		N.A	N.A	N.A	25.1
2.6 Other vegetation	41103	-		N.A	6378.5	4500	N/A
3. Infrastructure (Transnetwork, Homestead land, Hedgings)	N.A	54200	30000		N.A	8600	
4. Miscellaneous (Open Water Other)		1100		300	N.A	N.A	
Total	1381602	347736	468585	223968	126302.5	143245.95	102917.1

District Name	750 Narok	240 Nyandarua	250 Nyeri	840 Samburu	630 Siaya	640 South Nyanza	350 Taita Taveta
Land Use	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)
1. Agricultural Land	717000	208500	158900	N.A	206500	453300	1930
1.1 Cultivated land	130000	148732	110400	5000	80000	150000	80000
1.2 Fallow land	6000	N.A	12770	N.A	93460	346.7	N.A
1.3 Managed pasture	N.A	32100	6500	350168	33040	N.A	N.A
1.4 Field border	N.A	943	42100	25		N.A	12
2. Natural Vegetation	N.A	N.A		N.A		750	
2.1 Forest	275155	56000	104251.47	328806	500	2450.5	17000
2.2 Woodland	14583	29915	57691.6	379000	2000	3200	N.A
2.3 Bush	17600	3868	10941	396000	22150	12927	1539000
2.4 Grassland	1242028	3660	7021.9	285400		270000	400000
2.5 Marsh land	N.A	0	N.A	N.A	12920	N.A	1400
2.6 Other vegetation	40518	4880	30924.6	12840	870	N.A	N.A
3. Infrastructure (Transnetwork, Homestead land, Hedgings)	N.A	26600	709.9	125	100200	71500	N.A
4. Miscellaneous (Open Water, Barren Area, etc.)	N.A		N.A	208000		219500	44800
Total	992155	306698	383310.47	1965364		730674.2	2004130

Source : Ref. E.45

Table E1.8 Present District Land Use Pattern (3/3)

District Name	620 Kisumu	430 Kitui	320 Kwale	730 Laikipia	330 Lamu	440 Machakos	520 Mandera
Land Use	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)
1. Agricultural Land	180000	N.A	190000	N.A	551679	N.A	74000
1.1 Cultivated land	79037	96790	100000	44600	20000	1500300	5510
1.2 Fallow land	23463	N.A	90000	143000	25000	405800	3295
1.3 Managed pasture		N.A	N.A	709900	100000	5448000	N.A
1.4 Field border		484	950	223		N.A	370
2. Natural Vegetation			9100			7501	
2.1 Forest		283020	N.A	73800	31920	153000	N.A
2.2 Woodland		0	N.A	7099		N.A	850829
2.3 Bush		9568.7	N.A	7540	178.3	636900	89687
2.4 Grassland			N.A	N.A		N.A	1701656
2.5 Marsh land	30000	N.A	N.A	N.A	45785	N.A	N.A
2.6 Other vegetation		N.A	N.A	-		N.A	N.A
3. Infrastructure (Transnetwork, Homestead land, Hedgings)	47500	N.A	48600	N.A		N.A	N.A
4. Miscellaneous (Open Water Other)	56700	N.A	5200	N.A		33700	N.A
<b>Total</b>	<b>236700</b>	<b>389862.7</b>	<b>252900</b>	<b>986162</b>		<b>8185201</b>	<b>2651347</b>

District Name	360 Tana River	760 Trans Nzoia	850 Turkana	770 Uasin Gishu	530 Wajir	860 West Pokot	
Land Use	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	
1. Agricultural Land	N.A	246800	224000	249656	75000	336700	7936798
1.1 Cultivated land	23900	177725	6882	124656	2500	147000	5349377
1.2 Fallow land	N.A	16783	217118	20000	-	28000	2150536
1.3 Managed pasture	2704800	N.A	N.A	75000	-	119500	10203136
1.4 Field border	120	890	34	30000	12	41700	129795.3
2. Natural Vegetation	N.A		N.A	128744	5647600	N.A	5898685
2.1 Forest	358900	9538	N.A	41629	-	170600	2509709
2.2 Woodland	N.A	42754	N.A	46526	279555	80540	4278784
2.3 Bush	N.A	5668	N.A	4647	3634214	100675	29430437
2.4 Grassland		N.A	N.A	22823	1677330	60405	9226759
2.5 Marsh land	781800	N.A	N.A	N.A	-	40270	950822.1
2.6 Other vegetation		N.A	N.A	4000	-	120810	1004170
3. Infrastructure (Transnetwork, Homestead land, Hedgings)	N.A	N.A	N.A	8249	56501	22800	552864.9
4. Miscellaneous (Open Water, Barren Area, etc.)	N.A		Lake Turkan	870	-		4654914
<b>Total</b>	<b>3869520</b>	<b>304760</b>	<b>224000</b>	<b>387519</b>	<b>5779101</b>	<b>932800</b>	<b>69486841</b>

Source : Ref. E.45

Table E1.9 District Sizes by Land Categories (1/2)

Unit : km<sup>2</sup>

	GOVERNMENT LAND								FREEHOLD LAND		
	Forest Reserves	Other Govt. Reserves	Townships	Alienated land	Un-Alienated land	National Parks	Open Water	Total	Small-holder Schemes	Other	Total
Western Province											
Bungoma	547						2	549	368		368
Busia								137		3	137
Kakamega	69	3						72	482	3	485
Total	616	3					2	137	850	3	853
Nyanza Province											
Kisii									248		248
Kisumu		23	179	113	1			410	303		303
Siaya								1,005			1,005
South Nyanza								2,065			2,065
Total		23	179	113	1			3,480	551		551
Rift Valley Province											
Baringo	310	3	8			3		163	176		176
Elgeyo Marakwet											
Kajiado				948				142			1,090
Kericho	953	8	50	770	62			1,843	395	31	426
Laikipia	725	192	187	7,558	80	16		8,758	165		165
Nakuru	1,337	44	946	4,145	29	79	62	6,642	45	385	428
Nandi	69	13		643				725	142	5	147
Narok											
Samburu											
Trans-Nzoia	237	47	86	1,754			167	2,291	177		177
Turkana			1					2,279			2,280
Uasin Gishu	564	97	60	2,535	3			3,259	520	5	525
West Pokot											
Total	4,195	404	1,338	18,353	177	262	2,646	27,375	1,620	424	2,044
Central Province											
Murang'a	267	62		533		26		888	24	41	65
Kiambu	448	65	98	437	6		3	1,057	33	291	324
Kirinyaga	308						46	354			
Nyandarua	560	17	3	222	16	273		1,091	1,575	862	2,437
Nyeri	958	11	55	313	6	555		1,898	521	18	539
Total	2,541	155	156	1,505	228	900	3	5,288	2,153	1,212	3,365
Eastern Province											
Embu	172						21	194			
Isiolo											
Kitui					7,115	6,369		13,484			
Machakos	60	448	222	2,615	1,282	1,020	5	5,652	489	21	510
Marsabit							4,126	4,126			
Meru	1,056	4	5	533		311		1,909	95		95
Total	1,289	452	227	3,148	8,397	7,721	4,131	25,365	584	21	605
North-Eastern Province											
Garissa											
Mandera											
Wajir											
Total											
Coast Province											
Kilifi	417	440	272	3,136	669		109	5,043		233	233
Kwale	37	6	135	1,828	498	192	65	2,761		34	34
Lamu		222	119	1,472	2,874	877	308	5,872	857	46	903
Mombasa		3	204				65	272			
Taita		62	105	3,311	924	10,539	16	14,957			
Tana River		123	3	5,455	15,014	3,457		24,179		8	8
Total	454	856	838	15,202	19,979	15,065	563	53,123	857	321	1,178
Nairobi	21	77	93	225	16	117		549		135	135
Total	9,116	1,970	2,831	38,546	28,598	24,067	10,960	116,088	6,615	2,116	8,731

Source : Ref.E.4

Table E1.9 District Sizes by Land Categories (2/2)

Unit : km2

	TRUST LAND						AVAILABLE FOR		Total Trust Land	Total Area of Water	Total Area of Land and Water	Per Cent		
	NOT AVAILABLE FOR SMALL HOLDER REGISTRATION						REGISTRATION							
	Forest	Govt. Reser- ves	Town- ships	Alie- nated Land	Game Reser- ves	National Parks	Total	Already wes ered					Not yet Regist- ered	
Western Province														
Bungoma		3	31		1		35	1,851	271	2,157		3,074	0.53	
Busia		2					44	1,440	145	1,629	137	1,766	0.3	
Kakamega	258	2					310	2,456	197	2,963		3,520	0.6	
Total	258	7	123		1		389	5,747	613	6,749	137	8,360	1.43	
Nyanza Province														
Kisii	1		29				30	1,817	101	1,948		2,196	0.38	
Kisumu		5	249		15		266	538	827	1,631	567	2,660	0.46	
Siaya			4		41		45	1,632	846	2,523	1,005	3,528	0.6	
South Nyanza			6		121	119	246	2,680	2,779	5,713	2,064	7,778	1.33	
Total	1	5	285		177	119	587	6,667	4,553	11,815	3,636	16,162	2.77	
Rift Valley Province														
Baringo	325	2	3		107	88	525	771	8,831	10,127	163	10,790	1.85	
Elgeyo Marakwet	785					66	851	579	1,292	2,722		2,722	0.47	
Kajiado	13	14	16	14,512	2,881	392	17,828	416	1,771	20,015	142	21,105	3.62	
Kericho	102		37		1		140	2,159	322	2,621		4,890	0.84	
Laikipia		5		785			790		5	795		9,718	1.67	
Nakuru								130		130	176	7,200	1.24	
Nandi	333		4		13		350	1,161	362	1,873		2,745	0.47	
Narok	727		13	7,227	1,671		9,636	326	8,549	18,513		18,513	3.18	
Samburu	3,288		13	4,613			7,914		12,895	20,809		20,809	3.57	
Trans-Nzoia												2,468	0.42	
Turkana			65				65		61,703	61,768	2,279	64,048	11	
Uasin Gishu												3,784	0.65	
West Pokot	391		3	1,236			1,630	274	3,172	5,076		5,076	0.87	
Total	5,964	21	154	28,387	4,659	546	39,731	5,816	98,902	144,449	2,760	173,868	29.85	
Central Province														
Murang'a	9	2	29		1		41	1,482		1,523		2,476	0.42	
Kiambu			57		1		58	1,012		1,070	3	2,451	0.42	
Kirinyaga		159	3		100		262	821		1,083		1,437	0.25	
Nyandarua												3,528	0.61	
Nyeri		2	5				7	840		847		3,284	0.56	
Total	9	163	94		102		368	4,155		4,523	3	13,176	2.26	
Eastern Province														
Embu		28	8		18	68	122	1,085	1,313	2,520		2,714	0.47	
Isiolo		170	43			239	452		25,153	25,605		25,605	4.39	
Kitui	203		161		499		864	490	14,551	15,905		29,389	5.05	
Machakos	93	45	115		130		382	1,755	5,671	7,809	5	14,183	2.43	
Marsabit	151		12		3,896	1,614	5,673		68,279	73,952	4,126	78,078	13.4	
Meru	341		207			870	1,419	751	5,748	7,918		9,922	1.7	
Total	789	244	546		647	4,203	2,484	8,913	4,081	120,715	133,709	4,131	159,891	27.44
North-Eastern Province														
Garissa			251		3,142		3,393		40,538	43,931		43,931	7.54	
Mandera					202		202		26,268	26,470		26,470	4.54	
Wajir			145				145		56,356	56,501		56,501	9.7	
Total			396		202	3,142	3,740		123,162	126,902		126,902	21.78	
Coast Province														
Kilifi		51	140		1,819		2,010	351	4,886	7,247	109	12,523	2.15	
Kwale	61						1,536	753	3,238	5,527	65	8,322	1.43	
Lamu											308	6,814	1.17	
Mombasa									3	3	65	275	0.05	
Taita	2	1	74		557		634	159	1,225	2,018	16	16,975	2.91	
Tana River				30	1,687		1,717		12,790	14,507		38,694	6.64	
Total	63	52	214		3,881	1,687	5,897	1,263	22,142	29,302	563	83,603	14.35	
Nairobi												684	0.12	
Total	7,084	492	1,812		33,397	13,691	3,140	59,625	27,729	370,087	457,449	11,230	582,646	100

Source : Ref. E.4

Table E1.10 Forest/Park Area in each District

Unit: km2

Code	District	Forest	National	(A)+(B)	Forest	Woodland	(D)+(E)	Applied	
		Reserves	Parks		Forest	Woodland		Forest/ Park	Swamp
		*1 (A)	*1 (B)		*2 (D)	*2 (E)		*3	*2
		(C)	(F)			(F)			
110	Nairobi	98	117	215	31	0	31	215	0
210	Kiambu	513	0	513	394	0	394	513	0
220	Kirinyaga	467	46	513	332	1	333	513	0
230	Murang'a	340	26	366	262	16	278	366	0
240	Nyandarua	577	273	850	662	10	672	850	22
250	Nyeri	971	555	1,526	1,170	107	1,277	1,526	0
310	Kilifi	908	0	908	499	2,151	2,650	2,650	12
320	Kwale	104	192	296	208	584	792	792	0
330	Lamu	222	877	1,099	155	2,379	2,534	2,534	0
340	Mombasa	3	0	3	8	0	8	8	0
350	Taita Taveta	65	10,539	10,604	107	768	875	10,604	131
360	Tana River	123	5,144	5,267	91	2,555	2,646	5,267	118
410	Embu	200	89	289	150	45	195	289	0
420	Isiolo	170	239	409	0	726	726	726	705
430	Kitui	203	6,369	6,572	57	1,778	1,835	6,572	0
440	Machakos	646	1,020	1,666	155	621	776	1,666	2
450	Marsabit	151	5,510	5,661	208	461	669	5,661	403
460	Meru	1,401	1,181	2,582	898	205	1,103	2,582	0
510	Garissa	0	3,142	3,142	0	3,425	3,425	3,425	56
520	Mandera	0	0	0	0	51	51	51	0
530	Wajir	0	0	0	0	291	291	291	388
610	Kisii	1	0	1	0	0	0	1	0
620	Kisumu	28	0	28	2	0	2	28	160
630	Siaya	0	0	0	0	0	0	0	96
640	South Nyanza	0	119	119	35	72	107	119	52
710	Kajiado	27	3,273	3,300	97	885	982	3,300	1,233
720	Kericho	1,063	0	1,063	762	29	791	1,063	0
730	Laikipia	922	16	938	391	510	901	938	64
740	Nakuru	1,381	79	1,460	1,019	135	1,154	1,460	94
750	Narok	727	1,671	2,398	2,363	524	2,887	2,887	69
760	Trans Nzoia	284	167	451	249	39	288	451	110
770	Uasin Gishu	661	0	661	506	35	541	661	42
810	Baringo	640	195	835	450	337	787	835	128
820	Elgeyo Marakwe	785	66	851	680	220	900	900	40
830	Nandi	415	0	415	332	7	339	415	0
840	Samburu	3,288	0	3,288	963	1,216	2,179	3,288	0
850	Turkana	0	0	0	0	826	826	826	2,551
860	West Pokot	391	0	391	175	373	548	548	3
910	Bungoma	550	2	552	414	2	416	552	0
920	Busia	2	0	2	0	0	0	2	184
930	Kakamega	332	0	332	188	33	221	332	1
Kenya		18,659	40,907	59,566	14,013	21,417	35,430	65,707	6,664

\*1 Ref. E.4

\*2 Landsat Image, Sectoral Report R

\*3 applied larger area between (C) and (F)

Table E1.11 Estimated Present Land Use

(Unit : km2)

Code	District	Total Area *1	Land Area *1	Water Area *1	Forest & Park *1&*2	Swamp *2	Town- ships *1	Barren- land *2	Agriculture Land *3	Other Land
110	Nairobi	684	684	0	215	0	93	0	53	323
210	Kiambu	2,451	2,448	3	513	0	155	0	1,409	371
220	Kirinyaga	1,437	1,437	0	513	0	3	14	815	92
230	Murang'a	2,476	2,476	0	366	0	29	0	1,200	881
240	Nyandarua	3,528	3,508	20	850	22	3	31	1,487	1,115
250	Nyeri	3,284	3,284	0	1,526	0	60	5	1,104	589
310	Kilifi	12,523	12,414	109	2,650	12	412	0	1,204	8,136
320	Kwale	8,322	8,257	65	792	0	135	0	1,000	6,330
330	Lamu	6,814	6,506	308	2,534	0	119	0	200	3,653
340	Mombasa	275	210	65	8	0	143	0	59	0
350	Taita Taveta	16,975	16,959	16	10,604	131	179	0	800	5,245
360	Tana River	38,694	38,694	0	5,267	118	3	0	239	33,067
410	Embu	2,714	2,714	0	289	0	8	8	2,398	11
420	Isiolo	25,605	25,605	0	726	705	43	1,935	220	21,976
430	Kitui	29,389	29,389	0	6,572	0	161	51	968	21,637
440	Machakos	14,183	14,178	5	1,666	2	337	88	4,465	7,620
450	Marsabit	78,078	73,952	4,126	5,661	403	12	46,488	85	21,303
460	Meru	9,922	9,922	0	2,582	0	212	242	2,773	4,113
510	Garissa	43,931	43,931	0	3,425	56	251	0	12	40,187
520	Mandera	26,470	26,470	0	51	0	1	1,512	55	24,851
530	Wajir	56,501	56,501	0	291	388	145	679	25	54,973
610	Kisii	2,196	2,196	0	1	0	29	0	585	1,581
620	Kisumu	2,660	2,093	567	28	160	428	0	790	687
630	Siaya	3,528	2,523	1,005	0	96	4	0	800	1,623
640	South Nyanza	7,778	5,714	2,064	119	52	6	0	1,500	4,037
710	Kajiado	21,105	20,963	142	3,300	1,233	16	192	1,757	14,465
720	Kericho	4,890	4,890	0	1,063	0	87	0	2,330	1,410
730	Laikipia	9,718	9,718	0	938	64	187	41	446	8,042
740	Nakuru	7,200	7,024	176	1,460	94	946	173	4,122	229
750	Narok	18,513	18,513	0	2,887	69	13	89	1,300	14,155
760	Trans Nzoia	2,468	2,468	0	451	110	86	0	1,777	44
770	Uasin Gishu	3,784	3,784	0	661	42	60	0	1,247	1,774
810	Baringo	10,790	10,627	163	835	128	11	636	1,078	7,939
820	Elgeyo Marakwet	2,722	2,722	0	900	40	1	0	1,328	453
830	Nandi	2,745	2,745	0	415	0	4	0	171	2,155
840	Samburu	20,809	20,809	0	3,288	0	13	3,568	50	13,890
850	Turkana	69,684	67,405	2,279	826	2,551	66	17,984	69	45,909
860	West Pokot	9,056	9,056	0	548	3	3	1,454	1,470	5,578
910	Bungoma	3,074	3,074	0	552	0	31	0	2,188	303
920	Busia	1,766	1,629	137	2	184	1	0	455	987
930	Kakamega	3,520	3,520	0	332	1	1	0	2,548	638
Total		592,262	581,012	11,250	65,707	6,664	4,497	75,190	46,582	382,372

Note : \*1 : Ref.E.4

\*2 : Landsat image

\*3 : Ref.E.45



Table E1.12 Suitability Class Table for Soil Mapping Code (1/3)

Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture	Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture
1.	M1	5	1	3	3	2	M S	37.	L2	2	1	1	1	1	H
2.	M2	2	1	1	1	1	M-H	38.	L3	4	1	1	1	1	H
3.	M3	2	1	1	1	1	H	39.	L4	5	1	1	1	3	H R
4.	M4	4	1	1	1	1	M	40.	L5	5	1	1	1	1	M
5.	M5	5	1	1	1	1	M SR	41.	L6	5	1	2	2	2	M
6.	M6	4	1	1	1	2	M-H R	42.	L7	5	1	1	1	2	H
7.	M7	5	1	1	1	2	M SR	43.	L8	3	2	1	1	1	H
8.	M8	5	1	1	1	2	M SR	44.	L9	2	2	1	1	2	H
9.	M9	5	3	1	1	2	M	45.	L10	2	3	1	1	2	H
10.	M10	5	1	1	1	2	M	46.	L11	2	3	1	2	2	H S
11.	M11	5	1	1	1	2	M SR	47.	L12	3	3	1	1	2	H
12.	M12	4	1	1	1	2	M	48.	L13	3	3	1	1	2	H
13.	H1	5	1	1	1	3	H	49.	L14	3	3	1	1	2	H
14.	H2	5	1	1	1	1	M SR	50.	L15	4	3	1	1	3	H
15.	H3	5	1	1	1	2	M SR	51.	L16	3	4	1	1	2	H
16.	H4	5	1	1	1	2	M SR	52.	L17	5	4	1	1	2	H
17.	H5	4	1	1	1	1	M	53.	L19	3	1	1	1	1	M
18.	H6	3	1	1	1	1	M SR	54.	L20	4	1	1	1	1	M-H
19.	H7	5	2	1	1	1	H S	55.	L21	3	3	1	1	3	H
20.	H8	5	1	1	1	1	H	56.	L22	3	3	1	1	1	M-H
21.	H9	5	1	1	3	2	M S	57.	L23	2	1	1	1	3	H
22.	H10	5	2	1	1	2	M-H S	58.	L24	4	1	1	1	3	H
23.	H11	5	1	1	1	2	V SR	59.	L25	2	3	1	1	2	M
24.	H12	4	1	1	1	3	M R	60.	L26	4	3	1	3	2	H
25.	H13	5	1	1	1	3	M SR	61.	L27	3	1	1	1	3	H
26.	H14	5	1	1	1	3	M-H SR	62.	L28	5	1	1	1	2	H
27.	H15	5	1	1	1	2	M-H SR	63.	L29	5	1	1	1	2	M
28.	H16	5	1	1	1	3	M R	64.	L30	5	1	1	1	2	M
29.	H17	5	1	1	1	2	M-H SR	65.	L31	3	1	1	1	3	H
30.	H18	5	1	1	1	2	H S	66.	LS1	4	1	1	1	2	M-H S
31.	H19	5	1	1	1	2	H S	67.	LS2	4	1	1	1	2	M-H
32.	H20	5	1	1	1	2	H	68.	LC1	3	1	1	1	1	M
33.	H21	5	1	1	1	2	M	69.	LC2	1	1	1	1	3	M-H
34.	H22	5	1	1	1	2	M SR	70.	LC3	2	1	1	1	4	I-M
35.	HS1	5	1	1	1	2	M SR	71.	R1	1	1	1	1	1	H
36.	LI	2	1	1	1	3	H	72.	Lu1	3	1	1	1	1	M-H

Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture	Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture
73.	Lu2	3	1	1	1	1	M	109.	Y1	5	1	1	1	1	M-H
74.	R2	1	1	1	1	1	H	110.	Y2	3	1	3	1	3	H
75.	R3	1	1	1	1	3	H	111.	Y3	3	1	1	1	1	M
76.	R4	2	1	1	1	2	H	112.	Y4	4	1	2	2	2	M
77.	R5	3	1	1	1	3	H	113.	Y5	2	2	4	4	3	M-H
78.	R6	3	1	1	1	1	H	114.	Y6	3	2	1	1	3	M-H
79.	R7	3	1	1	1	1	H	115.	Y7	2	1	1	1	3	M-H
80.	R8	5	1	1	1	2	M-H	116.	Y8	2	1	1	1	4	M
81.	R9	5	1	1	1	1	M-H	117.	Y9	3	1	3	1	2	M
82.	R10	5	1	1	1	1	H	118.	Y10	2	2	2	1	3	L-M
83.	R11	2	1	1	1	1	H	119.	Y11	2	3	1	1	2	H
84.	R12	4	1	1	1	1	M	120.	Y12	2	4	3	1	3	H
85.	R13	5	1	1	1	1	M	121.	Y13	2	4	3	1	2	M-H
86.	R14	5	1	3	3	2	H SR	122.	Uu1	3	1	1	1	1	H
87.	F1	2	1	1	1	1	H	123.	Uu2	3	1	1	1	2	M
88.	F2	3	1	1	1	3	H	124.	Uu3	5	1	1	1	1	M
89.	F3	3	1	1	1	2	H	125.	Uh1	1	1	1	1	1	H
90.	F4	2	2	1	1	1	H	126.	Uh2	1	1	1	1	1	H
91.	F5	4	1	3	3	2	M	127.	Uh3	1	1	1	1	1	H
92.	F6	3	3	1	1	1	M	128.	Uh4	5	1	1	1	2	H
93.	F7	3	1	1	1	2	H	129.	Uh3+Uh4	5	1	1	1	2	H
94.	F8	4	3	4	3	2	M	130.	Uh5	1	1	1	1	1	H
95.	F9	3	3	1	1	3	M-H	131.	Uh6	2	1	1	1	3	M-H
96.	F10	2	1	3	1	3	H	132.	Uh7	2	1	1	1	3	M-H
97.	F11	2	1	3	1	2	H	133.	Uh8	2	1	1	1	3	M-H
98.	F12	2	1	1	1	3	L-M	134.	Uh9	3	1	1	1	2	M
99.	F13	2	1	1	1	4	L-M	135.	Uh10	1	1	1	1	1	H
100.	F14	2	1	1	1	3	L-M	136.	Uh11	1	1	1	1	1	H
101.	F15	3	1	1	1	3	M-H	137.	Uh12	4	1	1	1	3	M-H
102.	F16	3	1	1	1	4	V	138.	Uh13	3	1	1	1	3	M
103.	F17	3	1	1	1	4	M-H	139.	Uh14	3	1	1	1	3	M
104.	F18	4	1	1	1	3	M-H	140.	Uh15	4	1	1	1	3	M-H
105.	F19	2	1	1	1	4	L	141.	Uh16	2	1	1	1	1	M-H
106.	FY1	4	1	1	1	3	M-H	142.	Uh17	2	1	1	1	2	M-H
107.	FY2	3	1	1	1	3	M	143.	Uh18	2	1	1	1	3	M-H
108.	FY3	2	1	1	1	2	M	144.	Uh19	4	2	1	1	1	M

Source : Ref.E.36

Table E1.12 Suitability Class Table for Soil Mapping Code (2/3)

Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture	Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture
145.	Um1	1	1	1	1	3	H	181.	U18	4	2	1	1	1	H
146.	Um2	2	1	1	1	3	H	182.	U19	5	2	1	1	3	H S
147.	Um3	3	1	1	1	1	H	183.	U110	4	1	1	1	2	M-H
148.	Um4	3	1	1	1	1	M-H	184.	U111	5	2	1	1	3	M-H
149.	Um5	1	1	1	1	1	H	185.	U112	5	2	1	1	3	M
150.	Um6	2	1	1	1	3	H	186.	U113	3	1	1	1	3	M
151.	Um7	5	1	1	1	3	M-H	187.	U114	4	1	1	1	2	M-H
152.	Um8	3	1	1	1	1	H	188.	U115	2	1	1	1	3	M-H
153.	Um9	4	1	1	1	3	M-H	189.	U116	4	1	1	1	3	M-H
154.	Um10	3	1	1	1	3	M-H	190.	U117	2	1	1	1	3	H
155.	Um11	3	1	1	1	3	H	191.	U118	4	1	1	1	3	M-H
156.	Um12	3	3	1	1	3	M R	192.	U119	5	3	1	1	3	M-H SR
157.	Um13	2	1	1	1	3	H	193.	U120	4	1	1	1	3	H
158.	Um14	4	1	1	1	3	H R	194.	U121	4	2	1	1	1	H
159.	Um15	2	1	1	1	3	H	195.	Ux1	5	1	1	1	2	H
160.	Um16	3	1	1	1	3	H	196.	Ux2	3	3	1	1	2	M-H
161.	Um17	4	1	1	1	3	M-H	197.	Ux3	3	1	1	1	3	H
162.	Um18	4	1	1	1	3	M	198.	Ux4	2	1	1	1	1	M
163.	Um19	4	1	1	1	3	M-H	199.	Ux5	2	1	1	1	1	H
164.	Um20	4	1	1	1	3	M-H	200.	Ux6	5	1	1	1	2	H
165.	Um21	4	1	1	1	3	M-H	201.	Ux7	5	1	3	4	2	M-H
166.	Um22	5	1	1	1	3	M	202.	Ux8	5	3	1	1	2	M-H
167.	Um23	5	1	1	1	1	M	203.	Ux9	5	3	1	1	1	M-H
168.	Um24	5	1	1	1	3	M R	204.	Ux10	5	1	4	1	2	M
169.	Um25	5	1	1	1	3	M-H	205.	Uc1	1	1	1	1	1	H
170.	Um26	4	1	1	1	1	M-H	206.	Uc2	5	3	4	1	2	H
171.	Um27	5	1	1	1	4	L-M SR	207.	Uc3	3	1	1	1	4	L
172.	Um28	3	1	1	1	3	H	208.	Uc4	3	1	3	1		L-M
173.	Um29	4	3	1	1	3	M	209.	Uc5	5	1	1	1	3	M-H
174.	U11	1	1	1	1	1	H	210.	Uc6	3	3	1	1	3	M
175.	U12	4	1	1	1	2	H	211.	Uc7	3	3	2	1	2	M-H
176.	U13	5	3	1	1	1	H	212.	Uc8	2	1	1	1	3	M
177.	U14	4	1	1	1	2	H	213.	Uc9	2	3	1	1	4	L-M
178.	U15	5	1	1	1	1	M-H	214.	Uc10	4	4	4	3	3	M-H
179.	U16	5	1	1	1	3	M-H	215.	Uc11	4	2	3	1	2	M
180.	U17	4	1	1	1	3	H	216.	Up1	4	3	1	1	2	M

Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture	Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture
217.	Up2	3	3	3	1	2	H	253.	Pn30	5	1	1	1	1	M-H
218.	Up3	4	4	1	1	2	M-H	254.	Pn31	2	1	1	1	3	M-H
219.	Up4	5	3	4	1	2	H	255.	Pn32	3	1	1	1	2	M-H
220.	Up5	4	3	3	1	2	M-H	256.	Pn33	3	1	1	1	3	M-H
221.	Up6	3	3	3	1	1	H	257.	Pn34	3	1	1	1	4	L-M
222.	Up7	3	3	1	1	2	M-H	258.	Pn35	5	1	1	1	3	M
223.	Up8	3	3	1	1	2	M-H	259.	Pd1	5	1	1	1	1	M R
224.	Pn1	2	1	1	1	3	H	260.	Pd2	5	2	1	1	1	H
225.	Pn2	5	1	1	1	2	M-H S	261.	Pd3	5	1	1	1	4	M-H
226.	Pn3	3	3	4	1	2	H	262.	Pd4	5	1	1	1	2	M
227.	Pn4	3	3	3	3	2	H	263.	Pd5	3	1	1	2	2	M
228.	Pn5	3	3	1	1	2	M-H	264.	Pd6	5	1	1	1	3	M
229.	Pn6	3	3	1	1	2	M-H	265.	Ps1	2	1	1	1	4	L-M
230.	Pn7	4	3	2	1	2	H	266.	Ps2	3	1	1	1	4	M
231.	Pn8	3	1	1	1	3	M	267.	Ps3	3	1	1	1	4	M
232.	Pn9	4	1	1	1	2	M	268.	Ps3+Ps15	4	3	3	1	4	M
233.	Pn10	3	3	3	1	2	H	269.	Ps4	3	1	1	1	3	L-M
234.	Pn11	3	3	1	1	2	H	270.	Ps5	2	3	3	3	3	M
235.	Pn12	3	1	1	1	3	M-H	271.	Ps6	2	1	1	1	3	M
236.	Pn13	4	1	1	1	3	M-H	272.	Ps7	2	1	1	1	2	M
237.	Pn14	4	3	3	2	3	M	273.	Ps8	3	1	1	1	3	M-H
238.	Pn15	3	2	3	1	2	H	274.	Ps9	2	1	3	3	2	M
239.	Pn16	4	1	1	1	2	M-H	275.	Ps10	2	3	4	2	3	M-H
240.	Pn17	3	3	1	1	2	H	276.	Ps11	3	4	4	2	3	M-H
241.	Pn18	3	2	3	2	1	H	277.	Ps12	3	4	1	3	3	H
242.	Pn19	4	3	3	2	3	M	278.	Ps11+D1	3	4	4	2	3	M-H
243.	Pn20	2	2	3	2	2	H	279.	Ps14	3	3	1	1	2	M-H
244.	Pn21	2	3	3	2	1	H	280.	Ps15	4	3	3	1	3	M
245.	Pn22	2	3	3	1	3	H	281.	Ps16	3	4	3	3	3	H
246.	Pn23	3	4	3	1	2	H	282.	Ps17	3	4	2	1	2	H
247.	Pn24	5	4	1	1	2	M-H	283.	Ps18	3	4	3	1	2	H
248.	Pn25	4	1	1	1	2	H	284.	Ps19	3	4	3	3	3	M-H
249.	Pn26	5	3	1	1	2	M	285.	Ps20	3	3	2	1	3	M
250.	Pn27	5	3	1	1	2	M	286.	Ps21	2	3	4	2	3	M
251.	Pn28	2	3	3	3	2	H	287.	Ps22	2	3	2	2	2	M-H
252.	Pn29	4	3	3	1	1	M-H	288.	Ps23	3	3	3	3	3	M

Source : Ref.E.36

Table E1.12 Suitability Class Table for Soil Mapping Code (3/3)

Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture	Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture
289.	Ps24	2	4	4	4	3	H	325.	P18	2	4	4	4	3	H
290.	Ps25	2	4	3	3	2	H	326.	P19	2	5	4	2	3	H
291.	Ps26	2	1	1	1	3	L-M	327.	P110	5	3	4	4	3	V
292.	Ps27	2	1	2	2	3	H	328.	P112	4	3	1	1	2	M-H
293.	Ps28	2	1	3	1	2	M	329.	P113	2	4	2	1	2	H
294.	Ps28+D1	2	1	3	1	3	M	330.	P114	5	4	2	1	2	H
295.	Ps29	2	3	1	2	2	M	331.	Pt1	3	1	1	1	2	M
296.	Pv1	1	1	1	1	1	H	332.	Pt2	3	2	1	1	1	M-H
297.	Pv2	2	1	1	1	2	H	333.	Pt3	2	1	1	1	4	M
298.	Pv3	3	1	3	1	2	M	334.	Pt4	2	3	4	3	3	H
299.	Pv4	3	3	3	3	3	H	335.	Pf1	2	1	1	1	2	M-H
300.	Pv5	3	4	3	3	2	H	336.	Pf2	2	1	3	3	3	M-H
301.	Pv6	2	1	1	1	3	L-M	337.	Pf3	2	2	3	4	3	H
302.	Pv7	2	1	2	1	1	M	338.	pf4	2	2	4	4	3	M-H
303.	Pv8	3	1	1	1	1	M	339.	Pf5	2	3	4	4	2	H
304.	Pv9	4	1	2	1	1	M	340.	A1	2	3	4	4	2	M-H
305.	Pv10	2	3	2	2	3	M	341.	A2	2	2	3	3	1	M-H
306.	Pv11	4	3	2	1	2	M-II	342.	A3	2	1	3	2	2	M-H
307.	Pv12	3	4	1	1	2	H	343.	A4	2	4	4	4	3	M-H
308.	Pc1	2	1	1	1	1	L	344.	A5	2	3	3	3	1	M-H
309.	Pc2	2	3	3	1	2	M	345.	A6	2	3	4	4	3	M
310.	Pc3	3	3	3	3	3	M-H	346.	A7	2	3	3	3	2	H
311.	Pc4	2	2	3	1	3	M	347.	A8	2	3	1	1	2	M
312.	Pc5	2	4	4	4	3	H	348.	A9	2	3	1	3	2	M
313.	Pc6	2	4	2	1	3	V	349.	A10	5	2	1	1	2	M
314.	Pc7	2	1	1	1	3	H	350.	A11	2	3	4	3	2	H
315.	Pc8	3	1	1	1	3	M	351.	A12	2	4	3	3	2	H
316.	Pc9	5	1	1	1	3	M	352.	A13	2	4	3	2	2	H
317.	Pc10	3	3	2	2	2	M	353.	A14	3	4	1	1	2	H
318.	P11	3	3	4	1	3	M	354.	A15	3	4	1	1	1	H
319.	P12	5	3	1	1	2	M	355.	A16	3	4	1	4	3	H
320.	P13	2	4	4	3	3	M	356.	A17	2	3	3	3	2	M-H
321.	P14	3	4	1	4	3	H	357.	A18	2	3	1	1	1	V
322.	P15	3	5	1	4	3	H	358.	A8+A12	2	4	3	3	2	M-H
323.	P16	2	4	3	2	2	H	359.	B1	4	4	1	1	2	M
324.	P17	2	4	4	2	3	M-H	360.	B2	4	4	1	1	1	H

Serial No.	Soil Mapping Code	Depth	Drainage	Sodicity	Salinity	Fertility	Texture
361.	B3	2	3	3	3	2	H
362.	B4	3	3	3	3	3	H
363.	B5	3	4	1	1	2	H
364.	B6	3	4	2	1	2	H
365.	B7	2	3	3	3	2	H
366.	B8	2	4	4	1	3	H
367.	B9	2	4	3	3	2	H
368.	B10	2	4	3	3	3	M-H
369.	B11	2	4	1	1	3	H
370.	B12	3	4	1	4	3	M
371.	B13	3	4	1	1	1	M-H
372.	B14	2	4	3	3	3	H
373.	B15	2	4	3	1	2	H
374.	B16	2	4	1	1	1	H
375.	D1	2	1	1	1	3	L-M
376.	D2	2	1	1	1	3	L
377.	D3	2	1	1	3	2	M
378.	D1+P13	2	4	1	1	3	L-M
379.	Lava	5	1	1	1	4	-
380.	S1	2	5	4	4	3	H
381.	S2	2	5	1	1	1	H
382.	S3	2	5	1	1	3	H
383.	T	2	5	4	4	3	M-H
384.	V1	5	4	1	1	2	M-H
385.	V2	5	3	1	1	2	H
386.	W1	5	1	4	1	3	M
387.	W2	5	1	4	3	3	M
388.	Z1	2	1	1	1	3	M
389.	Z2	2	2	3	1	3	M
390.	Z3	2	3	3	3	3	M

Source : Ref.E.36

Table E1.13 Land Suitability Class for Major Crops (1/2)

Suitability Class	Agro-ecological Zone	Texture	Soil Fertility	Salinity	Sodicity	Drainage	Effective Soil Depth
<b>Maize</b>							
S1	UM2, LM2, CL2	M	2	1	1	1	3
S2	LH1-3, UM1,3,4, LM1,3, CL3	L	3	1	2	2	3
S3	LM4, CL4	H	3	1	3	2	4
NS		H	4	2	4	3	5
<b>Wheat</b>							
S1	UH3, LH3	L, M	2	1	3	2	2
S2	UH2, LH2	H	3	2	4	2	3
S3	LH4	H	3	2	4	3	4
NS		H	4	3	4	4	5
<b>Rice (Rainfed)</b>							
S1	CL1	H	2	1	2	5	3
S2	CL2, 3	M	3	1	3	5	4
S3	LM1-3	L	3	2	4	5	4
NS		L	4	3	4	5	5
<b>Sorghm / Millet</b>							
S1	UM4, LM4, IL3	M	2	1	2	2	2
S2	UM5, IL4, CL4	H, L	3	2	3	2	3
S3	UM1-3, LM1-3, LM5, IL5, CL2,3,5	H, L	3	2	3	3	4
NS		H, L	4	3	4	4	5
<b>Potatoes</b>							
S1	LH1	L, M	2	1	1	1	3
S2	UH1, LH2	L, M	2	1	1	1	4
S3	UH2,3, LH3	H	3	1	1	2	4
NS		H	4	2	3	3	5
<b>Beans</b>							
S1	LM2, UM2	M	3	1	1	1	3
S2	UM1,3,4, LM1,3	L	3	1	2	1	4
S3	LH1-3, LM4	H	4	1	3	2	4
NS		H	4	2	4	3	5
<b>Coffee</b>							
S1	UM2	M	2	1	1	1	2
S2	UM1	L	3	1	1	1	2
S3	UM3	H	3	1	1	1	3
NS		H	4	2	2	2	4
<b>Tea</b>							
S1	LH1	M	2	1	1	1	2
S2	UM1	L	2	1	1	1	2
S3	LM1	H	3	1	1	2	3
NS		H	4	2	2	3	4
<b>Cotton</b>							
S1	CL3	M, H	2	1	3	1	3
S2	LM3	M, H	3	2	4	1	3
S3	LM4, CL4, LM2	L	3	3	5	2	4
NS		L	4	4	5	3	5

Note : S1 : Highly suitable for crops, S2 : Moderately suitable for crops, S3 : Marginally suitable for crops  
NS : Not suitable for crops

Source : Ref. E.17

Table E1.13 Land Suitability Class for Major Crops (2/2)

Suitability Class	Agro-ecological Zone	Texture	Soil Fertility	Salinity	Sodicity	Drainage	Effective Soil Depth
<b>Sugarcane</b>							
S1	LM1	L, M	2	1	2	2	2
S2	CL2	L, M	2	1	2	3	2
S3	LM2	H	3	2	3	3	3
NS		H	4	3	4	4	4
<b>Pyrethrum</b>							
S1	UH2	M	2	1	2	2	2
S2	LH2	L, H	3	2	3	3	2
S3	UH1, UH3, LH3	L, H	3	2	3	3	3
NS		L, H	4	3	4	4	4
<b>Sisal</b>							
S1	UM4, LM4, CL4	M	2	1	2	1	2
S2	CL3	L	3	2	3	2	2
S3	CL5, IL5, UM3,5, LM3,5	L, H	3	2	3	3	3
NS		L, H	4	3	4	4	4
<b>Horticultural Crop</b>							
S1	LH1, UM1, LM1	M	2	2	3	1	3
S2	LH2, UM2, LM2, UH1,2	L, H	3	2	4	1	4
S3	LH3, UM3,4, CL2,3,4, UH3, LM3,4	L, H	3	3	5	2	4
NS		L, H	4	4	5	3	5
<b>Fodder Crop</b>							
S1	UM2, LM2, CL2	M	3	1	3	2	2
S2	LH1,2, UM1,3,4, LM1,3, CL2	H, L	3	2	4	2	3
S3	LM4, CL4	H, L	4	2	4	3	4
NS		H, L	4	3	4	4	5

Note : S1 : Highly suitable for crops, S2 : Moderately suitable for crops, S3 : Marginally suitable for crops  
 NS : Not suitable for crops

Source : Ref. E.17

Table E1.14 Criteria for Soil Fertility (1/2)

Soil Unit	Sub-soil Unit	Fertility	Class
Ferralsols	rhodic or orthic	low	3
	nito-rhodic	low	3
	humic	low	3
	<i>acric to rhodic</i>	low	3
	acric to rhodic	low	3
	nito-humic	low	3
	orthic	low	3
	orthic and Xanthic	low	3
	orthic to rhodic	low	3
Luvissols	ferric	low	3
	gleyic	moderate	2
	chromic	moderate	2
	calcaric	moderate	2
	nito-ferric	low	3
	ferralsol-chromic/orthic	low	3
	vertic	moderate	2
	ferralsol-ferric	low	3
	orthic	low	3
	ferralsol-chromic/orthic/ferric	low	3
ferralsol-chromic	low	3	
Rankers		moderate	2
Rendzinas	cambic	high	1
	orthic	moderate	2
Planosols	eutric	moderate	2
	solodic	low	3
	vertic-eutric	moderate	2
	dystic	low	3
	humic	moderate	2
Greyzems	vertic-orthic	moderate	2
	orthic	moderate	2
Gleysols	vertic	moderate	2
	calcaric	moderate	2
	humic	high	1
	mollic	high	1
Arenosols	calcaro-cambic	low	3
	cambic	low	3
	luvic	low	3
	ferralic	very low	4
	albic	very low	4
	ferralsol-chromic	very low	4
	luvic/ferralic	very low	4
	calcaric	low	3
	calcaro-cambic	low	3
	ferralic-luvic	very low	4
Vertisols	pellic	moderate to high	1-2
	chromic	moderate to high	1-2
Lithosols		moderate	2
Regosols	ando-calcaric	moderate	2
	eutric	moderate	2
	dystic	low	3
	calcaric	moderate	2
Andosols	humic	high	1
	mollic	high	1
	vitric	high	1

Table E1.14 Criteria for Soil Fertility (2/2)

Soil Unit	Sub-soil Unit	Fertility	Class	
Nitisols	eutric	high	1	
	vertic-eutric	high	1	
	mollic	high	1	
	ando-humic	high	1	
	dystic	moderate	2	
	vertic-mollic	moderate	2	
	humic	high	1	
Cambisols	humic	high	1	
	eutric	high	1	
	nito-chromic	moderate	2	
	ando-eutric	high	1	
	chromic	moderate	2	
	ferralic	moderate	2	
	calcic	moderate	2	
	ando-chromic	moderate	2	
	dystic	moderate	2	
	vertic	moderate	2	
	gleyic	moderate	2	
	Phaeozems	gleyic	high	1
		ando-haplic	high	1
haplic		high	1	
vertic-luvic		high	1	
ortho-luvic		moderate	2	
chromo-luvic		high	1	
ando-luvic		high	1	
luvic		moderate	2	
nito-luvic		moderate	2	
ando-haplic		high	1	
Histosols		dystic	moderate	2
	Xerosols	calcic	moderate	2
haplic		moderate	2	
gypsic		moderate	2	
Acrisols	chromic	low	3	
	ando-humic	low	3	
	humic	low	3	
	ferralo/chromic	low	3	
	ferralo/chromic-orthic	low	3	
	ferralo/orthic	low	3	
	gleyic	low	3	
	ferralo-chromic/orthic/ferric	low	3	
	plinthic	low	3	
	Kastanozen	haplic	moderate	2
Chernozems	haplic	moderate	2	
Solonchaks	orthic	low	3	
	takyric	low	3	
	gleyic	low	3	
	Solonetz	gleyic	low	3
mollic		low	3	
orthic		low	3	
luvo-orthic		low	3	
Fluvisols	calcaric	moderate	2	
	eutric	high	1	
	thionic	moderate	2	
Luvisols	nito chromic	low	3	
	calcic to chromic	moderate	2	
	gleyic to albic	low	3	

Table E1.15 Land Classification Criteria for Upland Crops

Land characteristic	Land Class			NS1 and S2
	S1	S2	S3	
Texture(s)	Sandy loam to friable clay loam	Sandy loam to very permeable clay, non compacted	Loamy sand to permeable clay	NS1: Includes lands which require additional investigations to determine their irrigability NS2: Includes lands which do not meet the minimum requirements for the other land classes and are not suitable for irrigation. These include lands with very shallow soils impermeable
Depth(s) to sand, gravel	90 cm plus and greater than 150cm to impermeable horizon	60 cm plus and greater than 120cm to impermeable horizon	45 cm plus and greater than 100cm to impermeable horizon	soils, excessive concentrations of salts, pH above 9.0 and more than 15% ESP etc.
Alkalinity (reaction)	pH-H20 less than 7,5 for noncalcareous soils and less than 8.6 for calcareous soils	pH-H20 less than 9.0 unless soil is calcareous and non sodic	pH-H20 less than 9.0 unless soil is calcareous and non sodic	
Salinity (ECe)	Total salts not to exceed 0.2%, ECe less than 4mmhos/cm	Total salts not to exceed 0.5%, ECe less than 8mmhos/ cm	Total salts not to exceed 0,5%, ECe less than 8mmhos/cm	
Slopes( t)	Flat to ver gently undulating (less than 2%)	Flat to very gently undulating (less than 5% in general)	Flat to undulating (less than 8% in general)	
Surface (micro relief)	Even enough to require only small amounts of levelling and no heavy grading	moderate grading required but in amounts found feasible at reasonable cost	heavy and expensive grading required	
Vegetation)	Woody cover less than 20%. Clearing cost small	Woody cover less than 40% Clearing required but at a moderate cost	Woody cover less than 80% Expensive clearing costs	
Drainage(d)	well drained to moderately well drained. No flooding	Well drained to imperfectly drained. My have surface water for short periods	well drained to poorly drained, may have surface water for several months	

Source : Ref.E.22



Table EI.16 Land Classification Criteria for Paddy

Land characteristic	Land Class			NS1 and S2
	S1	S2	S3	
Tecture(s)	Topsoil: fine sandy loam. to clay subsoil: clay but non-compacted	Topsoil: fine sandy loam. to clay loam subsoil: sandy clay to clay but non-compacted	Topsoil: sandy loam to clay loam subsoil: clay to clay loam but non-compacted	NS1: Includes lands which require additional investigations to determine their irrigability  NS2: Includes lands which do not meet the minimum requirements for the other land classes.
Depth(after land development) To clear sand or gravel. To pisoplinthite in permieable rock. To relatively impermeable zone (water)	Over 80 cm  Over 80 cm  less than 210 cm	Over 50 cm  Over 50 cm  less than 210 cm	Over 30 cm  Over 30 cm  less than 210 cm	
Alkalinity (reaction)	pH-H2O less than 7,5 for noncalcareous soils and less than 8.6 for calcareous soils	pH-H2O less than 9.0 unless soil is calcareous and non sodic	pH-H2O less than 9.0 unless soil is calcareous and non sodic	
Salinity (ECe)	Total salts not to exceed 0.2%, ECe less than 4mmhos/cm	Total salts not to exceed 0.5%, ECe less than 8mmhos/ cm	Total salts not to exceed 0.5%, ECe less than 8mmhos/cm	
Slopes( t)	less than 1%	less than 1%	less than 2%	
Surface (micro relief)	smooth except for gilgai and minor undulations	smooth except for gilgai and minor undulations (sink holes)	somewhat irregular but no major gulleys, sink holes or dissection	
Vegetation)	Woody cover less than 20%. Clearing cost small	Woody cover less than 40% Clearing required but at a moderate cost	Woody cover less than 80% Expensive clearing required	
Drainage(d)	Well drained to imperfectly drained. My have surface water but only for short periods	well drained to poorly drained, may have surface water for several months	well drained to poorly drained, may have surface water or be waterlogged for major parts of the year	

Source : Ref.E.22

Table E1.17 Gazetted and Ungazetted Forest of Kenya (1/3)

Name	G/U	Area (ha)	Name	G/U	Area (ha)
Aberdare	G	103,024.90	Kabonge	U	31.00
Arabuko-Sok	G	41,763.50	Kaimosi		
Aroso	U	294.00	Kaisungor	G	1,085.80
Aywaya	U	142.00	Kakamega	G	19,792.40
Bahati	G	10,186.70	kakuzi Hills	U	1,800.00
Bondoni			Kalangu	U	200.00
Boni	U	18,466.00	kalimani	G	179.70
Buda	G	667.70	Kamatira	U	1,910.00
Bunyala	G	825.60	Kambe-Kaya		100.00
Bura Nursery		10.00	Kamiti	G	169.60
Chauringo			Kangure	G	188.20
Chawia	U	86.00	Kanzalu	U	100.00
Chebartigon	G	103.20	Kapchemutwa	G	8,954.20
Cheboyit	G	2,488.80	Kapchorua	G	287.30
Chemorogok	G	1,346.80	Kapkanyar	G	6,037.40
Chemurokoi	G	3,965.90	Kapolet	G	1,551.60
Chepalungu	G	10,187.50	Kapsaret	G	1,194.20
Chepkuchumo	G	319.70	kaptagat	G	12,980.00
Chepyal		920.00	Kaptaroi	G	327.80
Cheptiram		566.60	Kaptimom	G	89.00
Cheremet			Karaini	U	24.00
Cherai	G	42.50	Karangu		101.00
Chieni	D		Karasuk		
Choke	U	74.00	Karua	G	210.00
Chonyi-Kaya		200.00	Karura	G	1,044.10
Chyulu Hills			Kasigau	G	202.30
City Park			Katende	G	949.00
Dagoretti	G	764.00	Katimok	G	2,070.90
Diani			Kauma-Kaya		100.00
East Ngamba		1,070.40	Kemeto	G	210.40
Eastern Mau	G	64,966.00	Kenze	G	187.80
Eburu	G	8,715.30	Kererr	G	2,160.20
Eldoret Plnts	G	148.00	Kericho Plnts		
Elgeyo Escpmnt			Kessop	G	2,347.20
Embakasi	G	573.00	Ketnwan	G	46.50
Embobut	G	21,933.90	Kiagu	G	1,366.20
Endau	U	6,718.00	Kiambere	U	643.00
Endebess Plnts			Kiambicho	G	376.40
Engare Engito			Kiambu	G	134.00
Escarpment	G	73.70	Kiamuti	G	182.10
Ewach Nursery	U	2.00	Kiangombe	U	2,104.00
Figgi Juu Mku	U	1,000.00	Kianjiru	U	1,004.00
Fungo-Kaya		100.00	Kibauni	U	2,000.00
Fururu		14.10	Kibithewa	G	206.40
Gaikuyu	U	3,075.00	Kibwezi	G	5,849.60
Gaithenge			kieiga	G	546.30
Gandini			Kierera	G	793.20
Garissa			Kigala	U	200.00
Gede			Kiganjo	G	302.20
Gembe	U	1,987.00	Kijabe Hill	G	706.40
Giribe		43.50	Kijegge	G	3,296.20
God Kwer			kikingo	G	1,234.30
Gogoni	G	824.30	Kikuyu Escpmnt	G	38,334.10
Gonja	G	841.70	kilala	G	150.90
Goye		8.20	Kilombe Hill	G	1,554.30
Gwasi Hills	U	12,140.00	Kiloriti Pn		
Homa	U	1,062.00	Kilulunyi		0.25
Huri Hills	U	30,000.00	Kilungu	G	148.40
Igno Mkundu	U	2,000.00	Kimojoch	G	758.80
Ikilisa	G	78.50	Kingatua	U	58.25
Imba	U	732.00	Kinyesha Mvua		49.50
Irizi	U	476.00	Kinyo	G	323.70
Iveti	G	347.60	Kiongwani	G	33.60
Jaycee		10.00	Kioo	G	45.30
Jibana-Kaya		150.00	Kipipiri	G	5,019.30
Jombo	G	906.50	Kipkabus	G	5,827.40
Kabarak	G	1,392.10			
Kabiok	G	14.20			

Note G : Gazetted Forest  
U : Ungazetted Forest

Table E1.17 Gazetted and Ungazetted Forest of Kenya (2/3)

Name	G/U	Area (ha)	Name	G/U	Area (ha)
Kipkunjurr	G	15,175.70	Mataa	G	42.90
Kiptaberr	G	12,886.40	Matha	U	100.00
Kiria			Mathews	G	93,765.50
Kirimiri	U	101.00	Mau Narok	G	797.20
Kitalale	G	2,037.20	Mavindi	U	100.00
Kitale Towns	G	401.00	Mazeras	D	
Kiteta	G	22.30	Mbololo Juu	U	68.80
Kithendu	G	218.90	Mbololo Mwambi	U	18.20
Kithatani			Mchungunyi		8.00
Kitondo	G	1,085.40	Melwa		
Kitoo	G	37.20	Menengai	G	5,990.00
Kitovu	U	161.00	Meru-L Imenti	G	2,462.10
Kitumbuuni	G	76.10	Meru-U Imenti		10,388.30
Kiu(Ngungu)		83.40	Metetani(Muis		
Kodera			Metkei	G	1,987.00
Koguta	U	413.00	Migori		
Kuja Bull Camp		17.50	Mikuro	U	100.00
Kwa Hill		2.40	Mirui	U	171.00
Kwisagat		1,909.00	Mkongani N.	G	1,113.30
Kyai	G	106.00	Mkongani W.	G	1,365.80
Kyawea	U	63.00	Mlima Tatu		
Kyemundu	G	140.80	Mngambua(Mwawanyu)		1,000.00
Lambwe		2,516.00	Modagache(Weni-Tole)		3.40
Lariak	G	4,998.20	Molinduko		194.00
Latema	U	40.50	Molo	G	901.60
Lelan	G	14,820.00	Momandu	G	139.20
Lembus	G	12,275.80	Morijo		
Leroghi	G	91,944.40	Mosegem	G	204.40
Leshau	G	194.70	Mraru	U	200.00
Loima Hills	U	10,000.00	Mrima	G	376.80
Loita Hills			Mtarakwa	G	112.10
Loitokitok	G	765.80	Mt. Elgon	G	73,705.60
Lokokwi			Mt. Kenya	G	200,870.90
Londiani	G	107.60	Mt. kulal	U	45,729.00
Lowero Hills		121.40	Mt. Nyiru	G	45,931.70
Lugari	G	2,163.00	Mt. Londiani	G	22,440.00
Lungi	U	9,517.00	Mugabwa (Ngabwa)		404.70
Lusoi		259.50	Muguga	G	225.30
Maatha		639.40	Muhaka		
Macha		14.60	Mukobe	G	748.70
Magumo North	G	241.50	Mukogodo	G	30,189.50
Magumo South	G	369.00	Mumbaka		478.50
Mai	U	515.00	Mumoni	U	10,441.00
Mailungaji	G	1,714.70	Mumoni Hill	G	2.00
Maimu	U	500.00	Munguni	G	194.20
Maji Mazuri	G	7,609.30	Molinduko	U	194.00
Makinyambu		404.70	Muringato N.H.	G	25.10
Makongo(Kitui)	G	3,431.70	Museve	U	48.00
Makongo-Machakos		166.30	Mutaithe		
Makuli-Nguta	G	1,653.10	Mutejwa	G	1,375.90
Makutani		80.90	Mutha	U	1,785.00
Malab Hill			Mutharanga	G	299.50
Malaba	G	718.80	Muthini		
Mandera			Mutito	G	1,958.70
Mango	U	45.00	Mutula	G	566.60
Mangrove Swamp		45,068.10	Mutuluni	U	596.00
Mangrove(Mto Tana)		250.00	Muune	U	100.00
Mangrove(Ras Mwachera)		5.00	Mwachi	G	417.20
Marabu-Magina	U	25.00	Mwachora		6.40
Maragoli	G	469.50	Mwakamu		1.50
Maralal			Mwakinyambu	U	404.70
Maranga	U	219.00	Mwandongo	U	688.00
Marenji	G	1,528.50	Mwanganini	U	14.60
Marigat		40.50	Mwarungu		200.00
Marmanet	G	23,329.00	Mworungu		400.00
Marop	G	216.50	Nabkoi	G	3,014.50
Marsabit	G	15,280.90	Nairobi Arboret	G	30.40
Masandare			Nakuru	G	618.90
			Namanga Hill	G	11,784.00
			Namuluku		8.20

Note G : Gazetted Forest  
U : Ungazetted Forest

Table E1.17 Gazetted and Ungazetted Forest of Kenya (3/3)

Name	G/U	Area (ha)	Name	G/U	Area (ha)
Nandi Hill Plt			South Laikipia	G	3,472.20
Nanyungu		16.00	South Mbooni	G	207.60
Ndare	G	5,554.30	South Nandi	G	19,502.20
Ndatai	G	13.80	Southern Mau	G	136.00
Ndiwenyi		5.60	South-W. Mau	G	82,418.90
Ndotos	G	97,164.90	Soysambu Hill		
Nduluni Kalani	G	110.10	Sultan Hamud		
Ndune			Sungululu		50.00
Ngaia	G	4,139.90	Susu		1.70
Ngamba	G	1,070.40	Tana River	U	330,874.50
Ngangao	U	123.40	Tarambas Hill	G	422.90
Ngata			Taressia	G	384.50
Ngong Hills		3,077.00	Tenges		
Ngong Road	G	1,325.20	Thunguru Hill	G	631.30
Ngorome	U	348.00	Thuuri	G	734.50
Ngulot			Timau	G	295.40
Nguruman			Timboroa	G	5,891.00
Njuguni	G	2,003.20	Tinderet	G	27,869.80
Njukiini East		498.00	Tingwa Hill	G	914.60
North Mbooni	G	39.70	Toropket	G	117.40
North Nandi	G	10,500.70	Trans-Mara	G	35,270.30
Northn.Tinderet	G	26,150.40	Tugen Hikk's N.		
Nthangu	G	843.80	Tulimani	G	325.80
Nthoani	U	1,387.00	Tumeya	G	581.50
Ntugi	G	1,378.80	Turbo Plantat.	G	10,788.00
Nuu	G	3,532.90	Tutwoin	G	12.10
Nyamarere			Twanyoni		
Nyambeni	G	4,689.90	Uaso Narok	G	2,053.40
Nyamweru	G	797.20	Uruu	G	433.40
Nyangweta			Usenge	U	63.00
Nyasoko		22.00	Utangwa	G	55.40
Nyeri	G	1,135.40	Utunene	G	165.90
Nyeri Hill	G	192.10	Uuni	G	92.70
Nyeri Munipa.		7.90	Waa		
Nzau	G	967.20	Waiya	G	263.00
Ol Arabel	G	9,364.60	Wajir		
Ol Bolossat	G	3,326.90	Wanga		77.00
Ol Busimoru	G	36,947.70	Weni-Mbogho		2.00
Ol Doiyo Sab			Weni-Mwana		5.30
Olabwwe Plnts	U	2,516.00	West Molo	G	275.20
Ololua	G	667.70	Western Mau	G	19,833.00
Oloruko Plain			Wesu		50.00
Otacho	U	117.50	Wire	U	392.00
Pangani			Witu	G	3,937.60
Pemwai	G	147.70	Yale		22.30
Perkerra Catch	G	4,358.50	Yekanga		100.00
Poror					
Rabai		600.00			
Rabuor		50.00			
Ramogi	U	283.00			
Ranen	U	66.60			
Rangwe	U	1,214.00			
Ribe		100.00			
Ronge	U	318.00			
Rumuruti	G	6,366.90			
Sagala	U	70.00			
Sagegi Hill		8.00			
Saimo	G	750.70			
Salaita	U	40.50			
Sanao	G	299.50			
Sekenuo	G	862.00			
Sekerr	U	8,021.00			
Sekhendu	G	804.10			
Shimba Hills	G	19,242.80			
Siria Plateau					
Sogotio	G	3,561.20			
Sokta Hill	G	163.50			
Sunday Hill		202.00			

Note G : Gazetted Forest  
U : Ungazetted Forest

Table E1.18 National Parks in Kenya

National Parks	Area(km <sup>2</sup> )	National Parks	Area(km <sup>2</sup> )
Abardares	766	Mount Elgon	169
Amboseli	392	Mount Kenya	590
Central Island	5	Nairobi	117
Chyulu	471	Ndere Island	4
Halls Gate	68	Oldonyo Sabuk	18
Kisita Marina	28	Ruma	120
Lake Nakuru	188	Saiwa Swamp	2
Longonot	52	Sibiloi	1,570
Malindi Marine	6	South Island	39
Marsabit	360	Tsavo East & West	21,343
Meru	870	Watamu Marine	10
Mombasa	10		
		<b>Total</b>	<b>27,198</b>

Source : Ref. E.4

Table E1.19 Suitable Area for Major Crops by District (1/3)

Unit: km<sup>2</sup>

District	Maize			Wheat			Rice			Sorghum&Millet			Potato			
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	Total
	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
110 Nairobi	0	82	202	0	2	0	0	0	0	0	0	0	0	0	0	304
210 Kiambu	252	574	250	27	260	44	0	0	0	0	0	0	0	10	828	301
220 Kirinyaga	159	592	150	0	0	0	0	0	153	780	123	0	0	87	554	838
230 Murang'a	345	640	244	0	43	0	0	61	0	43	49	283	907	283	907	1,239
240 Nyandarua	0	43	30	0	0	0	0	0	0	0	0	0	0	0	0	0
250 Nyeri	328	575	4	0	361	278	0	0	2	639	117	1	508	84	78	626
310 Kilifi	0	66	1,865	0	0	0	0	280	24	304	0	1,335	2,107	0	0	3,442
320 Kwale	0	625	741	0	0	0	0	873	64	937	0	194	2,277	0	0	2,471
330 Lamu	0	1	2,679	0	0	0	0	562	0	562	0	1,680	2,568	0	0	4,248
340 Mombasa	0	0	120	0	0	0	0	10	21	31	0	20	100	0	0	120
350 Taita Taveta	0	23	242	0	0	4	0	0	0	4	0	0	159	1,909	0	2,068
360 Tana River	0	0	440	0	0	0	0	237	0	237	0	95	811	0	0	906
410 Embu	94	449	239	0	0	0	0	0	187	187	10	150	1,041	44	0	1,201
420 Isiolo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430 Kitui	0	0	0	0	0	0	0	0	0	0	0	436	11,122	0	0	11,558
440 Machakos	0	874	2,056	0	23	29	0	0	428	428	37	746	6,692	8	23	7,475
450 Marsabit	0	17	44	0	0	0	0	0	21	21	38	0	1,500	0	0	1,538
460 Meru	369	1,520	974	128	72	208	0	0	915	915	147	544	3,341	18	11	4,032
510 Garissa	0	0	51	0	0	0	0	0	0	0	0	51	668	0	0	719
520 Mandera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
530 Wajir	0	0	0	0	0	0	0	0	0	0	0	0	101	0	0	101
610 Kisii	0	1,836	209	0	219	20	0	0	18	18	0	0	1,067	692	109	1,067
620 Kisumu	0	190	1,117	0	13	0	0	0	1,057	1,057	0	39	1,296	0	0	1,335
630 Siaya	0	229	1,805	0	0	0	0	0	1,967	1,967	0	0	2,041	0	0	2,041
640 South Nyanza	37	127	3,801	0	0	0	0	0	2,978	2,978	0	43	4,060	0	0	4,103
710 Kajiado	0	39	655	0	32	178	0	0	0	0	4	172	3,330	0	18	3,506
720 Kericho	1	980	2,171	77	267	215	0	0	137	137	1	1	902	1,411	228	904
730 Lukipia	0	239	6	0	334	691	0	0	0	0	0	35	870	0	0	905
740 Nakuru	0	540	699	0	1,063	786	0	0	0	0	0	237	571	0	171	808
750 Narok	0	1,039	2,994	223	620	2,891	0	0	10	10	109	306	2,636	320	645	3,051
760 Trans Nzoia	33	1,162	286	81	354	245	0	0	0	680	17	682	353	0	108	1,052
770 Uasin Gishu	34	620	1,679	272	287	1,600	0	0	0	2,159	0	266	118	11	503	384
810 Baringo	0	368	542	39	161	46	0	0	1	246	75	119	962	0	160	1,156
820 Elgeyo Marak	0	183	146	38	89	53	0	0	0	180	18	9	351	43	318	378
830 Nandi	4	1,707	291	339	156	158	0	0	10	653	95	335	441	277	105	871
840 Samburu	0	0	0	0	0	253	0	0	0	253	0	0	333	0	0	333
850 Turkana	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	30
860 West Pokot	0	3	92	0	0	132	0	0	0	132	0	0	803	0	53	803
910 Bungoma	34	1,261	869	0	81	0	0	0	730	730	0	279	1,634	164	75	1,913
920 Busia	0	155	777	0	0	0	0	0	960	960	0	0	932	0	0	932
930 Kakamega	11	2,483	540	0	0	17	0	0	1,339	1,339	1	413	2,521	24	0	2,935
Total	1,701	19,242	29,010	1,224	4,437	7,848	0	0	1,962	11,083	857	8,755	62,561	3,211	2,650	72,173
																13,045
																15,799

Table E1.19 Suitable Area for Major Crops by District (2/3)

Unit:km<sup>2</sup>

District	Beans			Coffee			Tea			Cotton			Sugarcane			Total
	S1	S2	S3	Total	S1	S2	S3	Total	S1	S2	S3	Total	S1	S2	S3	
110 Nairobi	0	80	2	82	0	0	0	0	0	0	0	0	0	0	0	0
210 Kiambu	336	309	237	882	252	84	265	601	0	0	0	0	0	0	0	0
220 Kirinyaga	159	469	273	901	159	145	83	387	123	145	0	268	0	153	150	303
230 Murang'a	375	705	206	1,286	345	30	284	659	0	0	0	0	0	37	156	193
240 Nyandarua	0	0	57	57	0	0	0	0	0	0	0	0	0	0	0	0
250 Nyeri	328	299	280	907	328	46	131	505	84	46	0	130	0	2	0	2
310 Kilifi	0	0	0	0	0	0	0	0	0	0	0	0	0	151	2,681	2,832
320 Kwale	0	0	0	0	0	0	0	0	0	0	0	0	0	632	1,039	1,671
330 Lamu	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2,686	2,687
340 Mombasa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	171	171
350 Taita Taveta	0	265	0	265	0	0	0	0	0	0	4	4	0	0	198	198
360 Tana River	0	0	0	0	0	0	0	0	0	0	0	0	0	0	513	513
410 Embu	94	457	245	796	94	98	86	278	44	98	0	142	0	147	227	374
420 Isiolo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430 Kinu	0	250	1,822	2,072	0	0	0	0	0	0	0	0	0	0	1,815	1,815
440 Machakos	1	1,918	1,138	3,057	0	1	207	208	0	23	29	52	0	78	1,290	1,368
450 Marsabit	0	21	39	60	0	0	0	0	0	0	0	0	0	17	44	61
460 Meru	372	1,686	786	2,844	415	96	383	894	18	93	0	111	0	797	784	1,581
510 Garissa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51	51
520 Mandera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
530 Wajir	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
610 Kisii	17	1,027	874	1,918	0	156	828	984	263	105	1,092	1,460	0	0	18	18
620 Kisumu	62	175	0	237	4	33	9	46	0	0	0	71	0	4	1,075	1,079
630 Siaya	30	1,519	394	1,943	0	15	0	15	0	0	168	168	0	31	1,177	1,208
640 South Nyanza	43	1,461	1,183	2,687	7	7	109	123	0	2	85	87	0	58	3,117	3,177
710 Kajiado	0	301	296	597	0	0	1	1	0	0	0	0	0	0	180	180
720 Kericho	7	447	1,850	2,304	0	228	130	358	334	228	34	596	0	0	137	137
730 Laikipia	0	13	226	239	0	0	0	0	0	0	0	0	0	0	0	0
740 Nakuru	0	427	625	1,052	0	0	0	0	0	0	0	0	0	0	0	0
750 Narok	0	327	2,101	2,428	0	0	225	225	36	0	220	256	0	0	10	10
760 Trans Nzoia	48	374	514	936	33	15	35	83	0	0	0	0	0	0	0	0
770 Uasin Gishu	0	383	1,679	2,062	0	0	3	3	11	0	0	11	0	0	0	0
810 Baringo	0	421	320	741	0	0	153	153	0	0	1	1	0	1	316	317
820 Elgeyo Marak	0	37	204	241	0	0	0	0	38	0	0	38	0	0	121	121
830 Nandi	9	860	1,092	1,961	0	44	370	414	221	44	470	735	0	0	10	10
840 Samburu	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0
850 Turkana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
860 West Pokot	3	4	122	129	0	3	1	4	0	0	0	0	0	0	0	0
910 Bungoma	304	1,085	669	2,058	32	347	293	672	164	122	67	353	0	60	735	795
920 Busia	47	324	508	879	0	0	0	0	0	0	0	0	0	108	595	703
930 Kakamega	293	2,299	452	3,044	0	801	231	1,032	0	120	1,640	1,760	0	0	386	386
Total	2,528	17,944	18,196	38,668	1,669	2,149	3,880	7,698	1,336	1,026	3,881	6,243	0	2,277	19,693	21,970
													3	22	6,171	6,196

Table E1.19 Suitable Area for Major Crops by District (3/3)

Unit:km<sup>2</sup>

District	Pyrethrum			Sisal			Horticulture			Fodder Crop			Total			
	S1	S2	S3	Total	S1	S2	S3	Total	S1	S2	S3	Total				
110 Nairobi	0	0	0	2	0	27	54	81	0	0	0	82	0	80	231	311
210 Kiambu	35	121	145	301	0	10	265	275	0	507	448	955	336	360	451	1,147
220 Kirinyaga	0	0	0	0	139	87	238	464	269	159	473	901	159	592	152	903
230 Murang'a	43	0	0	43	49	283	321	653	0	417	836	1,253	375	611	371	1,357
240 Nyandarua	253	39	1,330	1,622	0	0	0	0	0	551	431	982	0	0	758	758
250 Nyeri	207	55	242	504	117	1	134	252	131	631	451	1,213	328	438	249	1,015
310 Kilifi	0	0	0	0	114	412	2,389	2,915	0	0	1,593	1,593	0	0	2,551	2,551
320 Kwale	0	0	0	0	12	509	1,577	2,098	0	0	849	849	0	0	2,259	2,259
330 Lamu	0	0	0	0	0	2,193	1,792	3,985	0	0	2,193	2,193	0	0	2,680	2,680
340 Mombasa	0	0	0	0	0	0	20	20	0	0	20	20	0	0	171	171
350 Taita Taveta	0	0	4	4	0	89	1,777	1,866	0	4	260	264	0	23	1,415	1,438
360 Tana River	0	0	0	0	0	248	469	717	0	0	248	248	0	0	440	440
410 Embu	0	0	0	0	10	150	374	534	142	94	546	782	94	449	834	1,377
420 Isiolo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430 Kitui	0	0	0	0	0	261	7,118	7,379	0	0	2,010	2,010	0	0	12,073	12,073
440 Machakos	0	2	29	31	37	119	1,479	1,635	0	16	2,828	2,844	1	856	7,023	7,880
450 Marsabit	0	0	0	0	38	0	1,184	1,222	0	0	61	61	0	17	1,675	1,692
460 Meru	0	11	189	200	147	292	2,114	2,553	111	432	2,353	2,896	372	1,429	2,313	4,114
510 Garissa	0	0	0	0	0	51	646	697	0	0	51	51	0	0	51	51
520 Mandera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
530 Wajir	0	0	0	0	0	0	18	18	0	0	0	0	0	0	101	101
610 Kisii	0	70	0	70	0	0	143	143	1,363	342	192	1,897	14	1,769	313	2,096
620 Kisumu	0	0	13	13	0	0	106	106	0	208	177	385	51	139	1,496	1,686
630 Siaya	0	0	0	0	0	0	31	31	0	1,041	902	1,943	30	199	1,894	2,123
640 South Nyanza	0	0	0	0	0	8	428	436	84	822	1,763	2,669	5	217	3,899	4,121
710 Kajiado	0	0	148	148	4	5	1,494	1,503	562	1,512	395	2,469	1	903	3,598	3,604
720 Kericho	71	155	713	939	0	13	722	735	0	104	243	347	0	13	1,196	1,209
730 Laikipia	0	103	245	348	0	1	258	259	0	973	983	1,956	0	229	1,688	1,917
740 Nakuru	14	104	1,645	1,763	0	1	1,746	1,855	256	1,942	1,582	3,780	0	718	4,717	5,435
750 Narok	0	199	3,234	3,433	109	0	641	735	0	346	1,030	1,376	48	856	454	1,358
760 Trans Nzoia	14	131	445	590	17	0	129	139	11	694	2,011	2,716	0	385	704	1,089
770 Uasin Gishu	136	90	2,096	2,322	0	0	637	712	0	217	628	845	0	329	1,102	1,431
810 Baringo	35	114	116	265	75	0	321	339	38	374	85	497	0	145	780	925
820 Elgeyo Marak	0	89	321	410	18	0	384	479	634	247	1,044	1,925	4	1,317	142	1,463
830 Nandi	7	75	603	685	95	0	40	40	0	0	0	1	0	0	531	531
840 Samburu	0	0	0	0	0	0	30	30	0	0	0	0	0	0	30	30
850 Turkana	0	0	0	0	0	0	126	126	0	153	33	186	3	1	1,133	1,137
860 West Pokot	0	0	179	179	0	0	494	564	285	721	1,041	2,047	239	1,056	880	2,175
910 Bungoma	0	75	0	75	0	0	108	108	0	248	633	881	47	108	777	932
920 Busia	0	0	0	0	0	0	358	476	276	1,412	916	2,604	6	2,482	553	3,041
930 Kakamega	0	0	23	23	1	117	358	476	4,162	14,185	29,924	48,271	2,113	15,727	63,878	81,718
Total	815	1,433	11,722	13,970	982	5,717	30,016	36,715	4,162	14,185	29,924	48,271	2,113	15,727	63,878	81,718



Table E1.20 Imports of Principal Food

Unit:tonnes

Commodity	1978	1979	1980	1981	1982	1983
Wheat	90888	21152	48462	49239	139326	81946
Maize	80	18	323873	77394	89056	
Rice	11	241	1239	4573	11880	44768
Sugar	46112	12504	1751	1756	2216	2402
Tea	7763	8597	6244	10070	8261	9351
Milk	249	583	12888	11210	4210	4532
Fish	769	890	687	353	314	519
Fruit & Vegetables	3477	2079	3198	2015	694	591
Chocolate	25	10	16	2	5	3

Commodity	1984	1985	1986	1987	1988	1989
Wheat	149906	143793	115281	217857	75578	123535
Maize	405443	125454	700			2
Rice	507	562	61745	39129	10000	30006
Sugar	1503	39121	126209	49100	8749	44696
Tea	7524	16752	19662	16910	15649	1216
Milk	11108	6677	1508	545	82	15
Fish	216	366	318	124	128	321
Fruit & Vegetables	1658	5821	1148	1249	576	760
Chocolate	25	81	51	19	4	2135

Source : Ref. E.5

Table E1.21 Food Demand Projection

Unit : 1,000 ton

Crop	1990			1995			2000			2005			2010		
	Urban kg/yr	Rural kg/yr	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Population (million)	4.0	18.8	26.4	5.5	20.9	30.7	7.9	22.8	35.2	10.1	25.1	40.3	12.7	27.6	43.7
Maize	97.1	125.6	2,744	536	2,622	3,157	770	2,861	3,631	978	3,157	4,135	1,233	3,467	4,700
Millet	0.0	19.8	372	0	413	413	0	451	451	0	498	498	0	547	547
Wheat	24.7	10.0	286	136	209	345	196	228	424	249	251	500	314	276	590
Rice	13.1	1.4	78	72	29	101	104	32	136	132	35	167	166	39	205
Potatoes	14.8	26.2	551	82	547	629	117	597	714	149	659	808	188	723	911
Other roots	3.0	30.5	585	17	637	653	24	695	719	30	767	797	38	842	880
Sugar	30.0	15.0	401	166	313	479	238	342	580	302	377	679	381	414	795
Pulses	13.8	14.2	321	76	296	373	110	324	433	159	357	496	175	392	567
Milk	88.6	72.1	1,706	489	1,505	1,994	703	1,642	2,345	893	1,812	2,705	1,125	1,991	3,116
Beef	11.9	6.8	175	66	142	208	94	155	249	120	171	291	151	188	339
Fat	6.5	1.7	58	36	36	71	52	39	90	66	43	108	83	47	129
Vegetable	36.9	20.4	530	204	426	629	293	465	757	372	513	885	469	563	1,032
Fish	1.9	1.7	39	11	36	46	15	39	54	19	43	62	24	47	71

**Table E1.22 Annual Crop Production in Kenya**

(Unit : ton)

	1985	1986	1987	1988	1989	Average
Maize	2,482,999	2,902,837	2,730,999	3,042,487	2,650,798	2,762,024
Sorghum	132,109	173,297	114,944	110,275	182,338	142,593
Millet	74,052	61,313	52,566	55,794	135,825	75,910
Wheat	302,241	272,254	220,912	319,614	376,573	298,319
Barley	21,408	16,410	14,746	44,424	46,140	28,626
Rice	39,409	42,324	42,779	45,907	51,858	44,455
Sweet Potatoes	213,458	212,565	219,156	187,463	200,923	206,713
Irish Potatoes	473,087	674,362	643,690	711,240	709,050	642,286
Cassava	488,311	341,771	405,261	537,428	381,462	430,847
Bananas	771,645	895,712	825,142	863,695	871,141	845,467
Beans	310,852	473,149	383,247	319,063	572,545	411,771
Pigeon Peas	59,916	54,854	57,055	50,711	64,574	57,422
Cow Peas	32,070	47,408	41,010	32,808	57,071	42,073
Green Grams	16,151	20,708	18,252	20,008	31,887	21,401
Green Peas	1,472	1,951	8,541	11,386	4,892	5,648
Coffee	176,178	120,176	104,944	148,319	125,230	134,969
Tea	275,702	248,227	366,614	427,503	384,859	340,581
Pyrethrum	4,139	6,097	6,477	7,203	8,331	6,449
Cotton	48,353	27,125	21,286	27,183	28,260	30,441
Sugarcane	3,009,227	3,723,351	2,672,423	3,120,270	3,760,998	3,257,254
Sunflower	12,664	26,955	20,440	22,217	17,042	19,863
Tobacco	7,664	7,296	9,562	10,433	9,767	8,944
Ground Nuts	15,151	8,897	8,557	23,186	11,143	13,387
Coconuts	25,817	21,877	26,104	29,572	29,794	26,633
Sisal	143,900	142,932	141,970	168,099	93,907	138,162
Passion	7,377	5,840	4,956	5,207	6,747	6,025
Avocados	10,708	12,693	15,936	18,481	16,649	14,893
Citrus	83,371	130,698	151,554	167,392	137,790	134,161
Mango	129,708	152,115	118,102	95,146	90,367	117,087
Macadamia	6,612	7,297	8,495	10,363	8,462	8,246
Paw paw	13,758	19,121	22,747	26,671	27,007	21,861
Pineapple	48,108	39,626	62,074	61,020	61,464	54,458
<b>Total</b>	<b>9,437,615</b>	<b>10,891,236</b>	<b>9,540,539</b>	<b>10,720,567</b>	<b>11,154,892</b>	<b>10,348,970</b>

Source : Ref. E.45

Table E1.23 Projected Unit Yields

Crop	Unit: ton/ha					
	1990		2000		2010	
	I <sup>*1</sup>	R <sup>*2</sup>	I	R	I	R
Maize <sup>*3</sup>	2.7	2.1	3.1	2.6	4.1	3.2
Wheat <sup>*3</sup>		1.9		2.7		4.0
Millet/Sorghum <sup>*3</sup>		0.9		1.1		1.3
Rice <sup>*3</sup>	3.5		5.9		6.3 <sup>*4</sup>	
Coffee		0.6 <sup>*6</sup>		1.4 <sup>*5</sup>		3.3
Tea		1.3 <sup>*6</sup>		2.2 <sup>*5</sup>		3.7

- \*1 Irrigated
- \*2 Rainfed
- \*3 Trend projections based on the MoA's data
- \*4 Maximum yield at NIB scheme
- \*5 Sessional paper No.1 of 1986
- \*6 MoA annual Reports 1987 to 1990

**Table E1.24 Township Area**

Code	District	Unit : km <sup>2</sup>	
		Township Area in 1990 *1	Township Area in 2010 *3
110	Nairobi	93	125
210	Kiambu	155	208
220	Kirinyaga	3	4
230	Murang'a	29	39
240	Nyandarua	3	4
250	Nyeri	60	80
310	Kilifi	412	554
320	Kwale	135	181
330	Lamu	119	160
340	Mombasa	143	192
350	Taita Taveta	179	241
360	Tana River	3	4
410	Embu	8	10
420	Isiolo	43	57
430	Kitui	161	216
440	Machakos	337	453
450	Marsabit	12	16
460	Meru	212	285
510	Garissa	251	338
520	Mandera	1 *2	1
530	Wajir	145	195
610	Kisii	29	39
620	Kisumu	428	576
630	Siaya	4	5
640	South Nyanza	6	8
710	Kajiado	16	21
720	Kericho	87	117
730	Laikipia	187	251
740	Nakuru	946	1274
750	Narok	13	17
760	Trans Nzoia	86	115
770	Uasin Gishu	60	80
810	Baringo	11	14
820	Elgeyo Marakwet	1 *2	1
830	Nandi	4	5
840	Samburu	13	17
850	Turkana	66	88
860	West Pokot	3	4
910	Bungoma	31	41
920	Busia	1 *2	1
930	Kakamega	1 *2	1
Kenya		4,497	6,038

Note \*1 Ref. E.4

\*2 assuming one sq.km in case of null in Ref.E.4

\*3 assuming expansion with annual rate of half growth rate of population, 1.59

**Table E1.25 Land Use Plan in 2010**

Code	District	Total Area	Land Area	Water Area	Forest & Park	Swamp	Town-ships	Barren-land	Agriculture Land	Other Land
		(km2) *1	(km2) *1	(km2) *1	(km2) *1&*2	(km2) *2	(km2) *1	(km2) *2	(km2) *3	(km2) *4
110	Nairobi	684	684	0	215	0	125	0	63	281
210	Kiambu	2,451	2,448	3	513	0	208	0	1,658	69
220	Kirinyaga	1,437	1,437	0	513	0	4	14	795	111
230	Murang'a	2,476	2,476	0	366	0	39	0	1,412	659
240	Nyandarua	3,528	3,508	20	850	22	4	31	1,750	851
250	Nyeri	3,284	3,284	0	1,526	0	80	5	1,299	374
310	Kilifi	12,523	12,414	109	2,650	12	554	0	1,417	7,781
320	Kwale	8,322	8,257	65	792	0	181	0	1,177	6,107
330	Lamu	6,814	6,506	308	2,534	0	160	0	235	3,577
340	Mombasa	275	210	65	8	0	192	0	10	0
350	Taita Taveta	16,975	16,959	16	10,604	131	241	0	941	5,042
360	Tana River	38,694	38,694	0	5,267	118	4	0	281	33,024
410	Embu	2,714	2,714	0	289	0	10	8	2,407	0
420	Isiolo	25,605	25,605	0	726	705	57	1,935	259	21,923
430	Kitui	29,389	29,389	0	6,572	0	216	51	1,139	21,411
440	Machakos	14,183	14,178	5	1,666	2	453	88	5,253	6,716
450	Marsabit	78,078	73,952	4,126	5,661	403	16	46,488	100	21,284
460	Meru	9,922	9,922	0	2,582	0	285	242	3,263	3,550
510	Garissa	43,931	43,931	0	3,425	56	338	0	14	40,098
520	Mandera	26,470	26,470	0	51	0	1	1,512	65	24,841
530	Wajir	56,501	56,501	0	291	388	195	679	29	54,919
610	Kisii	2,196	2,196	0	1	0	39	0	688	1,468
620	Kisumu	2,660	2,093	567	28	160	576	0	930	399
630	Siaya	3,528	2,523	1,005	0	96	5	0	941	1,481
640	South Nyanza	7,778	5,714	2,064	119	52	8	0	1,765	3,770
710	Kajiado	21,105	20,963	142	3,300	1,233	21	192	2,067	14,150
720	Kericho	4,890	4,890	0	1,063	0	117	0	2,741	969
730	Laikipia	9,718	9,718	0	938	64	251	41	525	7,899
740	Nakuru	7,200	7,024	176	1,460	94	1,274	173	4,023	0
750	Narok	18,513	18,513	0	2,887	69	17	89	1,529	13,922
760	Trans Nzoia	2,468	2,468	0	451	110	115	0	1,792	0
770	Uasin Gishu	3,784	3,784	0	661	42	80	0	1,467	1,534
810	Baringo	10,790	10,627	163	835	128	14	636	1,268	7,746
820	Elgeyo Marakwet	2,722	2,722	0	900	40	1	0	1,562	219
830	Nandi	2,745	2,745	0	415	0	5	0	201	2,124
840	Samburu	20,809	20,809	0	3,288	0	17	3,568	59	13,877
850	Turkana	69,684	67,405	2,279	826	2,551	88	17,984	81	45,875
860	West Pokot	9,056	9,056	0	548	3	4	1,454	1,729	5,318
910	Bungoma	3,074	3,074	0	552	0	41	0	2,073	408
920	Busia	1,766	1,629	137	2	184	1	0	535	907
930	Kakamega	3,520	3,520	0	332	1	1	0	2,457	729
Kenya		592,262	581,012	11,250	65,707	6,664	6,038	75,190	52,000	375,413

\*1 : Ref. E.4

\*2 : Landsat image

\*3 : Ref. E.45

\*4 : includes grassland and bushland

Table E1.26 District Top 5 Priority Project/Programme for Agricultural Development

District	1st Priority	2nd Priority	3rd Priority	4th Priority	5th Priority
110 Nairobi					
210 Kiambu	National Extension Programme	Soil and Water Conservation	Farmers Training Centre	Coffee Production Improvement	Production of Mulberry
220 Kirinyaga	National Extension Programme	Soil and Water Conservation	Irrigation Project	Irrigation Project	Irrigation Project
230 Muranga	Farm Management	National Extension Programme	Foodcrop Production	Soil Conservation	Horticulture Development
240 Nyandarua	Rural Structure Construction	Soil and Water Conservation	Horticulture Crop Development	Draft Animal Equipment	Wheat and Maize Development
250 Nyeri	Crop Production Programme	Agricultural Mechanization Services	National Extension Programme	Smallholder Coffee Improvement	Farmers Farm Development Project,
310 Kilifi	National Extension Programme	Soil conservation	Kilifi Rural Development Project	Soil Conservation	Rural Technology Development Unit
320 Kwale	National Extension Programme	Rural Development Project	National Soil Conservation Project	Food and Nutrition Project	Irrigation Project
330 Lamu	National Extension Programme	Soil and Water Conservation	Upland Rice Scheme	Farmers Training Centres	Small holder Mechanization Project
340 Mombasa	Fruit tree nursery	Cassava Bulking plots	Rehabilitation and stabilization of eroded areas	Coconut rehabilitation	Rainfed Rice Project
350 Taita Taveta	National Extension Programme	Soil conservation	ASAL Project	Horticultural Development	Greater Grain Borer Control Project
360 Tana River	General Agriculture Extension	Crop Demonstrations Project	Horticultural Extension Services Project	Coconut Rehabilitation	Small-Scale Irrigation Project
410 Embu	National Extension Programme	Rural Technology Development	Soil Conservation	Agricultural Mechanization	Nyayo Tea Zone
420 Isiolo	Soil and Water Conservation	Rural Training Centre	Garfasa Irrigation Scheme	Irrigation Schemes	Irrigation Scheme
430 Kitui	Soil and Water Conservation	National Extension Programme	Crop Development	Farm Management	ASAL Programme
440 Machakos	Smallholders Coffee Improvement	Horticultural Crops Development	Cotton Development	Crop Development Extension	Seniculture
450 Marsabit	Crop Production	Soil and Water Conservation	Horticultural Extension services	Demonstration and training	
460 Meru	National Extension Programme	Small holder coffee Improvement	Soil Conservation	Soil and Water Conservation	Small Farm Mechanization Project
510 Garissa	Scheme rehabilitation	Rural Technology Development Centre	Establishment of New Schemes	Demonstration Plot	Extension Service Programme
520 Mandera	BPI Irrigation Scheme	Irrigation Scheme	Shantole Irrigation Scheme	Irrigation Scheme	Irrigation Scheme
530 Wajir	Dugo Farm Development	Central Fruit Tree Nursery and Orchard	Wells and pumps for vegetable growing	Soil conservation	Demonstration farms
610 Kisi	National Extension Programme	Smallholder Coffee Improvement	Kisii Valley-Bottom Integrated Development Pro.	Soil & Water Conservation	Fruit Tree Nursery Development
620 Kisumu	Soil conservation	Smallholder Rice Rehabilitation	Smallholder Rice Rehabilitation	Smallholder Coffee Improvement.	Agricultural Extension service
630 Siaya	Smallholder coffee Improvement	Robusta Coffee Development	Cotton Development Project	Farmers Support project	Soil and water Conservation
640 South Nyanza	Intensive Growing of Cereals	Cash Crops Expansion	Improve Livestock Breeding and Zero Grazing	Rainfed Rice Project	Soil Conservation
710 Kajiado	Irrigation Schemes	Famine Relief/dryland farming	KGGCU Depot Lotokitok	Soil Conservation	Irrigation Scheme
720 Kencho	Tea expansion and intensification	Maize intensification programme	Coffee expansion and intensification programme	Environmental conservation	Horticulture
730 Laikipia	Kiamaiga Irrigation Scheme	Division H/quarters	Pyrethrum Growing	Fruit Tree Nursery	Soil Conservation
740 Nakuru	On-farm trials & Demonstration Farm	Bird Army worm control	Nakuru FTC at Soil Conservation Station farm	National Extension Programme	Soil Conservation
750 Narok	National Extension Programme	Rural Structures Project	Soil and Water Conservation Project	Crop Protection	Horticultural
760 Trans Nzoia	National Extension Programme	Coffee expansion & rehabilitation	Increased industrial crops production	Horticulture	Rural Structures Programme
770 Uasin Gishu	National Extension Programme	Soil and Water Conservation	Crop Demonstrations	Improvement of Access Roads	Improvement of marketing
810 Baringo	Soil and Water Conservation	National Extension Programme	ASAL Project	Cotton Development	Coffee Improvement Programme
820 Elg. Marakwet	Food Crops	Cash Crop Development	Soil and Water Conservation	National Extension Programme	Irrigation
830 Nandi	National Extension Programme	Crop Production Development	Soil Conservation Project	Farm Management	Rural Structures on farm Structures
840 Samburu	Game proof electric Fencing	Tractor Hire Service	Wheat demonstration scheme	Farmers training centre	Input supply through KGGCU
850 Turkana	Rehabilitation irrigation Scheme	Seed Bulking Project	Rainfed agriculture Kibish Division	Draught animal project	Date palm project
860 West Pokot	Irrigation Cluster	Crop Production	Farmers' Training Centre	Extension Service	Soil and Water Conservation
910 Bungoma	Farmer's Training Centre	Horticultural	Robusta Coffee Development	Rainfed Rice production and Milling	Soil and Water Conservation
920 Busia	National Extension Programme	Soil and Water Conservation	Small Holder Coffee improvement	Busia F.T.C.	Small Holder Mechanization Project
930 Kakamega	National Extension Programme	Soil conservation	Small-holder mechanization	Small holder coffee improvement	Rehabilitation of the FTC farm

Source: Ref.E.3

**Table E2.1 Area and Number of Existing Irrigation Schemes by District**

Code	District	Small Holder/GOK Managed Schemes		Individual Farms	Private
		Number (nos.)	Area (ha)	(ha)	(ha)
110	Nairobi				1,564
210	Kiambu			330	10,688
220	Kirinyaga	9	6,149	88	61
230	Murang'a	2	38	99	6,107
240	Nyandarua	6	32	50	64
250	Nyeri	20	988	95	520
310	Kilifi	1	80	35	245
320	Kwale	6	64	71	48
330	Lamu	1	0		
340	Mombasa				
350	Taita Taveta	7	1,228	12	
360	Tana River	18	3,921		
410	Embu	3	412	43	194
420	Isiolo	17	1,106	2	
430	Kitui				
440	Machakos	32	3,261	36	1,382
450	Marsabit				
460	Meru	10	2,312	35	46
510	Garissa	36	631	4	
520	Mandera	7	640		
530	Wajir				
610	Kisii				
620	Kisumu	51	6,147		
630	Siaya	57	177		
640	South Nyanza	11	415		
710	Kajiado	19	2,136		16
720	Kericho				
730	Laikipia	6	472	126	
740	Nakuru	1	32	117	3,460
750	Narok	7	165	4	8
760	Trans Nzoia			117	124
770	Uasin Gishu				8
810	Baringo	33	1,336	3	
820	Elg. Marakwet	80	4,446		
830	Nandi			2	
840	Samburu	1	20		
850	Turkana	11	912		
860	West Pokot	38	1,469	2	
910	Bungoma	3	324		
920	Busia	7	350	4	
930	Kakamega	2	5		
Total		502	39,267	1,275	24,535

Source : Ref.E.23, E.37



**Table E2.2 Area and Number of Planned Irrigation Schemes by District**

Code	District	Small Holder/GOK Managed Schemes	
		Number (nos.)	Area (ha)
110	Nairobi		
210	Kiambu	7	115
220	Kirinyaga	3	2,930
230	Murang'a	8	500
240	Nyandarua	1	0
250	Nyeri	6	77
310	Kilifi	10	3,330
320	Kwale	6	498
330	Lamu	5	0
340	Mombasa		
350	Taita Taveta	5	4,140
360	Tana River	12	12,540
410	Embu	23	3,309
420	Isiolo	1	50
430	Kitui	9	155
440	Machakos	6	17,505
450	Marsabit		
460	Meru	12	4,570
510	Garissa	3	46
520	Mandera		
530	Wajir		
610	Kisii		
620	Kisumu	3	26,150
630	Siaya	4	10,480
640	South Nyanza	3	4,100
710	Kajiado	3	10,000
720	Kericho	4	407
730	Laikipia		
740	Nakuru		
750	Narok		
760	Trans Nzoia		
770	Uasin Gishu	2	335
810	Baringo	5	31
820	Elg. Marakwet	1	1,340
830	Nandi		
840	Samburu	1	20
850	Turkana	2	600
860	West Pokot	4	48
910	Bungoma	3	7,705
920	Busia	6	7,353
930	Kakamega	1	3
Total		159	118,337

Source : Ref. E.23, E.37

Table E2.3 List of Stations

Station Name	Province	District	Altitude (m)
1 AIHERO	Nyanza	Kisumu	1,200
2 AINABKOI	Rift Valley	Uasin Gishu	2,600
3 ARCHER'S POST	Rift Valley	Samburu	865
4 BACHUA	Coast	Taita	400
5 BARICHO	Coast	Kilifi	70
6 BUSIA	Western	Busia	1,180
7 CHEBLOCH	Rift Valley	Barineo	1,200
8 ELDORET	Rift Valley	Uasin Gishu	2,100
9 EQLATOR	Rift Valley	Uasin Gishu	2,760
10 GARISSA	North Eastern	Garissa	130
11 GEDE	Coast	Kilifi	30
12 HABASUEIN	North Eastern	Uajir	200
13 HOLA	Coast	Tana River	90
14 ISIOLO	Eastern	Isiolo	1,100
15 KABONDORI	Eastern	Embu	1,140
16 KAPENGURIA	Rift Valley	West Pokot	2,130
17 KAPSA3ET	Rift Valley	Nandi	2,000
18 KAP'ITIR	Rift Valley	Turkana	700
19 KATE;ANI	Eastern	Machakos	1,600
20 KEDONG	Rift Valley	Nakuru	1,900
21 KERICHO	Rift Valley	Kericho	2,070
22 KIAMBU	Central	Kiambu	1,730
23 KIBOS	Nyanza	Kisumu	1,170
24 KIIPAKIA	Central	Murang'a	2,500
25 KIPKABUS	Rift Valley	Uasin Gishu	2,400
26 KISIJU	Nyanza	Kisumu	1,140
27 KITALE	Rift Valley	Trans Nzoia	1,900
28 KITUI	Eastern	Kitui	1,180
29 KORU	Nyanza	Kisumu	1,600
30 LAMU	Coast	Lamu	9
31 LAMURIA	Rift Valley	Laikipia	1,850
32 LODAR	Rift Valley	Turkana	500
33 LOKICHOKIO	Rift Valley	Turkana	1,050
34 LOKITAUNG	Rift Valley	Turkana	700
35 MACHAKOS	Eastern	Machakos	1,650
36 MAGADI	Rift Valley	Kajiado	613
37 MAKINDU	Eastern	Nachakos	1,000
38 MALINDI	Coast	Kilifi	20
39 MANDERA	North Eastern	Mandera	330
40 MARALAL	Rift Valley	Samburu	1,950
41 MAREIGAT	Rift Valley	Baringo	1,070
42 MARSABIT	Eastern	Marsabit	1,360
43 MASARA	Nyanza	South Nyanza.	1,200
44 MERU	Eastern	Meru	1,565
45 MOLO	Rift Valley	Nakuru	2,500
46 MOMBASA	Coast	Mombasa	60
47 MOYALE	Eastern	Marsabit	1,110
48 MUGUGA	Central	Kiambu	2,100
49 MWEA	Central	Kirinyaga	1,160
50 MWINGI	Eastern	Kitui	1,050
51 NAIROBI KABETE	Nairobi	Nairobi	1,737
52 NAIROBI SOUTH	Nairobi	Nairobi	1,675
53 NAIVASIA	Rift Valley	Nakuru	1,900
54 NAKURU	Rift Valley	Nakuru	1,890
55 NANYUKI	Rift Valley	Laikipia	1,950
56 NAROK	Rift Valley	Narok	1,900
57 NGAO	Coast	Tana River	15
58 NYERI	Central	Nyeri	1,800
59 OL JORO OROK	Central	Nyandarua	2,380
60 OLOITOKITOK	Rift Valley	Kajiado	1,850
61 PORT VICTORIA/BUNYALA	Western	Busia	1,200
62 RUIRU	Central	Kiambu	1,610
63 RUMURUTI	Rift Valley	Laikipia	1,860
64 SIGOR	Rift Valley	West Pokot	1,050
65 SOUTH KINANGOP	Central	Nyandarua	2,600
66 SUBUKIA	Rift Valley	Nakuru	2,100
67 TAVETA	Coast	Taita	770
68 THIKA	Central	Murang'a	1,460
69 VOI	Coast	Taita	560
70 WAJIR	North Eastern	Wajir	240
71 WAYU	Coast	Tana River	160
72 YATTA	Eastern	Machakos	1,220

Source : Ref E.15

Table E2.4 Crop Water Requirement (1/2) (Specific Crop)

Unit : mm

Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
Ahero		112	190	54	7			16	245	283	5		663
Ainabkoi		125	197										332
Aroher'S Post	81		217	257	322	133		100	136	317	264	240	1850
Bachua		133	82	241	262	221	62		192	328	295	110	1591
Baricho	130		167	4	172	255	228	66		225	301	236	1478
Busia		12	65	70						9	56	77	223
Chebloch		188	273	258	207	44	48		168	289	269	184	1532
Eldoret	33	26	185	67	106	43				1	171	153	655
Eqlator	122	266	221										502
Garissa	67		256	304	342	87		167	86	332	273	212	1820
Gede		167	55	193	46	23	6		13	273	319	87	954
Habasuein		133	189	325	503	349	93		347	429	322	133	2584
Hola	21		379	319	335	52		233	145	338	307	271	2021
Isiolo		187	263	259	371	132	100	159	348	338	190	170	2180
Kabondori		116	192	113	191	45	67	29	237	237	99	97	1105
Kapenguria	39	144	141	94						28	71	19	482
Kapsa3et		134	170	81									382
Kap'Dtir		100	106	219	303	225	71		185	335	332	140	1687
Kate;Ani	63	92	170	129	166	130	34	26	204	238	135	268	1274
Kedong	159	176	274	81	32	3	41	136	260	140	1	43	1026
Kericho		2	4										6
Kiambu		93	151		41	29	62	4	57	207	153	67	654
Kibos		103	202	123	150	61	48	6	146	297	258	175	1077
Kiiiakia			74										74
Kipkabus	137	226	290	14						63			564
Kisi,Iu	185		44	40	111	150	38	7		157	220	235	886
Kitale	60	177	224	187	15					53	28		629
Kitui	85	132		7	197	258	157		163	310	82	148	1213
Koru	37	4	85			80			52	162	153	145	518
Lamu		167	96	213	106	67	28		96	373	384	128	1362
Lamuraia	2	28	127	128	88		58	134	240	218	51	53	749
Lodar		167	107	292	399	276	70		291	400	360	137	2250
Lokichokio		235	280	282	357	88	133	88	309	349	329	224	2189
Lokitaung	0	100	185	263	374	298	855		292	381	386	167	2242
Machakos	54	88	171	72	125	126	43	30	229	234	129	177	1133
Magadi	89		274	297	323	113		167	113	389	394	320	2053
Makindu	96	167	0	118	222	238	145		164	301	199	173	1517
Malindi		167	83	239	41	55	16		55	299	361	103	1147
Mandera		133	119	253	350	286	85		243	301	314	145	2013
Maralal		90	194	151	234	96	46			175	220	99	980
Marcigat	364	99	167		173	262	239	127		155	233	358	1866
Marsabit	46	115	240	78	163	163	42	23	243	200	180	191	1243
Masara		35	149	94	101	32			172	262	215	141	873
Meru		26	133		65	99	22	24	232	144		8	639
Molo	1	138	150	58	21								330
Mombasa		133	105	141	118	119	41		64	266	321	90	1125
Moyale		174	292	143	147	42	127		228	226	244	174	1467
Muguga	114	66		24		36			107	184	194	201	686
Mwea		185	247	152	130	17		39	247	276	142	124	1198
Mwingi	100	167	24	88	234	245	135		181	299	145	214	1562
Nairobi Kabete		73	127	42	54	56	54	4	48	205	148	64	661
Nairobi South		99	151	42	111	80	79	8	90	255	215	109	917
Naivasha	83	161	185	146	89	83	19	40	161	235	86	8	1010
Nakuru		81	167	90	142	73	67			97	120	100	712
Nanyuki	7	81	159	74	141	403	94		31	125	112	85	694
Narok		21	80	36	115	89	84	15	63	228	235	86	841
Ngao	71		288	281	254	33	0	167	87	309	254	286	1554
Nyeri	0	86	168	57	47	68	16	9	63	202	119	40	686
Ol Joro Orok	77	213	189										442
Oloitokitok	122	43				140	49	18	72	201	70	112	636
Port Victoria/Bunyala		49	164	104	73	10			148	249	220	133	868
Ruiru	6	63	105			18	54	6	35	210	149		566
Rumuruti	5	108	204	155	227	138	93		57	206	202	134	1210
Sigor	0	120	237	119	156	33			59	105	219	183	867
South Kinangop	0	0	0	0	0	0	0	0	0	0	0	0	0
Subukia	14	39	194	70							19	31	324
Taveta	65	200	24	95	157	226	128		243	306	295	292	1694
Thika	127	272	253	57	83	21	16	115	215	296	155	16	1215
Voi	61		184	227	286	87		167	48	318	293	173	1547
Wajir	93		233	270	324	116		133	81	301	303	281	1780
Wayu	81		225	305	335	87		167	70	321	286	246	1815
Yatta	206		124	147	249	224	25	183	10	253	200	255	1484

Source : Ref.E.15

Table E2.4 Crop Water Requirement (2/2) (Green grass)

Station	Unit : mm												Annual
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Ahero	297	262	239	71	107	129	192	197	256	231	216	218	1513
Ainabkoi	211	191	190						29	85	6	136	678
Archer'S Post	276	280	293	219	258	275	289	307	326	292	208	248	2968
Bachua	307	275	276	214	204	233	231	241	264	278	235	263	2487
Baricho	299	287	281	207	182	200	242	265	277	274	244	181	2473
Busia	222	176	158	14			92	85	181	98	84	145	774
Chebloch	281	257	266	195	167	185	106	174	237	251	228	256	1940
Eldoret	262	239	247	107	78	56			107	194	203	238	1371
Eqlator	245	240	250	65	49	4				137	153	231	1101
Gariisa	286	259	278	250	278	235	262	263	279	292	211	226	2772
Gede	292	242	278	153	2	13	89	157	256	270	256	284	1896
Habasuein	348	342	355	293	412	360	368	385	392	374	258	290	3901
Hola	310	311	315	243	264	223	255	281	300	282	237	291	2745
Isiolo	305	295	273	192	308	303	321	348	359	295	151	240	2942
Kabondori	264	226	194	71	153	129	183	163	245	209	73	135	1638
Kapenguria	218	221	193	66		27			17	66	135	194	962
Kapsa3et	233	221	208	63					36	94	146	186	1005
Kap'Dtir	311	286	277	227	246	234	245	256	289	296	270	284	2827
Kate;Ani	258	219	179	92	149	164	166	177	242	244	74	193	1702
Kedong	219	189	220	117	80	123	132	164	220	239	196	208	1628
Kericho	170	169	62									50	403
Kiambu	284	243	190	12	13	62	129	141	246	221	116	184	1319
Kibos	273	237	204	88	101	170	219	194	236	261	218	221	1704
Kitiakia	111	128	72						25	23		27	294
Kipkabus	218	232	243	35	71	8	21	6	206	193	193	229	1268
Kisi,Iu	255	222	178	62	63	114	138	148	202	220	193	196	1436
Kitale	271	235	231	124	27	48		32	147	118	201	234	1270
Kitui	259	283	225	82	190	221	228	251	285	293	24	79	1946
Koru	188	188	172			27	51	76	127	128	137	181	942
Lamu	341	293	316	193	40	69	153	236	286	318	312	307	2436
Lamuria	187	157	138	131	211	178	208	180	247	161	91	133	1379
Lodar	312	281	299	254	323	290	297	306	333	340	290	313	3284
Lokichokio	304	295	270	218	266	250	262	253	308	307	282	307	2868
Lokitauog	349	337	344	239	304	306	315	324	356	336	315	330	3437
Machakos	234	225	184	41	98	155	191	197	265	243	73	122	1607
Magadi	344	321	330	238	258	276	309	303	344	349	318	335	3415
Makindu	275	276	253	182	196	204	217	226	284	283	134	125	2201
Malindi	322	292	303	199	6	43	124	182	288	289	290	310	2138
Mandera	324	308	333	221	283	298	301	316	326	255	257	305	3253
Maralal	230	233	226	145	168	146	112	123	224	193	162	219	1655
Mareigat	302	286	293	215	226	222	200	204	283	271	247	277	2484
Marsabit	253	244	214	34	131	196	213	224	252	194	111	149	1742
Masara	268	233	167	37	56	161	223	223	260	222	178	205	1579
Meru	97	187	192		14	127	156	229	225	132			1059
Molo	214	205	199	33	32	36	21		64	106	74	149	880
Mombasa	314	302	305	163	70	115	146	211	246	258	258	226	2078
Moyale	341	299	286	81	87	186	207	243	265	189	206	247	2218
Muguga	250	240	221	28		64	87	123	194	244	150	225	1344
Mwea	280	275	228	89	92	153	164	224	264	235	110	198	1839
Mwingi	284	276	255	138	228	210	205	268	278	281	84	159	2279
Nairobi Kabete	218	243	207	32	6	82	110	139	201	202	90	165	1344
Nairobi South	278	263	213	42	61	114	134	178	264	244	159	235	1689
Naivasha	238	216	205	107	116	126	177	168	206	198	166	208	1677
Nakuru	185	232	201	93	87	113	117	97	174	160	108	187	1349
Nanyuki	231	216	189	71	85	129	158	158	182	148	100	150	1382
Narok	198	159	167	61	90	123	140	176	211	218	190	184	1450
Ngao	299	283	320	225	196	177	235	264	291	300	225	300	2475
Nyeri	278	229	185	63		88	66	165	215	224	107	139	1387
Ol Joro Orok	175	191	209	80	66	45	7		105	115	92	144	917
Oloitokitok	159	97	47	66	116	149	123	152	200	256	75	67	1122
Port Victoria/Bur	234	227	175	106	43	145	208	204	211	208	183	198	1585
Ruiru	254	209	194			41	106	123	197	258	99	82	1156
Rumuruti	249	243	260	166	174	155	156	163	242	238	198	222	1974
Sigor	214	238	226	66	115	167	108	87	129	157	196	247	1437
South Kinangop	115	112	72							44		43	435
Subukia	190	227	217	85		22	7	20	93	50	89	193	895
Taveia	257	259	191	114	135	194	202	225	268	279	220	202	2062
Thika	283	280	208	40	114	132	133	151	242	227	116	185	1592
Voi	240	278	258	202	213	233	239	238	266	278	227	157	2394
Wajir	326	302	306	223	263	263	271	277	294	269	244	282	2983
Wayu	312	284	279	250	268	238	262	285	296	281	220	261	2829
Yatta	293	267	234	156	185	185	172	231	268	277	161	216	2095

Source : Ref.E.15



Table E2.6 Water Requirement of NIB Scheme

Unit : m3/sec

Scheme	Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Ahero	1GD	0.65	0	0	0	0.65	1.29	1.94	2.59	2.59	2.59	1.94	1.29
Bunyala	1EF	0.23	0	0	0	0.23	0.46	0.65	0.65	0.65	0.65	0.65	0.46
Perkera	2EE	0.8	0.6	0.5	0.6	0.5	0.6	0.8	0.8	0.8	0.8	0.8	0.7
Mwea	4DA	1.98	2.43	7.16	5.52	2.55	2.97	2.31	5.73	9.51	6.32	2.58	4.55

Source : NIB







Table E2.9 Present Irrigation Water Demand (1/3)

Basin	Unit: m <sup>3</sup> /sec											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1AA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1AB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1AC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1AD	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1AE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1AF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1AG	0.000	0.009	0.043	0.048	0.000	0.000	0.000	0.000	0.000	0.006	0.038	0.051
1AH	0.000	0.001	0.005	0.007	0.002	0.002	0.002	0.002	0.002	0.003	0.006	0.006
1BA	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037
1BB	0.000	0.000	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
1BC	0.001	0.001	0.001	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.001
1BD	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
1BE	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501
1BG	0.002	0.002	0.002	0.002	0.071	0.071	0.071	0.071	0.071	0.071	0.002	0.002
1BH	0.088	0.288	0.330	0.285	0.023	0.001	0.001	0.001	0.001	0.079	0.044	0.001
1CA	0.220	0.194	1.185	0.450	0.684	0.293	0.011	0.011	0.011	0.017	1.133	0.982
1CB	0.011	0.011	0.011	0.011	0.011	0.011	0.245	0.245	0.245	0.011	0.011	0.011
1CC	0.081	0.129	0.244	0.050	0.066	0.030	0.003	0.003	0.003	0.032	0.109	0.094
1CD	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091
1CE	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
1DA	0.000	0.000	0.000	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
1DB	0.001	0.001	0.001	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041
1DC	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1DD	0.003	0.004	0.005	0.005	0.004	0.003	0.003	0.003	0.005	0.007	0.006	0.005
1EA	0.000	0.000	0.000	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.000
1EB	0.001	0.001	0.001	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.001
1EC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1ED	0.000	0.000	0.000	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143
1EE	0.000	0.000	0.000	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
1EF	0.230	0.015	0.044	0.029	0.250	0.463	0.650	0.650	0.691	0.717	0.711	0.496
1EG	0.000	0.000	0.000	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
1FA	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1FB	0.000	0.000	0.000	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
1FC	0.000	0.000	0.000	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
1FD	0.001	0.001	1.389	1.389	1.389	1.389	1.389	1.389	1.389	1.389	1.389	1.389
1FE	0.000	0.000	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
1FF	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1FG	0.000	0.004	2.856	2.852	2.849	2.845	2.844	2.844	2.855	2.863	2.861	2.854
1GA	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1GB	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378
1GC	0.000	0.000	0.000	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.000	0.000
1GD	0.000	0.000	0.000	1.628	1.628	1.628	1.628	1.628	1.628	1.628	1.628	1.628
1GD1	0.064	0.030	0.046	0.014	0.044	0.083	0.124	0.170	0.227	0.235	0.125	0.083
1GD2	0.485	0.227	0.348	0.102	0.328	0.626	0.941	1.285	1.719	1.774	0.950	0.626
1GD3	0.451	0.211	0.323	0.095	0.305	0.582	0.875	1.195	1.599	1.650	0.884	0.582
1GE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1GF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1GG	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1HA	0.000	0.110	0.172	0.197	0.163	0.145	0.143	0.149	0.348	0.391	0.180	0.162
1HB	0.000	0.004	0.006	0.036	0.034	0.034	0.034	0.035	0.043	0.044	0.034	0.034
1HC	0.003	0.010	0.034	0.023	0.017	0.005	0.003	0.003	0.032	0.050	0.046	0.028
1HD	0.000	0.007	0.011	0.171	0.168	0.168	0.168	0.169	0.183	0.185	0.168	0.000
1HE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1HF	0.000	0.023	0.091	0.059	0.062	0.021	0.000	0.001	0.108	0.158	0.135	0.086
1HG	0.000	0.001	0.006	0.004	0.004	0.001	0.000	0.000	0.007	0.010	0.008	0.005
1JA	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000
1JB	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1JC	0.002	0.002	0.002	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.002	0.002
1JD	0.000	0.000	0.000	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
1JE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1JF	0.001	0.001	0.001	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
1JG	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1KA	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.001	0.000	0.001	0.000	0.000
1KB	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1KB1	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1KB2	0.000	0.002	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1KB3	0.000	0.004	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1KB4	0.000	0.001	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1KB5	0.000	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1KC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1LA1	0.000	0.000	0.000	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.000
1LA2	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
1LA3	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059
1LB1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1LB2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2AA	0.000	0.052	0.030	0.086	0.113	0.081	0.020	0.000	0.085	0.114	0.106	0.039
2AB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2BA	0.008	0.100	0.173	0.093	0.116	0.032	0.008	0.008	0.050	0.081	0.165	0.135
2BB	0.000	0.345	0.616	0.320	0.405	0.089	0.000	0.000	0.158	0.273	0.588	0.476
2BC	0.000	0.111	0.198	0.127	0.154	0.053	0.024	0.024	0.075	0.088	0.213	0.153
2BD	0.000	0.169	0.162	0.346	0.464	0.356	0.109	0.000	0.293	0.513	0.525	0.214
2CA	0.000	0.017	0.010	0.028	0.037	0.027	0.007	0.000	0.028	0.037	0.035	0.013

Table E2.9 Present Irrigation Water Demand (2/3)

Basin	Unit : m3/sec											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2CB	0.000	0.000	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
2CB1	0.000	0.003	0.004	0.004	0.003	0.001	0.001	0.000	0.003	0.004	0.004	0.003
2CB2	0.000	0.008	0.011	0.010	0.009	0.002	0.002	0.000	0.006	0.011	0.011	0.008
2CB3	0.000	0.114	0.153	0.143	0.115	0.025	0.025	0.000	0.092	0.154	0.155	0.105
2CC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2CC1	0.000	0.047	0.080	0.048	0.061	0.019	0.002	0.000	0.027	0.045	0.085	0.064
2CC2	0.000	0.004	0.007	0.005	0.006	0.002	0.000	0.000	0.003	0.004	0.008	0.006
2CC3	0.000	0.020	0.034	0.021	0.026	0.009	0.001	0.000	0.011	0.020	0.036	0.028
2CC4	0.000	0.415	0.706	0.422	0.540	0.171	0.022	0.000	0.236	0.404	0.750	0.564
2CC5	0.000	1.043	1.776	1.059	1.356	0.428	0.054	0.000	0.593	1.014	1.884	1.415
2D	0.008	0.012	0.020	0.006	0.015	0.017	0.007	0.004	0.019	0.017	0.018	0.019
2EA	0.000	0.000	0.000	0.113	0.113	0.113	0.113	0.113	0.113	0.000	0.000	0.000
2EB	0.000	0.000	0.000	0.075	0.075	0.075	0.075	0.075	0.075	0.000	0.000	0.000
2EB1	0.080	0.027	0.050	0.005	0.037	0.059	0.052	0.028	0.000	0.034	0.053	0.080
2EB2	0.030	0.010	0.019	0.002	0.014	0.022	0.020	0.010	0.000	0.013	0.021	0.030
2EB3	0.023	0.008	0.015	0.002	0.011	0.017	0.015	0.008	0.000	0.010	0.015	0.024
2EC	0.001	0.001	0.001	0.001	0.044	0.001	0.044	0.044	0.001	0.001	0.001	0.001
2ED	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
2EE	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
2EE1	0.693	0.335	0.336	0.254	0.340	0.455	0.515	0.432	0.338	0.453	0.517	0.562
2EE3	0.944	0.457	0.457	0.346	0.463	0.620	0.703	0.589	0.461	0.618	0.705	0.765
2EF	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
2EG1	0.000	0.000	0.000	0.000	0.039	0.000	0.039	0.039	0.000	0.000	0.000	0.000
2EG2	0.000	0.000	0.000	0.124	0.124	0.124	0.124	0.124	0.124	0.000	0.000	0.000
2EG21	0.135	0.041	0.062	0.000	0.064	0.100	0.088	0.047	0.000	0.057	0.089	0.132
2EG22	0.249	0.075	0.114	0.000	0.118	0.185	0.163	0.087	0.000	0.106	0.165	0.245
2EH	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2EH1	0.014	0.004	0.006	0.000	0.006	0.010	0.009	0.005	0.000	0.006	0.009	0.013
2EH2	0.268	0.081	0.123	0.000	0.127	0.199	0.176	0.093	0.000	0.114	0.177	0.263
2EJ	0.065	0.020	0.030	0.000	0.031	0.049	0.043	0.023	0.000	0.028	0.043	0.064
2EK	0.061	0.018	0.028	0.005	0.034	0.050	0.045	0.026	0.005	0.026	0.040	0.060
2FA	0.000	0.000	0.000	0.000	0.057	0.000	0.057	0.057	0.000	0.000	0.000	0.000
2FB	0.000	0.000	0.000	0.007	0.007	0.000	0.007	0.007	0.000	0.000	0.000	0.000
2FC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2GA	0.000	0.000	0.000	0.000	0.056	0.000	0.056	0.056	0.000	0.000	0.000	0.000
2GB	0.000	0.000	0.000	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222
2GC	0.000	0.000	0.000	0.000	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.000
2GD	0.000	0.000	0.000	0.000	0.687	0.687	0.687	0.687	0.687	0.000	0.000	0.000
2H	0.005	0.002	0.219	0.219	0.219	0.005	0.002	0.002	0.003	0.007	0.221	0.222
2J	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2K	0.000	0.013	0.046	0.022	0.067	0.053	0.049	0.009	0.038	0.132	0.141	0.050
2KA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2KB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2KC	0.030	0.000	0.092	0.103	0.109	0.039	0.000	0.056	0.039	0.131	0.137	0.108
3AA	0.201	0.201	0.201	0.201	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.201
3AA11	0.000	0.004	0.005	0.001	0.004	0.003	0.003	0.000	0.003	0.009	0.007	0.004
3AA12	0.000	0.027	0.037	0.011	0.027	0.020	0.019	0.002	0.023	0.063	0.055	0.027
3AA13	0.000	0.008	0.011	0.003	0.008	0.006	0.006	0.001	0.007	0.018	0.016	0.008
3AA2	0.000	0.015	0.021	0.006	0.015	0.011	0.011	0.001	0.013	0.035	0.031	0.015
3AB	0.011	0.011	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011
3AC	0.060	0.060	0.060	0.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
3BA	0.008	0.008	0.008	3.756	3.756	3.756	3.756	0.008	0.008	0.008	3.756	3.756
3BA1	0.001	0.058	0.079	0.023	0.058	0.043	0.041	0.004	0.050	0.135	0.118	0.059
3BA2	0.011	0.535	0.727	0.211	0.535	0.401	0.380	0.039	0.458	1.245	1.089	0.544
3BB	0.000	0.001	0.001	0.000	2.409	2.409	0.001	0.000	0.001	0.003	0.002	0.000
3BC	0.000	0.001	0.002	0.873	0.873	0.873	0.874	0.000	0.001	0.004	0.876	0.873
3BD	0.540	0.540	0.540	0.540	0.540	0.540	0.540	0.540	0.540	0.540	0.540	0.540
3CB	0.070	0.160	0.135	0.593	0.605	0.573	0.570	0.064	0.119	0.158	0.645	0.012
3DA	0.000	0.000	0.000	0.325	0.325	0.325	0.000	0.000	0.000	0.000	0.325	0.000
3DB	0.000	0.000	0.000	0.048	0.048	0.048	0.000	0.000	0.000	0.000	0.048	0.000
3EA	0.000	0.000	0.000	0.359	0.359	0.359	0.000	0.000	0.000	0.000	0.359	0.359
3EB	0.000	0.000	0.000	0.342	0.342	0.342	0.000	0.000	0.000	0.000	0.342	0.342
3EC	0.129	0.209	0.349	0.305	0.372	0.307	0.070	0.053	0.433	0.489	0.317	0.581
3ED	0.000	0.000	0.000	0.007	0.007	0.007	0.000	0.000	0.000	0.000	0.007	0.007
3FA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3FA1	0.024	0.046	0.000	0.030	0.055	0.061	0.036	0.000	0.042	0.074	0.051	0.043
3FA2	0.010	0.019	0.000	0.012	0.022	0.025	0.015	0.000	0.017	0.030	0.021	0.017
3FA3	0.003	0.005	0.000	0.003	0.006	0.006	0.004	0.000	0.004	0.008	0.005	0.005
3FB	0.179	0.345	0.000	0.228	0.414	0.459	0.271	0.000	0.316	0.562	0.384	0.323
3G	0.736	0.736	0.736	0.736	0.736	0.736	0.736	0.736	0.736	0.736	0.736	0.736
3G1	0.531	0.207	0.000	0.000	0.000	0.629	0.213	0.078	0.324	0.874	0.315	0.487
3G2	0.043	0.017	0.000	0.000	0.000	0.051	0.017	0.006	0.026	0.071	0.026	0.040
3G3	0.278	0.108	0.000	0.000	0.000	0.329	0.112	0.041	0.169	0.458	0.165	0.255
3G4	0.027	0.011	0.000	0.000	0.000	0.032	0.011	0.004	0.017	0.045	0.016	0.025
3HA	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
3HB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3HC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3HD	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3HD2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3J	0.000	0.000	1.264	1.264	1.264	0.000	0.000	0.000	0.000	0.000	1.264	1.264
3K	0.001	0.015	0.011	0.162	0.159	0.013	0.005	0.001	0.154	0.174	0.180	0.157

Table E2.9 Present Irrigation Water Demand (3/3)

Unit : m3/sec

Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3LA	0.000	0.000	1.507	1.507	1.507	0.000	0.000	0.000	0.000	0.000	1.507	1.507
3LB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3MA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3MB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3MC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3MD1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3MD2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3N	0.009	0.004	0.000	0.000	0.000	0.011	0.004	0.001	0.006	0.015	0.005	0.008
4AA	0.649	0.062	0.109	0.689	0.699	0.770	0.675	0.651	0.682	0.762	0.726	0.683
4AB	0.010	0.010	0.010	0.207	0.207	0.207	0.207	0.207	0.207	0.207	0.207	0.207
4AC	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
4AD	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.000	0.019	0.019	0.019	0.019
4BA	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099
4BB	0.872	0.918	0.954	0.901	0.895	0.906	0.880	0.876	0.904	0.970	0.932	0.891
4BC	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724
4BD	0.580	0.771	0.811	0.727	0.701	0.596	0.580	0.616	0.818	0.838	0.717	0.696
4BE	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
4BF	0.175	0.334	0.367	0.297	0.276	0.189	0.175	0.205	0.373	0.389	0.289	0.271
4BG	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215
4CA	0.866	0.866	0.003	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
4CB	0.888	0.888	0.000	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888
4CC	2.644	2.644	0.002	2.644	2.644	2.644	2.644	2.644	2.644	2.644	2.644	2.644
4DA	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163
4DA1	0.242	0.600	1.748	1.345	0.625	0.720	0.559	1.389	2.316	1.545	0.633	1.108
4DA2	0.758	1.879	5.472	4.213	1.957	2.254	1.751	4.350	7.256	4.841	1.983	3.472
4DB	0.062	0.062	0.000	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062
4DC	0.082	0.061	0.074	0.129	0.121	0.087	0.082	0.094	0.158	0.164	0.126	0.119
4DD	1.790	1.790	1.790	1.790	1.790	1.790	1.790	1.790	1.790	1.790	1.790	1.790
4DE	0.009	0.009	0.000	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
4EA	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294
4EA1	0.000	0.093	0.428	0.000	0.209	0.329	0.071	0.077	0.772	0.463	0.000	0.026
4EA2	0.000	0.015	0.070	0.000	0.034	0.053	0.011	0.013	0.125	0.075	0.000	0.004
4EB	0.231	0.246	0.254	0.245	0.254	0.237	0.239	0.234	0.260	0.259	0.243	0.243
4EC	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
4ED	0.001	0.000	0.000	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.001
4FA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4FA1	0.000	0.093	0.186	0.094	0.176	0.120	0.051	0.073	0.295	0.221	0.069	0.066
4FA2	0.000	0.184	0.369	0.186	0.349	0.238	0.100	0.144	0.586	0.437	0.136	0.129
4FB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4GA	0.031	0.419	0.672	0.481	0.744	0.411	0.230	0.331	0.986	0.809	0.361	0.331
4GB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4GC	0.112	0.001	0.427	0.520	0.562	0.146	0.001	0.278	0.148	0.550	0.468	0.357
4GD	0.197	0.000	3.555	3.092	3.142	0.504	0.000	2.185	1.405	3.170	2.975	2.542
4GE	0.068	0.000	1.235	1.074	1.092	0.175	0.000	0.759	0.488	1.102	1.034	0.883
4GF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4GG	0.225	0.000	0.912	0.923	0.811	0.111	0.000	0.530	0.285	0.982	0.834	0.904
4HA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4HB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4HC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4JA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4JB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4KA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4KB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5AA	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.074	0.006	0.006	0.006
5AB	0.003	0.060	0.102	0.080	0.114	0.071	0.047	0.000	0.029	0.103	0.104	0.067
5AC	0.009	0.223	0.381	0.299	0.424	0.266	0.174	0.000	0.110	0.385	0.390	0.250
5AD	0.000	0.001	0.002	0.002	0.003	0.002	0.001	0.000	0.001	0.002	0.002	0.002
5BA	0.627	0.627	0.627	0.627	0.627	0.627	0.627	0.627	0.627	0.627	0.627	0.627
5BB	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
5BC	1.126	1.286	1.425	1.268	1.387	1.906	1.296	1.123	1.192	1.366	1.337	1.279
5BD	0.000	0.000	0.000	0.016	0.016	0.000	0.000	0.000	0.000	0.000	0.016	0.016
5BE	0.010	0.053	0.089	0.591	0.625	0.224	0.055	0.006	0.023	0.071	0.611	0.595
5CA	0.000	0.000	0.000	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.001	0.000
5CB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5CC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5DA	0.015	0.015	0.015	0.000	0.000	0.015	0.015	0.015	0.015	0.000	0.000	0.000
5DB	0.009	0.009	0.009	0.000	0.000	0.009	0.009	0.009	0.009	0.000	0.000	0.009
5DC	0.009	0.009	0.009	0.000	0.000	0.009	0.009	0.009	0.009	0.009	0.000	0.000
5DD	0.013	0.013	0.013	0.000	0.000	0.013	0.013	0.013	0.013	0.013	0.000	0.000
5EA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5EB	0.000	0.000	0.003	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.000
5EC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5ED	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5FA	0.000	0.230	0.296	0.510	0.762	0.536	0.143	0.012	0.550	0.651	0.501	0.207
5FB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5GA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5GB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5H	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5J	0.000	0.007	0.014	0.012	0.017	0.007	0.003	0.000	0.000	0.013	0.017	0.007
Total	23.705	26.937	45.239	53.096	57.178	48.220	39.735	40.430	50.440	54.148	57.324	54.453

Table E2.10 Monthly Water Requirement by Proposed and Existing Large Scale Irrigation Schemes

Unit : m3/sec

	Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Remarks
Aror	2CB	0.28	0.27	0.28	0.57	1.1	1.13	0.97	1.04	1.33	0.8	0.21	0.25	Plan
Kano Plain	1JG	7.1	17.4	18.5	17.1	19.2	14.7	7.9	15	26.3	29.1	23.5	11.2	Plan
Kanzalu	3DA	4.26	4.74	1.91	1.82	2.8	2.88	2.51	2.92	4.22	4.38	1.66	3.16	Plan
Kibwezi extension	3FB	13.1	14.9	13.5	8.18	11.5	12.1	11.9	13.3	16.6	15.8	6.86	7.13	Plan
Kimira	1HD	1.74	2.24	2.24	3.2	1.1	1.56	0.56	0.2	0.62	1.54	2.12	2.38	Plan
Kunati	4FA	0.34	0.44	0.56	0.39	0.4	0.34	0.26	0.14	0.2	0.41	0.29	0.39	Plan
Lower Ewaso Ng'iro	2KC	2.76	0	8.48	9.49	9.97	3.63	0	5.15	3.63	12	12.6	9.89	Plan
Lower Kuja	1KB		0.72	1.24	0.89	0.86	0.91	0.19	0.48	1.03	1.14	0.78	0.44	Plan
Bunyala Extension	1EF	2.83	2.72	3.77	1.89	1.68	5.66	11.3	13.7	18.8	11.1	7.76	10.5	Plan
Lower Rurupigazi	4DC	0.58	0.76	0.95	0.67	0.68	0.58	0.45	0.23	0.34	0.7	0.5	0.67	Plan
Mwea extension	4BC	0.99	1.2	3.32	2.59	1.21	1.41	0.92	2.68	4.43	2.88	1.08	2.14	Plan
Sabaki Extension	3HD	3.45	3.9	2.97	1.98	1.23	1.53	1.83	2.4	2.55	2.76	2.19	2.55	Plan
Taita Taveta	3J	0	0	1.51	1.17	1.89	1.59	1.1	0.91	2	2.61	1.51	0	Plan
Thanantuu	4FA	0.81	1.06	1.34	0.93	0.96	0.81	0.63	0.33	0.48	0.98	0.71	0.93	Plan
Tnan Delta	4GF	23.6	5.88		12	16.7	21	21.9	18.6	9.72	20.2	22.3	24.1	Plan
Turkwell	2BD	0	0.25	0.24	0.51	0.68	0.52	0.16	0	0.43	0.75	0.77	0.31	Plan
Upper Nzoia	1BE	3.16	2.6	2.9	2.15	0.72	1.68	0.6		1.88	3.33	3.27	3.9	Plan
Yala Swamp	1FG	1.61	6.86	8.75	6.86	4.41	1.89	1.61	6.44	8.47	8.89	6.58	3.22	Plan
Ahero	1GD	0.65	0	0	0	0.65	1.29	1.94	2.59	2.59	2.59	1.94	1.29	Existing
Bunyala	1EF	0.23	0	0	0	0.23	0.46	0.65	0.65	0.65	0.65	0.65	0.46	Existing
Perkera	2EE	0.8	0.6	0.5	0.6	0.5	0.6	0.8	0.8	0.8	0.8	0.8	0.7	Existing
Mwea	4DA	1.98	2.43	7.16	5.52	2.55	2.97	2.31	5.73	9.51	6.32	2.58	4.55	Existing

Table E2.11 Estimated Annual Water Permit by Basin

Condition	Unit	Basin 1	Basin 2	Basin 3	Basin 4	Basin 5	Total
Flood	m3/sec	29.19	16.60	39.23	58.34	29.59	172.95
Normal	litre/sec	1.90	0.34	1.24	1.67	4.37	9.53

Table E2.12 Future Irrigation Water Demand (1/3)

Unit : m3/sec

Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1AA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1AB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1AC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1AD	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1AE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1AF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1AG	0.000	0.013	0.063	0.070	0.000	0.000	0.000	0.000	0.000	0.009	0.056	0.074
1AH	0.000	0.001	0.005	0.007	0.002	0.002	0.002	0.002	0.002	0.003	0.006	0.006
1BA	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037
1BB	0.000	0.000	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
1BC	0.001	0.001	0.001	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.001
1BD	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
1BE	3.661	3.101	3.401	2.651	1.221	2.181	1.101	0.501	2.381	3.831	3.771	4.401
1BG	0.002	0.002	0.002	0.002	0.071	0.071	0.071	0.071	0.071	0.071	0.002	0.002
1BH	0.088	0.288	0.330	0.285	0.023	0.001	0.001	0.001	0.001	0.079	0.044	0.001
1CA	0.251	0.221	1.358	0.515	0.783	0.334	0.011	0.011	0.011	0.018	1.297	1.125
1CB	0.011	0.011	0.011	0.011	0.011	0.011	0.245	0.245	0.245	0.011	0.011	0.011
1CC	0.091	0.138	0.302	0.072	0.100	0.044	0.003	0.003	0.003	0.003	0.165	0.143
1CD	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091
1CE	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
1DA	0.000	0.000	0.000	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
1DB	0.001	0.001	0.001	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041
1DC	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1DD	0.003	0.004	0.005	0.005	0.004	0.003	0.003	0.003	0.003	0.005	0.007	0.006
1EA	0.000	0.000	0.000	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.000
1EB	0.001	0.027	0.067	0.121	0.113	0.086	0.082	0.079	0.137	0.177	0.168	0.056
1EC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1ED	0.000	0.000	0.000	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143
1EE	0.000	0.000	0.000	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
1EF	3.060	2.819	4.072	2.101	2.023	6.135	11.968	14.379	19.652	12.159	8.801	11.198
1EG	0.000	0.000	0.000	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
1FA	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1FB	0.000	0.000	0.000	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
1FC	0.000	0.000	0.000	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
1FD	0.001	0.001	1.389	1.389	1.389	1.389	1.389	1.389	1.389	1.389	1.389	1.389
1FE	0.000	0.000	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
1FF	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1FG	1.610	6.864	11.606	9.712	7.259	4.735	4.454	9.284	11.325	11.753	9.441	6.074
1GA	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1GB	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378
1GC	0.000	0.000	0.000	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.000	0.000
1GD	0.000	0.468	0.716	1.838	1.654	1.628	1.628	1.688	2.583	2.695	1.647	1.628
1GD1	0.042	0.000	0.000	0.000	0.042	0.083	0.124	0.166	0.166	0.166	0.124	0.083
1GD2	0.315	0.000	0.000	0.000	0.315	0.626	0.941	1.256	1.256	1.256	0.941	0.626
1GD3	0.293	0.000	0.000	0.000	0.293	0.582	0.875	1.168	1.168	1.168	0.875	0.582
1GE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1GF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1GG	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1HA	0.000	0.110	0.172	0.197	0.163	0.145	0.143	0.149	0.348	0.391	0.180	0.162
1HB	0.000	0.004	0.006	0.036	0.034	0.034	0.034	0.035	0.043	0.044	0.034	0.034
1HC	0.003	0.010	0.034	0.023	0.017	0.005	0.003	0.003	0.032	0.050	0.046	0.028
1HD	1.740	2.247	2.251	3.371	1.268	1.728	0.728	0.369	0.803	1.725	2.288	2.380
1HE	0.000	0.093	0.142	0.042	0.005	0.000	0.000	0.012	0.189	0.211	0.004	0.000
1HF	0.000	0.023	0.091	0.059	0.062	0.021	0.000	0.001	0.108	0.158	0.135	0.086
1HG	0.000	0.001	0.006	0.004	0.004	0.001	0.000	0.000	0.007	0.010	0.008	0.005
1JA	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000
1JB	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1JC	0.002	0.002	0.002	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.002	0.002
1JD	0.000	0.000	0.000	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
1JE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1JF	0.001	0.001	0.001	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
1JG	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1KA	4.004	9.814	10.434	9.644	10.829	8.291	4.456	8.460	14.833	16.412	13.254	6.317
1KB	3.096	7.586	8.066	7.456	8.371	6.409	3.444	6.540	11.467	12.688	10.246	4.883
1KB1	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.001	0.000	0.001	0.000	0.000
1KB2	0.000	0.009	0.016	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1KB3	0.000	0.024	0.042	0.030	0.029	0.031	0.006	0.016	0.035	0.039	0.027	0.015
1KB4	0.000	0.135	0.232	0.166	0.161	0.170	0.036	0.090	0.193	0.213	0.146	0.082
1KB5	0.000	0.354	0.610	0.438	0.423	0.448	0.093	0.236	0.507	0.561	0.384	0.216
1KC	0.000	0.126	0.217	0.156	0.151	0.159	0.033	0.084	0.180	0.200	0.137	0.077
1LA1	0.000	0.081	0.139	0.100	0.096	0.102	0.021	0.054	0.115	0.128	0.087	0.049
1LA2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1LA3	0.000	0.000	0.000	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.000
1LB1	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
1LB2	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059
2AA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2AB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2BA	0.000	0.052	0.030	0.086	0.113	0.081	0.020	0.000	0.085	0.114	0.106	0.039
2BB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2BC	0.008	0.100	0.173	0.093	0.116	0.032	0.008	0.008	0.050	0.081	0.165	0.135
2BD	0.000	0.345	0.616	0.320	0.405	0.089	0.000	0.000	0.158	0.273	0.588	0.476
2CA	0.000	0.111	0.198	0.127	0.154	0.053	0.024	0.024	0.075	0.088	0.213	0.153

Table E2.12 Future Irrigation Water Demand (2/3)

Unit : m3/sec

Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2CB	0.000	0.415	0.402	0.856	1.142	0.878	0.271	0.000	0.725	1.263	1.293	0.526
2CB1	0.000	0.017	0.010	0.028	0.037	0.027	0.007	0.000	0.028	0.037	0.035	0.013
2CB2	0.000	0.125	0.169	0.159	0.127	0.028	0.028	0.001	0.102	0.170	0.171	0.114
2CB3	0.008	0.008	0.008	0.016	0.031	0.032	0.027	0.029	0.037	0.022	0.006	0.007
2CC	0.019	0.018	0.019	0.038	0.074	0.076	0.065	0.070	0.089	0.054	0.014	0.017
2CC1	0.253	0.244	0.253	0.516	0.996	1.023	0.878	0.941	1.204	0.724	0.190	0.226
2CC2	0.000	1.531	2.607	1.557	1.993	0.628	0.079	0.000	0.871	1.488	2.766	2.077
2CC3	0.008	0.012	0.020	0.006	0.015	0.017	0.007	0.004	0.019	0.017	0.018	0.019
2CC4	0.000	0.000	0.000	0.113	0.113	0.113	0.113	0.113	0.113	0.000	0.000	0.000
2CC5	0.135	0.045	0.084	0.084	0.138	0.174	0.162	0.121	0.075	0.057	0.090	0.135
2D	0.001	0.001	0.001	0.001	0.044	0.001	0.044	0.044	0.001	0.001	0.001	0.001
2EA	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
2EB	0.639	0.192	0.293	0.001	0.305	0.476	0.420	0.224	0.001	0.272	0.422	0.628
2EB1	0.338	0.254	0.212	0.254	0.212	0.254	0.338	0.338	0.338	0.338	0.338	0.296
2EB2	0.461	0.346	0.288	0.346	0.288	0.346	0.461	0.461	0.461	0.461	0.461	0.403
2EB3	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
2EC	0.000	0.000	0.000	0.000	0.039	0.000	0.039	0.039	0.000	0.000	0.000	0.000
2ED	0.383	0.115	0.176	0.124	0.306	0.409	0.376	0.258	0.124	0.163	0.253	0.377
2EE	0.323	0.097	0.148	0.000	0.154	0.241	0.212	0.113	0.000	0.138	0.214	0.318
2EE1	0.065	0.020	0.030	0.000	0.031	0.049	0.043	0.023	0.000	0.028	0.043	0.064
2EE3	0.061	0.018	0.028	0.005	0.034	0.050	0.045	0.026	0.005	0.026	0.040	0.060
2EF	0.000	0.000	0.000	0.000	0.057	0.000	0.057	0.057	0.000	0.000	0.000	0.000
2EG1	0.000	0.000	0.000	0.007	0.007	0.000	0.007	0.007	0.000	0.000	0.000	0.000
2EG2	0.001	0.114	0.112	0.045	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2EG21	0.000	0.000	0.000	0.000	0.056	0.000	0.056	0.056	0.000	0.000	0.000	0.000
2EG22	0.000	0.000	0.000	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222
2EH	0.000	0.000	0.000	0.000	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.000
2EH1	0.000	0.000	0.000	0.000	0.687	0.687	0.687	0.687	0.687	0.000	0.000	0.000
2EH2	0.005	0.002	0.219	0.219	0.219	0.005	0.002	0.002	0.003	0.007	0.221	0.222
2EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2EK	0.000	0.013	0.046	0.022	0.067	0.053	0.049	0.009	0.038	0.132	0.141	0.050
2FA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2FB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2FC	2.790	0.000	8.572	9.593	10.079	3.669	0.000	5.206	3.669	12.151	12.717	9.998
2GA	0.201	0.254	0.274	0.222	0.054	0.040	0.038	0.004	0.045	0.124	0.108	0.254
2GB	0.011	0.011	0.011	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011
2GC	0.060	0.060	0.060	0.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
2GD	0.020	0.601	0.814	3.991	4.349	4.201	4.178	0.051	0.516	1.389	4.963	4.359
2H	0.000	0.001	0.001	0.000	2.409	2.409	0.001	0.000	0.001	0.003	0.002	0.000
2J	0.024	0.057	0.049	0.884	0.888	0.877	0.877	0.021	0.042	0.059	0.906	0.876
2K	0.540	0.544	0.546	0.540	0.540	0.541	0.543	0.540	0.542	0.552	0.549	0.540
2KA	0.094	0.217	0.183	0.604	0.621	0.577	0.573	0.085	0.161	0.213	0.675	0.015
2KB	4.260	4.740	1.910	2.145	3.125	3.205	2.510	2.920	0.400	4.380	1.985	3.160
2KC	0.000	0.000	0.000	0.048	0.048	0.048	0.000	0.000	0.000	0.000	0.048	0.000
3AA	0.000	0.000	0.000	0.359	0.359	0.359	0.000	0.000	0.000	0.000	0.359	0.359
3AA11	0.000	0.000	0.000	0.342	0.342	0.342	0.000	0.000	0.000	0.000	0.342	0.342
3AA12	0.129	0.209	0.349	0.305	0.372	0.307	0.070	0.053	0.433	0.489	0.317	0.581
3AA13	0.000	0.000	0.000	0.007	0.007	0.007	0.000	0.000	0.000	0.000	0.007	0.007
3AA2	0.036	0.069	0.000	0.046	0.083	0.092	0.054	0.000	0.063	0.112	0.077	0.065
3AB	13.367	15.403	13.597	8.674	12.274	12.850	12.259	13.455	17.110	16.864	7.623	7.711
3AC	1.615	1.079	0.736	0.736	0.736	1.778	1.089	0.866	1.272	2.184	1.257	1.543
3BA	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
3BA1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3BA2	0.049	0.000	0.062	0.002	0.064	0.098	0.085	0.025	0.000	0.084	0.116	0.088
3BB	3.450	3.900	2.970	1.980	1.230	1.530	1.830	2.400	2.550	2.760	2.190	2.550
3BC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3BD	0.291	0.992	2.884	2.876	3.857	2.634	1.669	0.907	3.128	3.979	4.142	2.572
3CB	0.001	0.308	0.220	0.452	0.394	0.258	0.087	0.001	0.286	0.703	0.840	0.336
3DA	0.000	0.000	1.507	1.507	1.507	0.000	0.000	0.000	0.000	0.000	1.507	1.507
3DB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3EA	0.046	0.000	0.137	0.175	0.214	0.067	0.000	0.125	0.037	0.237	0.226	0.129
3EB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3EC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3ED	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3FA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3FA1	0.009	0.004	0.000	0.000	0.000	0.011	0.004	0.001	0.006	0.015	0.005	0.008
3FA2	0.649	0.062	0.109	0.689	0.699	0.770	0.675	0.651	0.682	0.762	0.726	0.683
3FA3	0.010	0.010	0.010	0.207	0.207	0.207	0.207	0.207	0.207	0.207	0.207	0.207
3FB	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
3G	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.000	0.019	0.019	0.019	0.019
3G1	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099
3G2	0.872	0.918	0.954	0.901	0.895	0.906	0.880	0.876	0.904	0.970	0.932	0.891
3G3	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724
3G4	0.580	0.771	0.811	0.727	0.701	0.596	0.580	0.616	0.818	0.838	0.717	0.696
3HA	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
3HB	0.175	0.334	0.367	0.297	0.276	0.189	0.175	0.205	0.373	0.389	0.289	0.271
3HC	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215
3HD	0.866	0.866	0.003	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
3HD2	0.888	0.888	0.000	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888	0.888
3J	2.691	2.756	0.096	2.666	2.675	2.652	2.650	2.687	2.727	2.755	2.704	2.650
3K	0.163	0.618	0.712	0.512	0.452	0.202	0.163	0.250	0.730	0.776	0.489	0.438
3LA	0.719	0.878	2.536	1.963	0.910	1.060	0.782	2.035	3.373	2.226	0.886	1.619

Table E2.12 Future Irrigation Water Demand (3/3)

Unit : m<sup>3</sup>/sec

Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3LB	2.251	2.752	7.944	6.147	2.850	3.320	2.448	6.375	10.567	6.974	2.774	5.071
3MA	0.062	0.062	0.000	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062
3MB	0.658	0.817	1.028	0.795	0.805	0.663	0.532	0.328	0.500	0.866	0.630	0.785
3MC	1.790	1.934	2.005	1.921	2.004	1.842	1.865	1.822	2.064	2.055	1.905	1.899
3MD1	0.009	0.009	0.000	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
3MD2	0.294	0.416	0.859	0.294	0.570	0.728	0.387	0.396	1.312	0.905	0.294	0.328
3N	0.231	0.337	0.525	0.289	0.422	0.407	0.297	0.281	0.710	0.563	0.281	0.291
4AA	0.050	0.242	0.337	0.224	0.335	0.119	0.150	0.093	0.416	0.404	0.203	0.195
4AB	0.001	0.000	0.000	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.001
4AC	0.000	0.341	0.853	0.280	0.670	0.588	0.201	0.270	1.418	0.979	0.205	0.213
4AD	0.383	0.502	0.634	0.443	0.454	0.383	0.299	0.155	0.227	0.466	0.335	0.443
4BA	0.760	0.997	1.258	0.878	0.902	0.760	0.594	0.309	0.451	0.926	0.665	0.878
4BB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4BC	0.031	0.419	0.672	0.481	0.744	0.411	0.230	0.331	0.986	0.809	0.361	0.331
4BD	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4BE	0.112	0.001	0.427	0.520	0.562	0.146	0.001	0.278	0.148	0.550	0.468	0.357
4BF	0.197	0.000	3.555	3.092	3.142	0.504	0.000	2.185	1.405	3.170	2.975	2.542
4BG	0.068	0.000	1.235	1.074	1.092	0.175	0.000	0.759	0.488	1.102	1.034	0.883
4CA	23.640	5.880	0.000	12.000	16.680	21.000	21.930	18.600	9.720	20.160	22.320	24.120
4CB	0.236	0.000	0.955	0.967	0.849	0.116	0.000	0.555	0.299	1.028	0.873	0.946
4CC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4DA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4DA1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4DA2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4DB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4DC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4DD	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4DE	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.074	0.006	0.006	0.006
4EA	0.003	0.060	0.102	0.080	0.114	0.071	0.047	0.000	0.029	0.103	0.104	0.067
4EA1	0.009	0.223	0.381	0.299	0.424	0.266	0.174	0.000	0.110	0.385	0.390	0.250
4EA2	0.000	0.001	0.002	0.002	0.003	0.002	0.001	0.000	0.001	0.002	0.002	0.002
4EB	0.627	0.627	0.627	0.627	0.627	0.627	0.627	0.627	0.627	0.627	0.627	0.627
4EC	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161	0.161
4ED	1.126	1.286	1.425	1.268	1.387	1.906	1.296	1.123	1.192	1.366	1.337	1.279
4FA	0.000	0.000	0.000	0.016	0.016	0.000	0.000	0.000	0.000	0.000	0.016	0.016
4FA1	0.010	0.053	0.089	0.591	0.625	0.224	0.055	0.006	0.023	0.071	0.611	0.595
4FA2	0.000	0.000	0.000	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.001	0.000
4FB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4GA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4GB	0.015	0.015	0.015	0.000	0.000	0.015	0.015	0.015	0.015	0.000	0.000	0.000
4GC	0.009	0.009	0.009	0.000	0.000	0.009	0.009	0.009	0.009	0.009	0.000	0.009
4GD	0.009	0.009	0.009	0.000	0.000	0.009	0.009	0.009	0.009	0.009	0.000	0.000
4GE	0.013	0.013	0.013	0.000	0.000	0.013	0.013	0.013	0.013	0.013	0.000	0.000
4GF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4GG	0.000	0.000	0.003	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.000
4HA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4HB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4HC	0.000	0.230	0.296	0.510	0.762	0.536	0.143	0.012	0.550	0.651	0.501	0.207
4JA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4JB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4KA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4KB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5AA	0.000	0.007	0.014	0.012	0.017	0.007	0.003	0.000	0.000	0.013	0.017	0.007
5AB	0.003	0.060	0.102	0.080	0.114	0.071	0.047	0.000	0.029	0.103	0.104	0.067
5AC	0.009	0.223	0.381	0.299	0.424	0.266	0.174	0.000	0.110	0.385	0.390	0.250
5AD	0.000	0.001	0.002	0.002	0.003	0.002	0.001	0.000	0.001	0.002	0.002	0.002
5BA	0.627	1.254	1.254	1.254	1.254	1.254	1.254	1.254	1.254	1.254	1.254	1.254
5BB	0.161	0.321	0.321	0.321	0.321	0.321	0.321	0.321	0.321	0.321	0.321	0.321
5BC	1.126	2.400	2.539	2.382	2.501	3.020	2.410	2.237	2.306	2.480	2.451	2.393
5BD	0.000	0.000	0.000	0.033	0.033	0.000	0.000	0.000	0.000	0.000	0.033	0.033
5BE	0.010	0.053	0.089	1.142	1.176	0.224	0.055	0.006	0.023	0.071	1.162	1.146
5CA	0.000	0.000	0.000	0.002	0.002	0.000	0.002	0.002	0.000	0.000	0.002	0.000
5CB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5CC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5DA	0.015	0.015	0.015	0.000	0.000	0.015	0.015	0.015	0.015	0.000	0.000	0.000
5DB	0.009	0.009	0.009	0.000	0.000	0.009	0.009	0.009	0.009	0.009	0.000	0.009
5DC	0.009	0.009	0.009	0.000	0.000	0.009	0.009	0.009	0.009	0.009	0.000	0.000
5DD	0.013	0.013	0.013	0.000	0.000	0.013	0.013	0.013	0.013	0.013	0.000	0.000
5EA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5EB	0.000	0.000	0.006	0.006	0.006	0.000	0.000	0.000	0.000	0.006	0.006	0.000
5EC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5ED	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5FA	0.000	0.230	0.296	0.510	0.762	0.536	0.143	0.012	0.550	0.651	0.501	0.207
5FB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5GA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5GB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5H	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5J	0.000	0.007	0.014	0.012	0.017	0.007	0.003	0.000	0.000	0.013	0.017	0.007
Total	93.419	100.416	126.073	133.874	143.945	130.362	110.197	128.562	158.629	184.348	162.464	146.418

Table E2.13 Monthly Unit Irrigation Demand by Sub-basin (1/3)

Unit: m3/sec

Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1AA	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1AB	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1AC	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1AD	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1AE	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1AF	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1AG	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1AH	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1BA	1.012	0.971	0.862	0.478	0.101	0.185	0.000	0.119	0.567	0.441	0.775	0.874
1BB	1.012	0.971	0.862	0.478	0.101	0.185	0.000	0.119	0.567	0.441	0.775	0.874
1BC	0.814	0.914	0.721	0.255	0.000	0.104	0.000	0.000	0.066	0.246	0.521	0.724
1BD	1.012	0.971	0.862	0.478	0.101	0.185	0.000	0.119	0.567	0.441	0.775	0.874
1BE	1.012	0.971	0.862	0.478	0.101	0.185	0.000	0.119	0.567	0.441	0.775	0.874
1BG	1.012	0.971	0.862	0.478	0.101	0.185	0.000	0.119	0.567	0.441	0.775	0.874
1BH	1.012	0.971	0.862	0.478	0.101	0.185	0.000	0.119	0.567	0.441	0.775	0.874
1CA	0.978	0.988	0.922	0.413	0.291	0.216	0.000	0.000	0.413	0.724	0.783	0.889
1CB	0.978	0.988	0.922	0.413	0.291	0.216	0.000	0.000	0.413	0.724	0.783	0.889
1CC	0.814	0.959	0.907	0.135	0.265	0.031	0.078	0.022	0.795	0.721	0.745	0.855
1CD	0.978	0.988	0.922	0.413	0.291	0.216	0.000	0.000	0.413	0.724	0.783	0.889
1CE	0.978	0.988	0.922	0.413	0.291	0.216	0.000	0.000	0.413	0.724	0.783	0.889
1DA	0.978	0.988	0.922	0.413	0.291	0.216	0.000	0.000	0.413	0.724	0.783	0.889
1DB	1.012	0.971	0.862	0.478	0.101	0.185	0.000	0.119	0.567	0.441	0.775	0.874
1DC	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1DD	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1EA	0.870	0.914	0.777	0.243	0.000	0.000	0.000	0.000	0.139	0.351	0.563	0.694
1EB	0.870	0.914	0.777	0.243	0.000	0.000	0.000	0.000	0.139	0.351	0.563	0.694
1EC	0.870	0.914	0.777	0.243	0.000	0.000	0.000	0.000	0.139	0.351	0.563	0.694
1ED	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1EE	0.829	0.728	0.590	0.054	0.000	0.000	0.343	0.317	0.698	0.366	0.324	0.541
1EF	0.874	0.938	0.653	0.409	0.161	0.559	0.777	0.762	0.814	0.777	0.706	0.739
1EG	0.874	0.938	0.653	0.409	0.161	0.559	0.777	0.762	0.814	0.777	0.706	0.739
1FA	0.814	0.959	0.907	0.135	0.265	0.031	0.078	0.022	0.795	0.721	0.745	0.855
1FB	0.870	0.914	0.777	0.243	0.000	0.000	0.000	0.000	0.139	0.351	0.563	0.694
1FC	0.870	0.914	0.777	0.243	0.000	0.000	0.000	0.000	0.139	0.351	0.563	0.694
1FD	0.870	0.914	0.777	0.243	0.000	0.000	0.000	0.000	0.139	0.351	0.563	0.694
1FE	0.870	0.914	0.777	0.243	0.000	0.000	0.000	0.000	0.139	0.351	0.563	0.694
1FF	1.019	0.980	0.762	0.340	0.377	0.656	0.818	0.724	0.910	0.974	0.841	0.825
1FG	0.874	0.938	0.653	0.409	0.161	0.559	0.777	0.762	0.814	0.777	0.706	0.739
1GA	0.915	0.992	0.933	0.251	0.183	0.015	0.000	0.000	0.000	0.511	0.590	0.862
1GB	0.702	0.777	0.642	0.000	0.000	0.104	0.190	0.284	0.490	0.478	0.529	0.676
1GC	0.702	0.777	0.642	0.000	0.000	0.104	0.190	0.284	0.490	0.478	0.529	0.676
1GD	1.109	1.083	0.892	0.274	0.399	0.498	0.717	0.736	0.988	0.862	0.833	0.814
1GE	1.109	1.083	0.892	0.274	0.399	0.498	0.717	0.736	0.988	0.862	0.833	0.814
1GF	1.109	1.083	0.892	0.274	0.399	0.498	0.717	0.736	0.988	0.862	0.833	0.814
1GG	0.702	0.777	0.642	0.000	0.000	0.104	0.190	0.284	0.490	0.478	0.529	0.676
1HA	1.019	0.980	0.762	0.340	0.377	0.656	0.818	0.724	0.910	0.974	0.841	0.825
1HB	1.019	0.980	0.762	0.340	0.377	0.656	0.818	0.724	0.910	0.974	0.841	0.825
1HC	0.874	0.938	0.653	0.409	0.161	0.559	0.777	0.762	0.814	0.777	0.706	0.739
1HD	1.109	1.083	0.892	0.274	0.399	0.498	0.717	0.736	0.988	0.862	0.833	0.814
1HE	1.109	1.083	0.892	0.274	0.399	0.498	0.717	0.736	0.988	0.862	0.833	0.814
1HF	1.001	0.963	0.624	0.143	0.209	0.621	0.833	0.833	1.003	0.829	0.687	0.765
1HG	1.001	0.963	0.624	0.143	0.209	0.621	0.833	0.833	1.003	0.829	0.687	0.765
1JA	0.635	0.699	0.231	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.187
1JB	0.635	0.699	0.231	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.187
1JC	0.635	0.699	0.231	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.187
1JD	0.635	0.699	0.231	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.187
1JE	0.635	0.699	0.231	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.187
1JF	0.635	0.699	0.231	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.187
1JG	0.635	0.699	0.231	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.187
1KA	1.001	0.963	0.624	0.143	0.209	0.621	0.833	0.833	1.003	0.829	0.687	0.765
1KB	1.001	0.963	0.624	0.143	0.209	0.621	0.833	0.833	1.003	0.829	0.687	0.765
1KC	1.001	0.963	0.624	0.143	0.209	0.621	0.833	0.833	1.003	0.829	0.687	0.765
1LA	0.635	0.699	0.231	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.187
1LA	0.739	0.657	0.624	0.235	0.336	0.475	0.523	0.657	0.814	0.814	0.733	0.687
1LA	0.739	0.657	0.624	0.235	0.336	0.475	0.523	0.657	0.814	0.814	0.733	0.687
1LB	0.739	0.657	0.624	0.235	0.336	0.475	0.523	0.657	0.814	0.814	0.733	0.687
1LB	0.739	0.657	0.624	0.235	0.336	0.475	0.523	0.657	0.814	0.814	0.733	0.687



Table E2.13 Monthly Unit Irrigation Demand by Sub-basin (2/3)

Basin	Unit: m3/sec											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2AA	1.303	1.393	1.284	0.922	1.135	1.181	1.176	1.210	1.373	1.254	1.215	1.232
2AB	1.303	1.393	1.284	0.922	1.135	1.181	1.176	1.210	1.373	1.254	1.215	1.232
2BA	0.799	0.984	0.844	0.255	0.429	0.644	0.403	0.325	0.498	0.586	0.756	0.922
2BB	0.799	0.984	0.844	0.255	0.429	0.644	0.403	0.325	0.498	0.586	0.756	0.922
2BC	0.799	0.984	0.844	0.255	0.429	0.644	0.403	0.325	0.498	0.586	0.756	0.922
2BD	1.161	1.182	1.034	0.876	0.918	0.903	0.915	0.956	1.115	1.105	1.042	1.060
2CA	1.165	1.162	1.116	0.980	1.206	1.119	1.109	1.142	1.285	1.269	1.119	1.169
2CB	1.049	1.062	0.993	0.752	0.624	0.714	0.396	0.650	0.914	0.937	0.880	0.956
2CC	1.049	1.062	0.993	0.752	0.624	0.714	0.396	0.650	0.914	0.937	0.880	0.956
2D	0.859	0.963	0.844	0.559	0.627	0.563	0.418	0.459	0.864	0.721	0.625	0.818
2EA	0.709	0.938	0.810	0.328	0.000	0.085	0.026	0.075	0.359	0.187	0.343	0.721
2EB	0.709	0.938	0.810	0.328	0.000	0.085	0.026	0.075	0.359	0.187	0.343	0.721
2EC	0.709	0.938	0.810	0.328	0.000	0.085	0.026	0.075	0.359	0.187	0.343	0.721
2ED	0.915	0.992	0.933	0.251	0.183	0.015	0.000	0.000	0.000	0.511	0.590	0.862
2EE	1.128	1.182	1.094	0.829	0.844	0.856	0.747	0.762	1.092	1.012	0.953	1.034
2EF	0.799	0.847	0.743	0.127	0.119	0.139	0.078	0.000	0.247	0.396	0.285	0.556
2EG	0.799	0.847	0.743	0.127	0.119	0.139	0.078	0.000	0.247	0.396	0.285	0.556
2EG	0.709	0.938	0.810	0.328	0.000	0.085	0.026	0.075	0.359	0.187	0.343	0.721
2EH	1.128	1.182	1.094	0.829	0.844	0.856	0.747	0.762	1.092	1.012	0.953	1.034
2EJ	1.128	1.182	1.094	0.829	0.844	0.856	0.747	0.762	1.092	1.012	0.953	1.034
2EK	1.128	1.182	1.094	0.829	0.844	0.856	0.747	0.762	1.092	1.012	0.953	1.034
2FA	0.691	0.959	0.750	0.359	0.325	0.436	0.437	0.362	0.671	0.597	0.417	0.698
2FB	0.691	0.959	0.750	0.359	0.325	0.436	0.437	0.362	0.671	0.597	0.417	0.698
2FC	0.691	0.959	0.750	0.359	0.325	0.436	0.437	0.362	0.671	0.597	0.417	0.698
2GA	0.889	0.893	0.765	0.413	0.433	0.486	0.661	0.627	0.795	0.739	0.640	0.777
2GB	0.691	0.959	0.750	0.359	0.325	0.436	0.437	0.362	0.671	0.597	0.417	0.698
2GC	0.889	0.893	0.765	0.413	0.433	0.486	0.661	0.627	0.795	0.739	0.640	0.777
2GD	0.889	0.893	0.765	0.413	0.433	0.486	0.661	0.627	0.795	0.739	0.640	0.777
2H	1.284	1.327	1.232	0.918	0.963	1.065	1.154	1.131	1.327	1.303	1.227	1.251
2J	1.135	1.219	1.008	0.841	0.993	0.965	0.978	0.945	1.188	1.146	1.088	1.146
2KA	0.739	0.657	0.624	0.235	0.336	0.475	0.523	0.657	0.814	0.814	0.733	0.687
2KB	1.284	1.327	1.232	0.918	0.963	1.065	1.154	1.131	1.327	1.303	1.227	1.251
2KC	1.284	1.327	1.232	0.918	0.963	1.065	1.154	1.131	1.327	1.303	1.227	1.251
3AA	1.038	1.087	0.795	0.162	0.228	0.440	0.500	0.665	1.019	0.911	0.613	0.877
3AB	0.963	0.905	0.668	0.355	0.556	0.633	0.620	0.661	0.934	0.911	0.285	0.721
3AC	0.948	0.864	0.724	0.000	0.000	0.158	0.396	0.459	0.760	0.963	0.382	0.306
3BA	0.948	0.864	0.724	0.000	0.000	0.158	0.396	0.459	0.760	0.963	0.382	0.306
3BB	0.963	0.905	0.668	0.355	0.556	0.633	0.620	0.661	0.934	0.911	0.285	0.721
3BC	1.038	1.087	0.795	0.162	0.228	0.440	0.500	0.665	1.019	0.911	0.613	0.877
3BD	0.948	0.864	0.724	0.000	0.000	0.158	0.396	0.459	0.760	0.963	0.382	0.306
3CB	0.948	0.864	0.724	0.000	0.000	0.158	0.396	0.459	0.760	0.963	0.382	0.306
3DA	1.094	1.104	0.874	0.602	0.691	0.714	0.642	0.862	1.034	1.034	0.621	0.806
3DB	1.094	1.104	0.874	0.602	0.691	0.714	0.642	0.862	1.034	1.034	0.621	0.806
3EA	0.963	0.905	0.668	0.355	0.556	0.633	0.620	0.661	0.934	0.911	0.285	0.721
3EB	0.963	0.905	0.668	0.355	0.556	0.633	0.620	0.661	0.934	0.911	0.285	0.721
3EC	0.963	0.905	0.668	0.355	0.556	0.633	0.620	0.661	0.934	0.911	0.285	0.721
3ED	0.963	0.905	0.668	0.355	0.556	0.633	0.620	0.661	0.934	0.911	0.285	0.721
3FA	1.027	1.141	0.945	0.702	0.732	0.787	0.810	0.844	1.096	1.057	0.517	0.467
3FB	1.027	1.141	0.945	0.702	0.732	0.787	0.810	0.844	1.096	1.057	0.517	0.467
3G	0.594	0.401	0.175	0.255	0.433	0.575	0.459	0.568	0.772	0.956	0.289	0.250
3HA	0.896	1.149	0.963	0.779	0.795	0.899	0.892	0.889	1.026	1.038	0.876	0.586
3HB	0.896	1.149	0.963	0.779	0.795	0.899	0.892	0.889	1.026	1.038	0.876	0.586
3HC	1.116	1.186	1.049	0.799	0.680	0.772	0.904	0.989	1.069	1.023	0.941	0.676
3HD1	1.202	1.207	1.131	0.768	0.022	0.166	0.463	0.680	1.111	1.079	1.119	1.157
3HD2	1.202	1.207	1.131	0.768	0.022	0.166	0.463	0.680	1.111	1.079	1.119	1.157
3HD3	1.202	1.207	1.131	0.768	0.022	0.166	0.463	0.680	1.111	1.079	1.119	1.157
3J	0.960	1.071	0.713	0.440	0.504	0.748	0.754	0.840	1.034	1.042	0.849	0.754
3K	1.172	1.248	1.139	0.629	0.261	0.444	0.545	0.788	0.949	0.963	0.995	0.844
3L	0.896	1.149	0.963	0.779	0.795	0.899	0.892	0.889	1.026	1.038	0.876	0.586
3MA	1.146	1.137	1.030	0.826	0.762	0.899	0.862	0.900	1.019	1.038	0.907	0.982
3MB	1.146	1.137	1.030	0.826	0.762	0.899	0.862	0.900	1.019	1.038	0.907	0.982
3MC	1.146	1.137	1.030	0.826	0.762	0.899	0.862	0.900	1.019	1.038	0.907	0.982
3MD	1.172	1.248	1.139	0.629	0.261	0.444	0.545	0.788	0.949	0.963	0.995	0.844
3N	0.594	0.401	0.175	0.255	0.433	0.575	0.459	0.568	0.772	0.956	0.289	0.250
4AA	0.698	0.649	0.515	0.505	0.788	0.687	0.777	0.672	0.953	0.601	0.351	0.497
4AB	0.698	0.649	0.515	0.505	0.788	0.687	0.777	0.672	0.953	0.601	0.351	0.497
4AC	1.038	0.947	0.691	0.243	0.000	0.340	0.246	0.616	0.829	0.836	0.413	0.519

Table E2.13 Monthly Unit Irrigation Demand by Sub-basin (3/3)

Unit: m3/sec

Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
4AD	1.038	0.947	0.691	0.243	0.000	0.340	0.246	0.616	0.829	0.836	0.413	0.519
4BA	1.038	0.947	0.691	0.243	0.000	0.340	0.246	0.616	0.829	0.836	0.413	0.519
4BB	1.038	0.947	0.691	0.243	0.000	0.340	0.246	0.616	0.829	0.836	0.413	0.519
4BC	1.045	1.137	0.851	0.343	0.343	0.590	0.612	0.836	1.019	0.877	0.424	0.739
4BD	1.038	0.947	0.691	0.243	0.000	0.340	0.246	0.616	0.829	0.836	0.413	0.519
4BE	0.414	0.529	0.269	0.000	0.000	0.000	0.000	0.000	0.096	0.086	0.000	0.101
4BF	1.057	1.157	0.777	0.154	0.426	0.509	0.497	0.564	0.934	0.848	0.448	0.691
4BG	1.045	1.137	0.851	0.343	0.343	0.590	0.612	0.836	1.019	0.877	0.424	0.739
4CA	0.414	0.529	0.269	0.000	0.000	0.000	0.000	0.000	0.096	0.086	0.000	0.101
4CB	0.414	0.529	0.269	0.000	0.000	0.000	0.000	0.000	0.096	0.086	0.000	0.101
4CC	1.057	1.157	0.777	0.154	0.426	0.509	0.497	0.564	0.934	0.848	0.448	0.691
4DA	1.045	1.137	0.851	0.343	0.343	0.590	0.612	0.836	1.019	0.877	0.424	0.739
4DB	1.045	1.137	0.851	0.343	0.343	0.590	0.612	0.836	1.019	0.877	0.424	0.739
4DC	1.045	1.137	0.851	0.343	0.343	0.590	0.612	0.836	1.019	0.877	0.424	0.739
4DD	0.986	0.934	0.724	0.274	0.571	0.498	0.683	0.609	0.945	0.780	0.282	0.504
4DE	1.094	1.104	0.874	0.602	0.691	0.714	0.642	0.862	1.034	1.034	0.621	0.806
4EA	0.362	0.773	0.717	0.000	0.052	0.490	0.582	0.855	0.868	0.493	0.000	0.000
4EB	0.362	0.773	0.717	0.000	0.052	0.490	0.582	0.855	0.868	0.493	0.000	0.000
4EC	0.986	0.934	0.724	0.274	0.571	0.498	0.683	0.609	0.945	0.780	0.282	0.504
4ED	1.060	1.141	0.952	0.532	0.851	0.810	0.765	1.001	1.073	1.049	0.324	0.594
4FA	0.362	0.773	0.717	0.000	0.052	0.490	0.582	0.855	0.868	0.493	0.000	0.000
4FB	0.362	0.773	0.717	0.000	0.052	0.490	0.582	0.855	0.868	0.493	0.000	0.000
4GA	0.362	0.773	0.717	0.000	0.052	0.490	0.582	0.855	0.868	0.493	0.000	0.000
4GB	1.068	1.071	1.038	0.965	1.038	0.907	0.978	0.982	1.076	1.090	0.814	0.844
4GC	1.068	1.071	1.038	0.965	1.038	0.907	0.978	0.982	1.076	1.090	0.814	0.844
4GD	1.068	1.071	1.038	0.965	1.038	0.907	0.978	0.982	1.076	1.090	0.814	0.844
4GE	1.165	1.174	1.042	0.965	1.001	0.918	0.978	1.064	1.142	1.049	0.849	0.974
4GF	1.165	1.174	1.042	0.965	1.001	0.918	0.978	1.064	1.142	1.049	0.849	0.974
4GG	1.116	1.170	1.195	0.868	0.732	0.683	0.877	0.986	1.123	1.120	0.868	1.120
4HA	0.967	1.170	0.840	0.316	0.709	0.853	0.851	0.937	1.100	1.094	0.093	0.295
4HB	1.116	1.170	1.195	0.868	0.732	0.683	0.877	0.986	1.123	1.120	0.868	1.120
4JA	1.068	1.071	1.038	0.965	1.038	0.907	0.978	0.982	1.076	1.090	0.814	0.844
4JB	1.273	1.211	1.180	0.745	0.149	0.266	0.571	0.881	1.103	1.187	1.204	1.146
4KA	1.068	1.071	1.038	0.965	1.038	0.907	0.978	0.982	1.076	1.090	0.814	0.844
4KB	1.273	1.211	1.180	0.745	0.149	0.266	0.571	0.881	1.103	1.187	1.204	1.146
5AA	0.653	0.790	0.780	0.309	0.246	0.174	0.026	0.000	0.405	0.429	0.355	0.538
5AB	0.653	0.790	0.780	0.309	0.246	0.174	0.026	0.000	0.405	0.429	0.355	0.538
5AC	0.930	1.004	0.971	0.640	0.650	0.598	0.582	0.609	0.934	0.889	0.764	0.829
5AD	0.930	1.004	0.971	0.640	0.650	0.598	0.582	0.609	0.934	0.889	0.764	0.829
5BA	0.698	0.649	0.515	0.505	0.788	0.687	0.777	0.672	0.953	0.601	0.351	0.497
5BB	0.698	0.649	0.515	0.505	0.788	0.687	0.777	0.672	0.953	0.601	0.351	0.497
5BC	0.698	0.649	0.515	0.505	0.788	0.687	0.777	0.672	0.953	0.601	0.351	0.497
5BD	0.698	0.649	0.515	0.505	0.788	0.687	0.777	0.672	0.953	0.601	0.351	0.497
5BE	0.862	0.893	0.706	0.274	0.317	0.498	0.590	0.590	0.702	0.553	0.386	0.560
5CA	0.859	0.963	0.844	0.559	0.627	0.563	0.418	0.459	0.864	0.721	0.625	0.818
5CB	0.859	0.963	0.844	0.559	0.627	0.563	0.418	0.459	0.864	0.721	0.625	0.818
5CC	0.859	0.963	0.844	0.559	0.627	0.563	0.418	0.459	0.864	0.721	0.625	0.818
5DA	1.139	1.219	1.019	0.741	1.150	1.169	1.198	1.299	1.385	1.101	0.583	0.896
5DB	0.862	0.893	0.706	0.274	0.317	0.498	0.590	0.590	0.702	0.553	0.386	0.560
5DC	0.930	1.004	0.971	0.640	0.650	0.598	0.582	0.609	0.934	0.889	0.764	0.829
5DD	1.030	1.157	1.094	0.845	0.963	1.061	1.079	1.146	1.258	1.090	0.802	0.926
5EA	1.217	1.248	1.142	0.860	0.982	1.015	1.012	1.034	1.134	1.004	0.941	1.053
5EB	1.299	1.414	1.325	1.130	1.538	1.389	1.374	1.437	1.512	1.396	0.995	1.083
5EC	0.945	1.009	0.799	0.131	0.489	0.756	0.795	0.836	0.972	0.724	0.428	0.556
5FA	1.299	1.414	1.325	1.130	1.538	1.389	1.374	1.437	1.512	1.396	0.995	1.083
5FB	1.30	1.41	1.33	1.13	1.54	1.39	1.37	1.44	1.51	1.40	1.00	1.08
5G	1.22	1.25	1.14	0.86	0.98	1.01	1.01	1.03	1.13	1.00	0.94	1.05
5H	1.21	1.27	1.24	0.85	1.06	1.15	1.12	1.18	1.26	0.95	0.99	1.14
5J	0.94	1.01	0.80	0.13	0.49	0.76	0.80	0.84	0.97	0.72	0.43	0.56

Table E2.14 Monthly Mean Basin Flow (1/3)

Unit: m3/sec

Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1AA	0.735	0.616	0.854	1.755	2.843	2.044	1.585	1.755	1.874	2.095	2.214	1.245
1AB	0.796	0.67	0.922	1.876	3.028	2.182	1.696	1.876	2.002	2.236	2.362	1.336
1AC	0.199	0.15	0.248	0.619	1.067	0.738	0.549	0.619	0.668	0.759	0.808	0.409
1AD	1.597	1.303	1.891	4.117	6.805	4.831	3.697	4.117	4.411	4.957	5.251	2.857
1AE	0.307	0.251	0.363	0.787	1.299	0.923	0.707	0.787	0.843	0.947	1.003	0.547
1AF	0.846	0.63	0.954	4.842	8.766	5.994	3.006	2.538	3.042	3.618	4.122	2.106
1AG	0.718	0.532	0.811	4.159	7.538	5.151	2.578	2.175	2.609	3.105	3.539	1.803
1AH	2.845	2.149	3.193	15.721	28.365	19.433	9.805	8.297	9.921	11.777	13.401	6.905
1BA	0.761	0.961	0.961	2.061	4.761	1.961	2.761	5.261	2.761	1.761	2.761	2.261
1BB	5.998	6.298	6.298	8.398	12.198	8.898	11.798	17.598	12.898	9.698	10.798	8.098
1BC	3.72	4.62	4.32	6.12	7.62	8.42	11.32	14.72	12.72	6.82	6.52	4.12
1BD	9.929	10.663	11.448	15.623	22.488	18.914	26.507	40.727	30.938	17.772	18.71	16.085
1BE	8.801	9.926	9.647	13.533	18.908	16.337	22.165	31.309	24.643	15.587	16.284	11.223
1BG	11.375	11.951	12.225	17.399	27.63	23.097	33.396	52.063	41.245	23.813	23.725	24.846
1BH	1.355	1.255	0.955	1.655	4.055	2.855	3.955	6.255	6.855	4.655	4.455	8.155
1CA	1.001	0.701	1.801	2.001	3.201	2.301	4.201	8.601	5.401	1.901	2.401	4.601
1CB	0.164	0.064	0.264	1.764	3.264	1.864	3.164	8.364	5.464	2.064	1.764	3.864
1CC	1.808	1.308	1.708	3.308	4.608	3.408	3.908	9.408	8.508	4.208	3.808	6.608
1CD	3.121	2.421	3.021	5.921	8.621	6.321	7.321	17.621	15.421	7.621	6.421	11.321
1CE	4.646	3.446	5.646	10.446	16.346	11.346	16.246	38.046	28.646	12.346	11.346	21.446
1DA	20.879	21.05	22.578	36.747	62.999	47.943	67.819	112.13	89.553	50.852	50.055	60.152
1DB	2.003	2.103	1.503	2.503	6.503	3.803	4.603	7.103	9.703	7.203	7.803	14.803
1DC	23.99	24.122	24.749	40.519	72.397	53.752	74.631	122.82	103.67	61.414	61.238	82.052
1DD	25.085	25.039	25.406	41.717	75.367	55.775	76.833	126.6	108.25	64.9	64.677	89.446
1EA	5.668	6.068	4.968	9.168	16.168	14.468	20.268	22.668	16.968	12.768	11.768	7.668
1EB	8.609	9.209	7.609	14.509	26.209	23.009	30.509	34.909	26.509	20.409	18.709	12.009
1EC	2.205	2.205	2.105	4.005	7.405	6.205	6.605	8.205	6.705	5.605	5.105	3.205
1ED	12.12	12.62	10.92	20.62	37.82	32.62	40.52	47.62	36.92	29.32	26.72	17.02
1EE	40.568	40.502	39.373	68.263	123.29	95.415	124.68	183.95	153.78	102.07	99.741	111.63
1EF	47.878	45.906	45.47	80.058	141.9	106.41	136.96	200.28	168.68	116.45	117.57	122.67
1EG	4.547	3.647	3.947	7.647	12.947	8.747	9.147	12.047	10.547	9.847	11.047	6.847
1FA	0.868	0.568	0.868	1.468	1.968	1.568	1.468	3.868	4.168	2.068	1.768	2.868
1FB	2.283	1.583	2.183	3.783	5.083	4.083	3.783	9.583	10.783	5.483	4.483	7.483
1FC	3.287	2.387	3.187	5.487	7.487	5.887	5.487	14.087	15.887	8.087	6.587	11.087
1FD	5.274	3.78	5.098	8.69	11.636	9.292	8.485	21.784	24.716	12.637	10.331	17.294
1FE	9.898	8.398	12.698	26.198	31.998	27.598	22.598	38.598	39.098	25.998	20.198	23.198
1FF	1.52	1.52	2.72	5.62	5.62	3.92	2.72	3.32	3.32	3.32	3.92	2.72
1FG	16.758	13.458	22.958	49.258	52.758	38.758	30.158	48.958	50.358	39.358	36.558	33.358
1GA	0.664	0.608	0.719	1.548	2.377	1.603	2.321	5.195	3.592	1.714	1.548	2.708
1GB	6.95	8.372	8.056	17.536	25.436	16.43	18.958	26.542	22.118	14.218	10.9	8.372
1GC	3.349	4.042	3.888	8.508	12.358	7.969	9.201	12.897	10.741	6.891	5.274	4.042
1GD	9.328	11.245	10.819	23.599	34.249	22.108	25.516	35.74	29.776	19.126	14.653	11.245
1GE	0.514	0.469	0.559	1.23	1.901	1.274	1.856	4.182	2.885	1.364	1.23	2.169
1GF	0.33	0.301	0.358	0.793	1.227	0.822	1.198	2.703	1.864	0.88	0.793	1.401
1GG	0.584	0.534	0.634	1.384	2.134	1.434	2.084	4.684	3.234	1.534	1.384	2.434
1HA	5.742	5.742	6.542	12.442	17.642	13.942	10.242	10.942	11.642	8.742	7.942	7.942
1HB	3.755	4.355	4.855	11.055	14.355	11.555	5.855	7.455	9.455	7.355	6.855	5.755
1HC	2.481	2.381	2.881	6.481	8.181	5.981	3.181	4.281	5.381	4.581	4.181	3.281
1HD	3.262	2.562	5.362	12.662	24.162	15.562	7.262	9.062	10.662	8.762	6.862	6.262
1HE	2.693	2.093	4.293	10.893	20.193	11.893	5.293	7.093	8.593	7.393	5.793	5.293
1HF	3.002	2.202	4.102	12.202	21.402	8.802	3.602	6.702	8.002	8.102	6.402	5.902
1HG	1.652	1.252	2.252	6.352	10.752	4.352	1.652	2.752	3.252	3.652	3.452	3.452
1JA	4.778	3.878	7.878	17.478	25.178	23.878	21.778	29.178	26.578	11.778	9.178	10.078
1JB	6.588	5.462	11.063	23.733	32.844	30.976	27.198	36.622	33.888	15.657	12.407	13.776
1JC	9.183	7.313	12.801	27.322	44.16	40.537	33.903	45.152	44.1	21.046	16.517	17.881
1JD	10.677	8.277	13.677	29.477	51.177	46.177	37.377	49.777	50.277	24.377	18.977	20.377
1JE	2.434	2.034	1.434	6.934	7.934	6.034	2.834	2.734	4.934	2.834	10.234	13.234
1JF	3.956	2.956	2.556	16.956	25.556	19.056	12.956	11.356	16.856	10.656	18.456	18.156
1JG	18.791	14.491	19.791	58.991	94.291	77.491	56.391	67.991	75.691	41.191	50.291	54.491
1KA	1.314	3.714	5.814	13.114	21.314	9.514	3.514	2.614	5.114	3.614	6.614	4.814
1KB	23.514	21.244	37.394	97.325	132.73	59.625	21.868	26.43	37.025	33.889	35.74	44.712
1KC	10.591	11.491	20.091	50.691	50.091	16.491	5.391	2.491	5.091	4.291	9.391	17.691
1LA	4.254	4.854	7.354	25.754	33.154	20.354	20.354	24.054	27.154	16.254	9.954	10.454
1LA	13.817	15.017	22.917	70.317	80.217	46.717	42.317	49.017	55.317	33.717	24.717	30.017

Table E2.14 Monthly Mean Basin Flow (2/3)

Unit: m3/sec

Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1LA	36.575	32.675	53.175	139.18	137.28	69.075	50.575	52.275	60.375	36.675	36.175	59.075
1LB	5.497	6.397	9.297	29.797	34.497	21.397	20.097	24.097	26.897	16.597	12.197	13.597
1LB	10.081	7.981	13.581	31.181	25.381	9.981	3.781	1.481	2.181	1.381	5.181	12.981
2AA	0	0	0	0	0	0	0	0	0	0	0	0
2AB	0	0	0	0	0	0	0	0	0	0	0	0
2BA	3.521	3.136	3.796	4.676	6.216	5.061	6.656	8.581	7.041	6.051	5.501	4.401
2BB	6.367	5.674	6.862	8.446	11.218	9.139	12.01	15.475	12.703	10.921	9.931	7.951
2BC	10.246	10.78	10.246	15.586	20.748	18.434	21.282	26.622	22.172	19.858	19.858	14.518
2BD	0	0	0	0	0	0	0	0	0	0	0	0
2CA	0	0	0	0	0	0	0	0	0	0	0	0
2CB	3.083	4.463	5.015	8.534	9.638	8.258	8.258	8.81	7.982	6.326	6.602	3.911
2CC	0	0	0	0	0	0	0	0	0	0	0	0
2D	0	0	0	0	0	0	0	0	0	0	0	0
2EA	0.35	0.392	0.35	0.63	0.91	0.791	0.826	1.267	1.148	0.672	0.469	0.511
2EB	0.704	0.76	0.592	1.194	1.978	1.754	1.586	2.258	2.09	1.362	1.082	1.138
2EC	0.723	0.795	0.579	1.353	2.361	2.073	1.857	2.721	2.505	1.569	1.209	1.281
2ED	0.945	1.065	0.945	1.745	2.545	2.205	2.305	3.565	3.225	1.865	1.285	1.405
2EE	1.326	1.506	1.326	2.526	3.726	3.216	3.366	5.256	4.746	2.706	1.836	2.016
2EF	0.156	0.186	0.156	0.356	0.556	0.471	0.496	0.811	0.726	0.386	0.241	0.271
2EG	0.117	0.147	0.117	0.317	0.517	0.432	0.457	0.772	0.687	0.347	0.202	0.232
2EG	1.286	1.402	1.054	2.301	3.925	3.461	3.113	4.505	4.157	2.649	2.069	2.185
2EH	1.17	1.314	1.17	2.13	3.09	2.682	2.802	4.314	3.906	2.274	1.578	1.722
2EJ	1.493	1.609	1.261	2.508	4.132	3.668	3.32	4.712	4.364	2.856	2.276	2.392
2EK	0.501	0.561	0.501	0.901	1.301	1.131	1.181	1.811	1.641	0.961	0.671	0.731
2FA	0.344	0.232	0.449	0.876	1.093	0.344	0.554	1.093	0.988	0.232	0.344	0.771
2FB	0.494	0.366	0.614	1.102	1.35	0.494	0.734	1.35	1.23	0.366	0.494	0.982
2FC	1.446	0.342	2.481	6.69	8.829	1.446	3.516	8.829	7.794	0.342	1.446	5.655
2GA	0.09	0.026	0.15	0.394	0.518	0.09	0.21	0.518	0.458	0.026	0.09	0.334
2GB	1.591	1.231	1.471	2.831	4.511	3.911	4.871	6.191	6.071	4.631	3.911	2.831
2GC	1.056	0.813	0.921	1.974	3.351	3	3.351	4.269	4.269	3.351	2.892	1.974
2GD	0.745	0.489	0.985	1.961	2.457	0.745	1.225	2.457	2.217	0.489	0.745	1.721
2H	0	0	0	0	0	0	0	0	0	0	0	0
2J	0	0	0	0	0	0	0	0	0	0	0	0
2KA	16.143	9.123	16.683	60.153	56.913	18.843	20.193	27.753	26.673	12.903	32.613	22.353
2KB	18.612	10.526	19.234	69.305	65.573	21.722	23.277	31.985	30.741	14.88	37.583	25.765
2KC	22.11	12.516	22.848	82.257	77.829	25.8	27.645	37.977	36.501	17.682	44.619	30.597
3AA	0.981	0	0.421	6.381	9.501	0.981	0	0	0	0	9.781	3.541
3AB	6.233	3.741	4.987	18.248	25.19	6.233	1.783	0.537	0.537	0.537	25.813	11.929
3AC	7.635	3.164	5.268	35.776	74.963	25.256	9.739	4.479	0.797	0	37.091	14.473
3BA	4.563	2.811	3.541	16.827	33.179	12.009	6.899	4.125	3.541	3.687	14.053	10.841
3BB	1.196	0.91	1.064	2.714	4.76	2.56	1.746	1.328	0.91	0.778	2.846	1.746
3BC	3.449	2.747	3.125	7.175	12.197	6.797	4.799	3.773	2.747	2.423	7.499	4.799
3BD	2.946	2.361	2.676	6.051	10.236	5.736	4.071	3.216	2.361	2.091	6.321	4.071
3CB	2.146	1.054	1.574	11.974	18.422	5.994	2.822	1.47	0.95	0.95	5.474	4.798
3DA	8.856	3.841	6.201	40.421	84.376	28.621	11.216	5.316	1.186	0	41.896	16.526
3DB	10.666	5.124	7.732	45.548	94.122	32.508	13.274	6.754	2.19	0.56	47.178	19.142
3EA	0	0	0	0.754	1.612	0	0	0	0	0	1.689	0
3EB	0	0	0	2.609	4.247	0	0	0	0	0	4.394	1.118
3EC	0.404	0.18	0.292	1.484	2.108	0.404	0.004	0	0	0	2.164	0.916
3ED	0.713	0	0.195	5.708	8.594	0.713	0	0	0	0	8.853	3.081
3FA	13.189	8.866	16.726	87.859	76.069	28.123	11.617	4.543	0.22	2.578	53.668	34.018
3FB	12.948	8.647	16.467	87.238	75.508	27.806	11.384	4.346	0.045	2.391	53.221	33.671
3G	5.685	5.585	6.085	8.085	5.085	5.185	4.985	4.885	4.885	4.985	9.085	7.985
3HA	4.048	4.407	0	87.493	45.65	34.141	19.993	2.009	0	26.108	152.71	29.705
3HB	2.579	2.905	0	78.166	40.264	29.839	17.023	0.733	0	22.562	137.25	25.82
3HC	6.176	1.576	4.576	4.976	4.176	5.876	2.776	1.076	1.076	2.776	4.576	17.376
3HD1	3.238	3.581	0	82.754	42.882	31.914	18.433	1.296	0	24.26	144.91	27.687
3HD2	1.011	0.244	0.744	0.811	0.678	0.961	0.444	0.161	0.161	0.444	0.744	2.878
3HD3	0.757	0	0.457	0.532	0.382	0.701	0.119	0	0	0.119	0.457	2.857
3J	8.62	8.471	9.217	12.2	7.725	7.874	7.576	7.427	7.427	7.576	13.692	12.051
3K	17.557	3.257	9.557	8.557	6.757	6.657	2.957	1.357	1.157	5.757	8.257	29.557
3L	8.311	1.411	5.311	3.311	2.011	2.411	0.511	0	0	1.411	3.511	17.311
3MA	1.566	1.607	3.156	3.114	4.663	1.859	0.938	0.603	0.98	2.486	3.24	3.784
3MB	2.786	2.861	5.636	5.561	8.336	3.311	1.661	1.061	1.736	4.436	5.786	6.761

Table E2.14 Monthly Mean Basin Flow (3/3)

Unit: m3/sec

Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3MC	1.287	1.322	2.613	2.578	3.869	1.531	0.764	0.485	0.799	2.055	2.683	3.136
3MD	3.53	3.68	9.23	9.08	14.63	4.58	1.28	0.08	1.43	6.83	9.53	11.48
3N	1.102	0.99	1.401	1.738	0.952	0.803	0.803	0.728	0.728	0.84	3.272	2.748
4AA	4.095	4.095	4.095	11.867	13.274	6.239	4.095	3.425	3.425	6.909	10.46	6.909
4AB	2.618	2.336	2.618	8.117	8.634	3.182	2.336	2.9	2.336	4.263	7.835	4.545
4AC	8.018	7.728	8.163	24.693	27.883	12.368	7.873	8.598	7.583	13.528	22.953	14.833
4AD	2.261	2.027	1.871	5.147	8.774	4.289	2.651	2.456	2.144	3.197	5.459	3.704
4BA	14.293	11.653	11.653	37.261	63.661	30.397	17.461	16.669	12.973	20.629	38.317	26.701
4BB	3.125	2.597	2.465	6.205	9.857	5.325	3.521	2.861	2.333	3.389	5.457	4.137
4BC	2.37	1.95	1.95	6.024	10.224	4.932	2.874	2.748	2.16	3.378	6.192	4.344
4BD	3.91	3.16	3.16	10.435	17.935	8.485	4.81	4.585	3.535	5.71	10.735	7.435
4BE	36.909	26.793	34.661	74.563	131.89	69.505	43.653	35.785	30.727	39.719	68.943	51.521
4BF	2.28	1.85	1.85	6.021	10.321	4.903	2.796	2.667	2.065	3.312	6.193	4.301
4BG	43.114	31.324	40.494	86.999	153.81	81.104	50.974	41.804	35.909	46.389	80.449	60.144
4CA	3.052	2.116	2.22	7.576	13.868	7.212	4.196	2.844	2.168	2.48	6.224	5.184
4CB	1.739	1.026	1.026	4.746	8.9	4.25	2.266	1.398	1.057	1.305	4.064	3.196
4CC	10.118	6.024	6.024	27.384	51.236	24.536	13.144	8.16	6.202	7.626	23.468	18.484
4DA	5.352	4.68	4.176	8.712	16.44	11.232	7.704	7.032	6.36	7.956	10.56	7.284
4DB	4.207	3.687	3.297	6.807	12.787	8.757	6.027	5.507	4.987	6.222	8.237	5.702
4DC	2.086	1.744	1.554	3.834	7.216	4.632	3.112	2.808	2.428	3.568	4.974	3.036
4DD	13.407	10.407	9.157	31.407	54.657	34.407	21.157	18.157	15.907	26.157	35.157	20.157
4DE	79.66	58.528	65.572	174.75	238.15	141.88	84.356	70.268	57.354	82.008	167.71	143.06
4EA	14.025	11.715	10.945	19.415	24.805	14.795	10.945	8.789	8.019	10.175	25.575	20.185
4EB	10.538	7.422	8.406	25.298	39.402	15.786	8.406	7.422	5.29	12.342	34.482	18.246
4EC	5.434	3.819	4.329	13.084	20.394	8.154	4.329	3.819	2.714	6.369	17.844	9.429
4ED	117.65	86.469	96.861	257.94	351.47	209.44	124.57	103.79	84.737	121.11	247.55	211.17
4FA	130.84	95.987	107.6	287.65	392.2	233.44	138.58	115.35	94.051	134.71	276.04	235.38
4FB	126.62	92.796	104.07	278.82	380.28	226.21	134.13	111.59	90.917	130.38	267.54	228.08
4GA	131.7	87.368	89.215	279.46	416.13	224.05	124.31	94.756	72.592	98.45	275.76	242.52
4GB	125.38	83.065	84.828	266.42	396.88	213.53	118.33	90.117	68.961	93.643	262.89	231.16
4GC	120.93	79.961	81.668	257.49	383.81	206.28	114.1	86.789	66.305	90.203	254.08	223.35
4GD	101.53	69.883	78.139	182.72	287.29	190.97	97.403	72.635	60.251	65.755	175.84	182.72
4GE	88.395	60.496	67.774	159.96	252.15	167.24	84.756	62.922	52.005	56.857	153.9	159.96
4GF	68.76	46.542	52.338	125.75	199.17	131.55	65.862	48.474	39.78	43.644	120.92	125.75
4GG	47.414	31.291	35.497	88.773	142.05	92.979	45.311	32.693	26.384	29.188	85.268	88.773
4HA	2.052	1.827	2.65	3.324	1.752	1.453	1.453	1.303	1.303	1.528	6.392	5.344
4HB	1.613	1.429	2.105	2.658	1.367	1.122	1.122	0.999	0.999	1.183	5.179	4.318
4JA	0	0	0	0	0	0	0	0	0	0	0	0
4JB	0.325	0.333	0.656	0.647	0.97	0.386	0.194	0.124	0.202	0.516	0.673	0.787
4KA	1.028	1.056	2.089	2.061	3.094	1.224	0.61	0.387	0.638	1.642	2.145	2.508
4KB	0.78	0.801	1.575	1.554	2.329	0.926	0.466	0.298	0.487	1.24	1.617	1.889
5AA	0.28	0.046	0	1.437	0.878	0.124	0.878	1.697	1.32	0.28	1.775	1.216
5AB	0.254	0.164	0.139	0.699	0.484	0.194	0.484	0.799	0.654	0.254	0.829	0.614
5AC	1.624	0.958	0.773	4.917	3.326	1.18	3.326	5.657	4.584	1.624	5.879	4.288
5AD	0.287	0.197	0.172	0.732	0.517	0.227	0.517	0.832	0.687	0.287	0.862	0.647
5BA	0.723	0.563	0.483	1.379	1.139	0.563	0.483	0.563	0.563	0.483	1.379	1.139
5BB	0.98	0.76	0.65	1.882	1.552	0.76	0.65	0.76	0.76	0.65	1.882	1.552
5BC	2.307	2.451	2.547	7.443	7.587	3.123	2.547	3.507	3.315	3.555	8.979	6.819
5BD	0.743	0.785	0.813	2.241	2.283	0.981	0.813	1.093	1.037	1.107	2.689	2.059
5BE	2.12	1.6	1.34	4.252	3.472	1.6	1.34	1.6	1.6	1.34	4.252	3.472
5CA	1.784	1.208	1.048	4.632	3.256	1.4	3.256	5.272	4.344	1.784	5.464	4.088
5CB	3.75	2.562	2.232	9.624	6.786	2.958	6.786	10.944	9.03	3.75	11.34	8.502
5CC	2.011	1.381	1.206	5.126	3.621	1.591	3.621	5.826	4.811	2.011	6.036	4.531
5DA	8.936	7.224	9.578	38.04	28.41	12.574	11.504	17.924	15.784	15.142	45.102	27.768
5DB	3.279	2.559	2.199	6.231	5.151	2.559	2.199	2.559	2.559	2.199	6.231	5.151
5DC	6.442	6.868	7.152	21.636	22.062	8.856	7.152	9.992	9.424	10.134	26.18	19.79
5DD	9.943	10.567	10.983	32.199	32.823	13.479	10.983	15.143	14.311	15.351	38.855	29.495
5EA	0	0	0	0	0	0	0	0	0	0	0	0
5EB	0	0	0	0	0	0	0	0	0	0	0	0
5EC	0	0	0	0	0	0	0	0	0	0	0	0
5FA	0	0	0	0	0	0	0	0	0	0	0	0
5FB	0	0	0	0	0	0	0	0	0	0	0	0
5G	0	0	0	0	0	0	0	0	0	0	0	0
5H	0	0	0	0	0	0	0	0	0	0	0	0
5J	0	0	0	0	0	0	0	0	0	0	0	0

Table E2.15 Irrigation Potential by Sub-basin (1/4) (for paddy)  
(in case of monthly mean flow)

Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)
1AA	856	1GA	264	2BA	0	3AA11	0	4AA	0	5AA1	0
1AB	1013	1GB	3161	2BB	8660	3AA12	0	4AB	0	5AA2	0
1AC	329	1GC1	89	2BC	8792	3AA13	0	4AC	0	5AA3	0
1AD	817	1GC2	1056	2BD	4813	3AA2	0	4AD	0	5AA4	0
1AE	343	1GD1	1241	2CB1	338	3AB	0	4BA	212	5AB	0
1AF	934	1GD2	4006	2CB2	828	3AC1	0	4BB	43	5AC	0
1AG	797	1GD3	2060	2CB3	11895	3AC2	0	4BC	2310	5AD	0
1AH	1215	1GE	2583	2CC1	1823	3BA1	0	4BD	2457	5BA	0
1BA	0	1GF	982	2CC2	160	3BA2	0	4BE	9761	5BB	0
1BB1	0	1GG	0	2CC3	694	3BB	0	4BF	3412	5BC	0
1BB2	0	1HA	5212	2CC4	1161	3BC	0	4BG	19479	5BD	0
1BC	0	1HB	3688	2CC5	1990	3BD	0	4CA	0	5BE	0
1BD	0	1HC	3133	2EA	0	3CB	0	4CB1	0	5DA1	582
1BE	0	1HD	2299	2EB1	0	3DA	4536	4CB2	0	5DA2	279
1BG	0	1HE	1929	2EB2	0	3DB	251	4CC	13089	5DA3	402
1BH	0	1HF	2325	2EB3	0	3EA1	40	4DA1	668	5DB	713
1CA	0	1HG	944	2EC	0	3EA21	30	4DA2	2094	5DC1	0
1CB1	0	1JA	0	2ED1	0	3EA22	1	4DB	1689	5DC2	0
1CB2	0	1JB	0	2ED2	0	3EB1	21	4DC	1126	5DD	12667
1CC	0	1JC1	0	2EE1	40	3EB2	347	4DD	1750		
1CD	0	1JC2	0	2EE2	0	3EC	182	4DE	2592		
1CE	0	1JC3	0	2EE3	54	3ED1	10	4EA1	1992		
1DA	6875	1JD	0	2EF	586	3ED2	85	4EA2	335		
1DB	1994	1JE	0	2EG1	0	3FA1	903	4EB	4032		
1DC	1779	1JF1	0	2EG21	21	3FA2	365	4EC	1841		
1DD	1712	1JF2	0	2EG22	39	3FA3	102	4ED1	430		
1EA	37	1JG1	987	2EH1	0	3FB	575	4ED2	888		
1EB	10625	1JG2	763	2EH2	0	3G1	1297	4ED3	6583		
1EC	2758	1KA	1049	2EJ	2337	3G2	3704	4ED4	782		
1ED	2045	1KB1	373	2EK	0	3G3	680	4FA1	6850		
1EE	8861	1KB2	2316	2FA	0	3G4	62	4FA2	5291		
1EF	4250	1KB3	8064	2FC	0	3HA	783	4FB	2186		
1EG	5829	1KB4	2557	2GA	0	3HB	780	4GA	2174		
1FA	0	1KB5	8509	2GB1	0	3HC	823	4GB	2204		
1FB	0	1KC1	1777	2GB2	0	3HD1	195	4GC	728		
1FC	0	1KC2	2198	2GB3	0	3LA1	186	4GD	2961		
1FD1	0	1KC3	180	2GC	0	3LA2	854	4GE	4409		
1FD2	0	1LA1	0	2GD	0	3LA3	874	4GF	5345		
1FE	704	1LA2	0	2KA1	0	3LA4	619	4GG	1907		
1FF	221	1LA31	0	2KA2	0	3LB	207	4HA1	245		
1FG	18885	1LA32	0	2KA3	0	3MA	1512	4HA21	0		
		1LB11	0	2KA4	0	3MB1	189	4HA22	0		
		1LB12	0	2KA5	0	3MB2	664	4HA23	9		
		1LB2	0	2KA6	0	3MB3	63	4HA24	127		
				2KB1	612	3MB4	148	4HA3	237		
				2KB2	1122	3MCI	537	4HA4	136		
				2KC	1930	3MC2	116	4HA5	719		
						3MD1	50	4HB	2382		
						3MD2	88	4HC	1862		
<b>Total</b>	<b>72,879</b>	<b>Total</b>	<b>63,745</b>	<b>Total</b>	<b>47,895</b>	<b>Total</b>	<b>21,879</b>	<b>Total</b>	<b>117,337</b>	<b>Total</b>	<b>14,643</b>

Table E2.15 Irrigation Potential by Sub-basin (2/4) (for upland crop)  
( in case of monthly mean flow )

Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)
1AA	856	1GA	1659	2BA	3252	3AA11	9	4AA	1353	5AA1	51
1AB	1013	1GB	2008	2BB	5408	3AA12	69	4AB	1595	5AA2	13
1AC	329	1GC1	267	2BC	8792	3AA13	20	4AC	3955	5AA3	205
1AD	817	1GC2	3151	2BD	4813	3AA2	0	4AD	3855	5AA4	243
1AE	343	1GD1	229	2CB1	338	3AB	375	4BA	2655	5AB	205
1AF	934	1GD2	1753	2CB2	828	3AC1	0	4BB	2271	5AC	370
1AG	797	1GD3	1818	2CB3	11895	3AC2	651	4BC	1538	5AD	175
1AH	1215	1GE	2583	2CC1	1823	3BA1	161	4BD	5968	5BA	482
1BA	1155	1GF	982	2CC2	160	3BA2	1522	4BE	11894	5BB	819
1BB1	69	1GG	1210	2CC3	694	3BB	324	4BF	3412	5BC	3684
1BB2	3499	1HA	5212	2CC4	1161	3BC	998	4BG	4258	5BD	1231
1BC	5098	1HB	3688	2CC5	1990	3BD	363	4CA	7711	5BE	2326
1BD	1715	1HC	3133	2EA	1076	3CB	467	4CB1	2116	5DA1	582
1BE	1670	1HD	2299	2EB1	1129	3DA	213	4CB2	3610	5DA2	279
1BG	985	1HE	1929	2EB2	437	3DB	222	4CC	6946	5DA3	402
1BH	1391	1HF	2325	2EB3	330	3EA1	128	4DA1	668	5DB	713
1CA	1184	1HG	944	2EC	1720	3EA21	96	4DA2	2094	5DC1	499
1CB1	384	1JA	4260	2ED1	151	3EA22	0	4DB	1689	5DC2	1470
1CB2	152	1JB	2576	2ED2	874	3EB1	21	4DC	1126	5DD	2264
1CC	1772	1JC1	357	2EE1	356	3EB2	194	4DD	1750		
1CD	1417	1JC2	745	2EE2	0	3EC	182	4DE	2593		
1CE	426	1JC3	1617	2EE3	1020	3ED1	10	4EA1	1992		
1DA	2084	1JD	1719	2EF	1013	3ED2	85	4EA2	335		
1DB	1994	1JE	3163	2EG1	926	3FA1	903	4EB	4032		
1DC	1779	1JF1	2519	2EG21	1199	3FA2	365	4EC	1841		
1DD	1712	1JF2	2305	2EG22	2121	3FA3	292	4ED1	429		
1EA	5575	1JG1	1418	2EH1	59	3FB	753	4ED2	889		
1EB	5087	1JG2	1088	2EH2	1138	3G1	1297	4ED3	6583		
1EC	2758	1KA	1049	2EJ	1461	3G2	3704	4ED4	782		
1ED	2045	1KB1	373	2EK	1441	3G3	680	4FA1	6849		
1EE	6469	1KB2	2316	2FA	1097	3G4	62	4FA2	5291		
1EF	4146	1KB3	8064	2FC	2520	3HA	352	4FB	2187		
1EG	5829	1KB4	2557	2GA	697	3HB	780	4GA	2173		
1FA	886	1KB5	8509	2GB1	649	3HC	823	4GB	2204		
1FB	2124	1KC1	1777	2GB2	156	3HD1	195	4GC	729		
1FC	1532	1KC2	2198	2GB3	756	3LA1	186	4GD	2961		
1FD1	1444	1KC3	180	2GC	351	3LA2	854	4GE	4409		
1FD2	109	1LA1	4430	2GD	2622	3LA3	874	4GF	5673		
1FE	4917	1LA2	4794	2KA1	2199	3LA4	619	4GG	4592		
1FF	1746	1LA31	12187	2KA2	688	3LB	207	4HA1	245		
1FG	7257	1LA32	10270	2KA3	1265	3MA	1512	4HA21	0		
		1LB11	2597	2KA4	4275	3MB1	189	4HA22	0		
		1LB12	5343	2KA5	935	3MB2	664	4HA23	9		
		1LB2	3857	2KA6	7272	3MB3	63	4HA24	127		
				2KB1	453	3MB4	148	4HA3	237		
				2KB2	261	3MC1	537	4HA4	136		
				2KC	499	3MC2	116	4HA5	719		
						3MD1	50	4HB	2382		
						3MD2	88	4HC	1862		
Total	86,714	Total	127,458	Total	84,300	Total	22,423	Total	132,725	Total	16,013

Table E2.15 Irrigation Potential by Sub-basin (3/4) (for paddy)  
( in case of 80% dependable monthly flow)

Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)
1AA	627	1GA	264	2BA	0	3AA11	0	4AA	0	5AA1	0
1AB	748	1GB	2309	2BB	6830	3AA12	0	4AB	0	5AA2	0
1AC	301	1GC1	89	2BC	7013	3AA13	0	4AC	0	5AA3	0
1AD	567	1GC2	1056	2BD	3807	3AA2	0	4AD	0	5AA4	0
1AE	357	1GD1	1241	2CB1	254	3AB	0	4BA	212	5AB	0
1AF	907	1GD2	1912	2CB2	611	3AC1	0	4BB	43	5AC	0
1AG	783	1GD3	1216	2CB3	5013	3AC2	0	4BC	2310	5AD	0
1AH	874	1GE	1969	2CC1	786	3BA1	0	4BD	2457	5BA	0
1BA	0	1GF	748	2CC2	118	3BA2	0	4BE	9761	5BB	0
1BB1	0	1GG	0	2CC3	524	3BB	0	4BF	2237	5BC	0
1BB2	0	1HA	4527	2CC4	925	3BC	0	4BG	13436	5BD	0
1BC	0	1HB	3590	2CC5	1576	3BD	0	4CA	0	5BE	0
1BD	0	1HC	2856	2EA	0	3CB	0	4CB1	0	5DA1	295
1BE	0	1HD	1615	2EB1	0	3DA	6170	4CB2	0	5DA2	139
1BG	0	1HE	1809	2EB2	0	3DB	155	4CC	5806	5DA3	205
1BH	0	1HF	1868	2EB3	0	3EA1	40	4DA1	1126	5DB	394
1CA	0	1HG	830	2EC	0	3EA21	30	4DA2	1142	5DC1	0
1CB1	0	1JA	0	2ED1	0	3EA22	1	4DB	2832	5DC2	0
1CB2	0	1JB	0	2ED2	0	3EB1	10	4DC	2084	5DD	7423
1CC	0	1JC1	0	2EE1	40	3EB2	1236	4DD	2079		
1CD	0	1JC2	0	2EE2	0	3EC	128	4DE	1603		
1CE	0	1JC3	0	2EE3	54	3ED1	10	4EA1	1105		
1DA	6875	1JD	0	2EF	463	3ED2	53	4EA2	196		
1DB	1750	1JE	0	2EG1	0	3FA1	730	4EB	2327		
1DC	1407	1JF1	0	2EG21	21	3FA2	292	4EC	1217		
1DD	1525	1JF2	0	2EG22	39	3FA3	84	4ED1	215		
1EA	37	1JG1	987	2EH1	0	3FB	456	4ED2	450		
1EB	8938	1JG2	763	2EH2	0	3G1	941	4ED3	3339		
1EC	2462	1KA	1209	2EJ	1355	3G2	3160	4ED4	285		
1ED	1882	1KB1	311	2EK	0	3G3	544	4FA1	4299		
1EE	7117	1KB2	1879	2FA	0	3G4	52	4FA2	2277		
1EF	3794	1KB3	6525	2FC	0	3HA	785	4FB	1733		
1EG	5360	1KB4	2047	2GA	0	3HB	905	4GA	1721		
1FA	0	1KB5	6748	2GB1	0	3HC	973	4GB	1746		
1FB	0	1KC1	1273	2GB2	0	3HD1	149	4GC	580		
1FC	0	1KC2	1573	2GB3	0	3LA1	392	4GD	2344		
1FD1	0	1KC3	132	2GC	0	3LA2	724	4GE	3489		
1FD2	0	1LA1	0	2GD	0	3LA3	386	4GF	4489		
1FE	704	1LA2	0	2KA1	0	3LA4	265	4GG	1519		
1FF	221	1LA31	0	2KA2	0	3LB	261	4HA1	209		
1FG	16135	1LA32	0	2KA3	0	3MA	105	4HA21	0		
		1LB11	0	2KA4	0	3MB1	87	4HA22	0		
		1LB12	0	2KA5	0	3MB2	253	4HA23	9		
		1LB2	0	2KA6	0	3MB3	63	4HA24	100		
				2KB1	612	3MB4	63	4HA3	191		
				2KB2	1122	3MC1	231	4HA4	127		
				2KC	1930	3MC2	53	4HA5	564		
						3MD1	484	4HB	1883		
						3MD2	63	4HC	1478		
Total	63,371	Total	51,346	Total	33,093	Total	20,334	Total	85,020	Total	8,456



Table E2.15 Irrigation Potential by Sub-basin (4/4) (for upland crop)  
( in case of 80% dependable monthly flow )

Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)	Basin	Area(ha)
1AA	627	1GA	1042	2BA	2470	3AA11	9	4AA	933	5AA1	12
1AB	748	1GB	1531	2BB	4360	3AA12	40	4AB	1017	5AA2	0
1AC	301	1GC1	157	2BC	7013	3AA13	9	4AC	2979	5AA3	64
1AD	567	1GC2	1922	2BD	3807	3AA2	39	4AD	3063	5AA4	77
1AE	357	1GD1	257	2CB1	254	3AB	236	4BA	1796	5AB	90
1AF	907	1GD2	1083	2CB2	611	3AC1	20	4BB	1500	5AC	185
1AG	783	1GD3	1217	2CB3	5013	3AC2	428	4BC	1017	5AD	62
1AH	874	1GE	1969	2CC1	786	3BA1	90	4BD	7437	5BA	241
1BA	766	1GF	748	2CC2	118	3BA2	1890	4BE	8163	5BB	797
1BB1	59	1GG	968	2CC3	524	3BB	504	4BF	2237	5BC	2408
1BB2	3054	1HA	4527	2CC4	925	3BC	638	4BG	2648	5BD	692
1BC	4165	1HB	3590	2CC5	1576	3BD	425	4CA	396	5BE	1496
1BD	1446	1HC	2856	2EA	447	3CB	2460	4CB1	1171	5DA1	295
1BE	1386	1HD	1615	2EB1	447	3DA	174	4CB2	1739	5DA2	140
1BG	1171	1HE	1809	2EB2	171	3DB	146	4CC	4294	5DA3	205
1BH	1101	1HF	1868	2EB3	139	3EA1	118	4DA1	1126	5DB	393
1CA	971	1HG	830	2EC	969	3EA21	1017	4DA2	1142	5DC1	281
1CB1	597	1JA	3091	2ED1	60	3EA22	0	4DB	2832	5DC2	717
1CB2	597	1JB	2262	2ED2	349	3EB1	10	4DC	2084	5DD	1184
1CC	1418	1JC1	243	2EE1	147	3EB2	172	4DD	2079		
1CD	1154	1JC2	759	2EE2	0	3EC	128	4DE	1605		
1CE	345	1JC3	1445	2EE3	425	3ED1	10	4EA1	1105		
1DA	1752	1JD	1547	2EF	463	3ED2	53	4EA2	196		
1DB	1750	1JE	2405	2EG1	475	3FA1	730	4EB	2327		
1DC	1407	1JF1	2318	2EG21	530	3FA2	292	4EC	1217		
1DD	1525	1JF2	2062	2EG22	928	3FA3	242	4ED1	215		
1EA	4674	1JG1	1274	2EH1	25	3FB	615	4ED2	449		
1EB	4301	1JG2	974	2EH2	462	3G1	941	4ED3	3340		
1EC	2462	1KA	1209	2EJ	1355	3G2	3160	4ED4	285		
1ED	1882	1KB1	311	2EK	570	3G3	544	4FA1	4298		
1EE	5759	1KB2	1879	2FA	630	3G4	52	4FA2	2277		
1EF	3794	1KB3	6525	2FC	1585	3HA	329	4FB	1734		
1EG	5360	1KB4	2047	2GA	326	3HB	905	4GA	1720		
1FA	722	1KB5	6748	2GB1	448	3HC	973	4GB	1747		
1FB	1762	1KC1	1273	2GB2	112	3HD1	148	4GC	579		
1FC	1270	1KC2	1573	2GB3	553	3LA1	392	4GD	2344		
1FD1	1127	1KC3	132	2GC	351	3LA2	724	4GE	3489		
1FD2	87	1LA1	3416	2GD	1282	3LA3	386	4GF	4489		
1FE	4402	1LA2	3868	2KA1	1314	3LA4	265	4GG	1543		
1FF	1373	1LA31	9877	2KA2	479	3LB	261	4HA1	209		
1FG	6495	1LA32	8277	2KA3	873	3MA	105	4HA21	0		
		1LB11	2150	2KA4	1521	3MB1	87	4HA22	0		
		1LB12	4437	2KA5	494	3MB2	253	4HA23	9		
		1LB2	3083	2KA6	5644	3MB3	63	4HA24	100		
				2KB1	350	3MB4	63	4HA3	191		
				2KB2	215	3MC1	231	4HA4	127		
				2KC	399	3MC2	53	4HA5	564		
						3MD1	484	4HB	1883		
						3MD2	63	4HC	1478		
Total	75,298	Total	103,174	Total	51,995	Total	20,977	Total	89,173	Total	9,339

Table E2.16

## Guidelines for Evaluation Irrigation Water Quality

Type of Problem	Units	Water Quality Guidelines		
		No Problem	Increasing Problem	Severe Problem
<b>SALINITY (affects crop water availability)</b>				
EC <sub>w</sub>	mmhos/cm	< 0.7	0.7 - 3.0	> 3.0
<b>PERMEABILITY (affects infiltration rate into soil)</b>				
EC <sub>w</sub>	mmhos/cm	> 0.5	0.5 - 0.2	< 0.2
adj SAR				
Montmorillonite - Smectites (2:1 crystal lattice)		< 6	6 - 9* <sup>1</sup>	> 9
Illite - Vermiculite (2:1 crystal lattice)		< 8	8 - 16* <sup>1</sup>	> 16
Kaolinite - Scaquioxides (1:1 crystal lattice)		<16	16 - 24* <sup>1</sup>	> 24
<b>SPECIFIC ION TOXICITY (affects sensitive crops)*<sup>2</sup></b>				
Sodium (Na)				
Surface Irrigation	adj SAR	< 3	3 - 9	> 9
Sprinkler Irrigation	meq/l	< 3	> 3	
Chloride (Cl)				
Surface Irrigation	meq/l	<4	4 - 10	> 10
Sprinkler Irrigation	meq/l	< 3	>3	
Boron (B)	mg/l	< 0.7	0.7 - 2.0	> 2
<b>MISCELLANEOUS EFFECTS (affect susceptible crops)</b>				
Nitrogen (NO <sub>3</sub> -N or NH <sub>4</sub> -N)* <sup>3</sup>	mg/l	< 5	5 - 30	> 30
Bicarbonate (HCO <sub>3</sub> ) with sprinklers	meq/l	< 1.5	1.5 - 8.5	> 8.5
pH			Normal range 6.5 - 8.4	

Note: \*1: Use the lower range if EC<sub>w</sub> < 0.4 mmhos/cm; the intermediate range if EC<sub>w</sub> = 0.4 - 1.6 mmhos/cm; the upper range if EC<sub>w</sub> > 1.6 mmhos/cm.

\*2: Most tree crops and other woody plants are sensitive to sodium and chloride (use values shown). Most annual crops are not sensitive (use the crop tolerance tables, Table 5.4.5).

\*3 NO<sub>3</sub>-N means nitrogen in the form of NO<sub>3</sub> while NH<sub>4</sub>-N means nitrogen in the form of NH<sub>4</sub>. Both reported as N in mg/l. 3

Source: Ref. E.46

Table E2.17 Recommended Maximum Concentrations of Trace Elements  
in Irrigation Waters

Element (symbol)	For Waters used Continuously on All Soils mg/l	For use up to 20 Years on Fine Textured Soils of pH 6.0 to 8.5 mg/l
Aluminium (Al)	5.0	20.0
Arsenic (As)	0.1	2.0
Beryllium (Be)	0.1	0.5
Boron (B)	*1	2.0
Cadmium (Cd)	0.01	0.05
Chromium (Cr)	0.1	1.0
Cobalt (Co)	0.05	5.0
Copper (Cu)	0.2	5.0
Fluoride (F)	1.0	15.0
Iron (Fe)	5.0	20.0
Lead (Pb)	5.0	10.0
Lithium (Li) *2	2.5	2.5
Manganese (Mn)	0.2	10.0
Molybdenum (Mo)	0.01	0.05 *3
Nickel (Ni)	0.2	2.0
Selenium (Se)	0.02	0.02
Vanadium (V)	0.1	1.0
Zinc (Zn)	2-0	10.0

These levels will normally not adversely affect plants or soils. No data available for Mercury (Hg), Silver (Ag), Tin (Sn), Titanium (Ti), Tungsten (W).

Note: \*1 See Table 5.4.3.

\*2 Recommended maximum concentration for irrigating citrus is 0.075 ml.

\*3 For only acid fine textured soils or acid soils with relatively high iron oxide contents.

Source: Ref. E.46

Table E2.18 Crop Tolerance Table

(Yield Potentials expected when Common Surface Irrigation Methods are Used)

Crop	100%		90%		75%		50%		No Yield
	ECe	ECw	ECe	ECw	ECe	ECw	ECe	ECw	ECe
Barley ( <i>Hordeum vulgare</i> )	8.0	5.3	10.0	6.7	13	8.7	18	12	28
Cotton ( <i>Gossypium hirsutum</i> )	7.7	5.1	9.6	6.4	13	8.4	17	12	27
Sugarbeet ( <i>Beta vulgaris</i> )	7.0	4.7	8.7	5.8	11	7.5	15	10	24
Wheat ( <i>Triticum aestivum</i> )	6.0	4.0	7.4	4.9	9.5	6.4	13	8.7	20
Safflower ( <i>Carthamus tinctorius</i> )	5.3	3.5	6.2	4.1	7.6	5.0	9.9	6.6	14.5
Soybean ( <i>Glycine max</i> )	5.0	3.3	5.5	3.7	6.2	4.2	7.5	5.0	10
Sorghum ( <i>Sorghum bicolor</i> )	4.0	2.7	5.1	3.4	7.2	4.8	11	7.2	18
Groundnut ( <i>Arachis hypogaea</i> )	3.2	2.1	3.5	2.4	4.1	2.7	4.9	3.3	6.5
Rice (Paddy) ( <i>Oryza sativa</i> )	3.0	2.0	3.8	2.6	5.1	3.4	7.2	4.8	11.5
Sesbania ( <i>Sesbania exaltata</i> )	2.3	1.5	3.7	2.5	5.9	3.9	9.4	6.3	16.5
Corn ( <i>Zea mays</i> )	1.7	1.1	2.5	1.7	3.8	2.5	5.9	3.9	10
Flax ( <i>Linum usitatissimum</i> )	1.7	1.1	2.5	1.7	3.8	2.5	5.9	3.9	10
Broadbean ( <i>Vicia faba</i> )	1.6	1.1	2.6	1.8	4.2	2.0	6.8	4.5	12
Cowpea ( <i>Vigna unguiculata</i> )	1.3	0.9	2.0	1.3	3.1	2.1	4.9	3.2	8.5
Beans ( <i>Phaseolus vulgaris</i> )	1.0	0.7	1.5	1.0	2.3	1.5	3.6	2.4	6.5

Source: Ref. E.46

Table E2.19 Groundwater Availability

Basin	Q	Area	Unit	Basin	Q	Area	Unit	Basin	Q	Area	Unit	Basin	Q	Area	Unit	Basin	Q	Area	Unit
	m3/Day	km2	l/km2		m3/Day	km2	l/km2		m3/Day	km2	l/km2		m3/Day	km2	l/km2		m3/Day	km2	l/km2
IAA	464	246	0.0218	2AA	18488	11498	0.0186	3AA	283	697	0.0047	4AA	217	519	0.0048	5AA	1320	1247	0.0123
IAB	394	293	0.0156	2AB	25336	9853	0.0298	3AB	2468	1786	0.016	4AB	451	684	0.0076	5AB	455	482	0.0109
IAC	389	120	0.0375	2BA	2859	1325	0.025	3AC	848	887	0.0111	4AC	185	429	0.005	5AC	1745	1085	0.0186
IAD	666	222	0.0347	2BB	6608	2038	0.0375	3BA	412	830	0.0057	4AD	311	441	0.0082	5AD	908	517	0.0203
IAE	554	176	0.0364	2BC	11561	3827	0.035	3BB	131	256	0.0059	4BA	406	317	0.0148	5BA	125	269	0.0054
IAF	1326	411	0.0373	2BD	45466	13251	0.0397	3BC	464	476	0.0113	4BB	144	259	0.0064	5BB	461	452	0.0118
IAG	1190	359	0.0384	2CA	20900	3571	0.0677	3BD	315	328	0.0111	4BC	204	227	0.0104	5BC	2824	1636	0.02
IAH	2068	564	0.0424	2CB	4897	2380	0.0238	3CB	405	395	0.0119	4BD	1431	547	0.0303	5BD	805	674	0.0138
IBA	1373	628	0.0253	2CC	35730	11436	0.0362	3DA	2039	807	0.0292	4BE	502	554	0.0105	5BE	2636	1238	0.0246
IBB	2695	865	0.0361	2D	22136	12965	0.0198	3DB	2304	822	0.0324	4BF	514	374	0.0159	5CA	3417	2342	0.0169
IBC	2595	770	0.039	2EA	298	412	0.0084	3EA	2608	875	0.0345	4BG	1225	443	0.032	5CB	7145	2259	0.0366
IBD	1011	678	0.0173	2EB	507	726	0.0081	3EB	2695	804	0.0388	4CA	559	537	0.012	5CC	9443	3005	0.0364
IBE	2527	1011	0.0289	2EC	677	826	0.0095	3EC	2410	671	0.0416	4CB	366	313	0.0135	5DA	8306	2237	0.043
IBG	1952	907	0.0249	2ED	386	421	0.0106	3ED	1893	570	0.0384	4CC	2242	1019	0.0255	5DB	3579	1286	0.0322
IBH	1909	618	0.0358	2EE	846	609	0.0161	3FA	32475	9995	0.0376	4DA	670	715	0.0108	5DC	2894	1268	0.0264
ICA	780	684	0.0132	2EF	591	389	0.0176	3FB	12383	4196	0.0342	4DB	601	453	0.0154	5DD	5554	1883	0.0341
ICB	688	671	0.0119	2EG1	389	397	0.0113	3G	18131	6306	0.0333	4DC	412	354	0.0135	5EA	80878	25393	0.0369
ICC	420	664	0.0073	2EG2	2007	1264	0.0184	3HA	4353	921	0.0547	4DD	1027	452	0.0263	5EB	130746	27092	0.0559
ICD	1054	521	0.0234	2EH	1089	604	0.0209	3HB	11258	2498	0.0522	4DE	3054	735	0.0481	5EC	73003	29264	0.0289
ICE	586	231	0.0294	2EJ	2860	1419	0.0233	3HC	11408	2942	0.0449	4EA	1488	743	0.0232	5ED	59376	17936	0.0383
IDA	1752	520	0.039	2EK	759	603	0.0146	3HD1	2701	627	0.0499	4EB	2832	1193	0.0275	5FA	76655	18485	0.048
IDB	1712	696	0.0285	2FA	868	548	0.0183	3HD2	2472	386	0.0741	4EC	1496	605	0.0286	5FB	29256	8171	0.0414
IDC	1096	373	0.034	2FB	56	143	0.0045	3J	11741	3022	0.045	4ED	11360	3160	0.0416	5GA	103438	22579	0.053
IDD	1081	355	0.0352	2FC	1510	1514	0.0115	3K	23580	4176	0.0654	4FA	4141	2181	0.022	5GB	9726	3379	0.0333
IEA	885	429	0.0239	2GA	700	323	0.0251	3LA	26293	7305	0.0417	4FB	10677	3950	0.0313	5H	15894	6784	0.0271
IEB	1173	380	0.0357	2GB	1086	963	0.0131	3LB	2626	771	0.0394	4GA	14046	3909	0.0416	5J	55378	29263	0.0219
IEC	787	250	0.0364	2GC	848	753	0.013	3MA	19371	6120	0.0366	4GB	18192	5503	0.0383				
IED	415	128	0.0375	2GD	2402	1153	0.0241	3MB	6041	1700	0.0411	4GC	5848	1823	0.0371				
IEE	1437	401	0.0415	2H	12009	8215	0.0169	3MC	3739	1044	0.0415	4GD	24438	7399	0.0382				
IEF	1069	385	0.0321	2J	80187	28304	0.0328	3MD1	4854	1276	0.044	4GE	41209	11732	0.0407				
IEG	1887	544	0.0401	2KA	6572	5092	0.0149	3MD2	599	173	0.0401	4GF	51582	15518	0.0385				
IFA	172	240	0.0083	2KB	1841	1636	0.013	3N	11679	3175	0.0426	4GG	31205	7120	0.0507				
IFB	1337	378	0.0409	2KC	4433	1994	0.0257					4HA	18716	5480	0.0395				
IFC	1242	272	0.0528									4HB	43453	9066	0.0555				
IFD	660	480	0.0159									4HC	33771	6623	0.059				
IFE	2432	652	0.0432									4JA	28455	8489	0.0388				
IFF	819	272	0.0348									4JB	14214	3691	0.0446				
IFG	3467	980	0.0409									4KA	25516	8251	0.0358				
IGA	250	443	0.0065									4KB	33520	10218	0.038				
IGB	1370	518	0.0306																
IGC	715	912	0.0091																
IGD	2590	720	0.0416																
IGE	1228	391	0.0364																
IGF	1030	260	0.0459																
IGG	247	374	0.0076																
IHA	4890	869	0.0651																
IHB	2555	762	0.0388																
IHC	1462	521	0.0325																
IHD	2816	778	0.0419																
IHE	2507	761	0.0381																
IHF	2641	846	0.0361																
IHG	798	333	0.0277																
IHA	214	748	0.0033																
IJB	192	262	0.0085																
IJC	259	339	0.0088																
IJD	485	213	0.0264																
IJE	1266	601	0.0244																
IJF	1687	1006	0.0194																
IJG	1143	312	0.0424																
IKA	1453	463	0.0363																
IKB	13631	3558	0.0443																
IKC	9248	2898	0.0369																
ILA1	1029	914	0.013																
ILA2	2364	1003	0.0273																
ILA3	7095	2886	0.0285																
ILB1	2092	1449	0.0167																
ILB2	6349	2715	0.0271																
<b>Total</b>	<b>121670</b>			<b>Total</b>	<b>316902</b>			<b>Total</b>	<b>224979</b>			<b>Total</b>	<b>430680</b>			<b>Total</b>	<b>685967</b>		

Table E2.20 Estimated Cost and Benefit

Scheme Name	Area (ha)	Cost (million Kshs)	Evaluation			Escalation		Estimated	
			Benefit (million Kshs/Year)	Year	Rate	Benefit (million Kshs/Year)	Cost (million Kshs)		
Aror	1340	127.5	28.36	1988	1.25	35.45	159.40		
Kano Plain	25640	2915	528	1991	1	1,102.50	5,859.90		
Kanzalu	4055	297.7	90.832	1980	2.51	227.99	960.23 *2		
Kibwezi	13200	822.58	295.7	1980	2.51	742.16	5,724.79 *3		
Kimira	2000	457	86	1988	1.25	86.00	457.00		
Kunai	1050	23.5	35.1	1980	2.51	59.04	88.13		
Lower Ewaso 'Ngiro	10000	932.8	224	1986	1.54	344.96	1,436.51		
Lower Kujja	1900	61.7	19.4	1985	1.65	24.10	140.60		
Bunyala Extension	10480	152	134.1	1983	2.06	276.34	313.12		
Lower Rupingazi	1800	60.2	40.3	1980	2.51	101.20	151.08		
Mwea extension	2900	1227.1	299.6	1988	1.25	453.60	1,605.00		
Sabaki Extension	3000	199.1	67.2	1980	2.51	168.67	499.84		
Tana Delta	12000	2850	304	1989	1.25	380.00	3,562.50		
Taita Taveta	3780	195	84.7	1986	1.54	130.39	300.30		
Thanantu	2520	283.5	56.4	1986	1.54	86.93	436.59		
Turkwell	600	15	2	1979	2.94	5.88	44.10		
Upper Nzoia	7550	1076.7	96.64	1983	2.06	199.10	2,218.00		
Yala Swamp	7540	1063.85	37.83	1986	1.54	58.26	1,638.33		
							25,595.42		

Source : Ref. E.7,12,28,30,34,40,41,42,43

\*1 : Ref. E.4

\*2 : include Kshs.213 million of Dam Cost

\*3 : include Kshs.3,660 million of Dam Cost

Table E2.21 Environmental Impacts for 18 Irrigation Schemes

Potential impact	Scheme name								
	Arror	Kano	Kanzalu	Kibwezi	Kimira	Kunati	S.Ewaso	Kuja	Bunyala
Disease aspects									
- Introduction of new diseases	-1		2		-1				
- Impacts of existing diseases	-1	2			2		2	2	1
- Agro-chemical hazards									
Downstream impacts									
- on water volume	1		1	1	2		2	2	1
- on water quality	1	2		1			-1		
In flow water quality									
- chemistry	-1	-1	-1	1	-1		1	2	
- sediments		-1	1		-1			-1	
Soil quality							2	-1	-1
ASAL key production area impacts	1	-1			-1		2	-1	-1
Fuel wood demand		1					2		
Other impacts									
Total Rating	0	2	3	3	0		10	3	0

Potential impact	Scheme name								
	Rubingazi	Mwea	Sabaki	Tana D	Taita	Thanantu	Turkwel	U.Nzoia	Yala
Disease aspects									
- Introduction of new diseases	-1	2		-1	1		1		
- Impacts of existing diseases	-1	2		2					
- Agro-chemical hazards				2					
Downstream impacts									
- on water volume			1	1	1		2		
- on water quality	-1	1	1	2					
In flow water quality									
- chemistry					2				
- sediments	1		2	1					
Soil quality		-1							
ASAL key production area impacts	-1	-1	-1	-1			2		
Fuel wood demand							2		
Other impacts				1	1		1		2
Total Rating	-3	3	3	7	5		8		2

2= probable impact  
 1 = possible impact  
 -1 = probably no impact  
 blank = not evaluated

	from above		
	Table	Order	Ranking (D)
Lower Rupigazi	-3	1	1
Arror	0	2	2
Kimira	0	3	2
Bunyala Ext.	0	4	2
Kano Plain	2	5	5
Yala Swamp	2	6	5
Kanzalu	3	7	7
Kibwezi Ext.	3	8	7
Kunati	3	9	7
Lower Kuja	3	10	7
Mwea Ext.	3	11	7
Sabaki Ext.	3	12	7
Thanantu	3	13	7
Upper Nzoia	3	14	7
Taveta	5	15	15
Tana Delta	7	16	16
Turkwel	8	17	17
Lower E.'Ngiro	10	18	18

Table E2.22 Estimation of Escalatin Rate

Year	Civil * Engineering Cost Index	Escalation Rate 1991 base
1972	100	8.33
1973		
1974		
1975		
1976		
1977		
1978		
1979	283.51	2.94
1980	332.1	2.51
1981	384	2.17
1982	404.1	2.06
1983	404.1	2.06
1984	455.5	1.83
1985	505.3	1.65
1986	539.7	1.54
1987	604.3	1.38
1988	666.4	1.25
1989	710.06	1.17
1990		
1991	833	1

\* : Ref E.4



## ***FIGURES***



Fig. E1.1

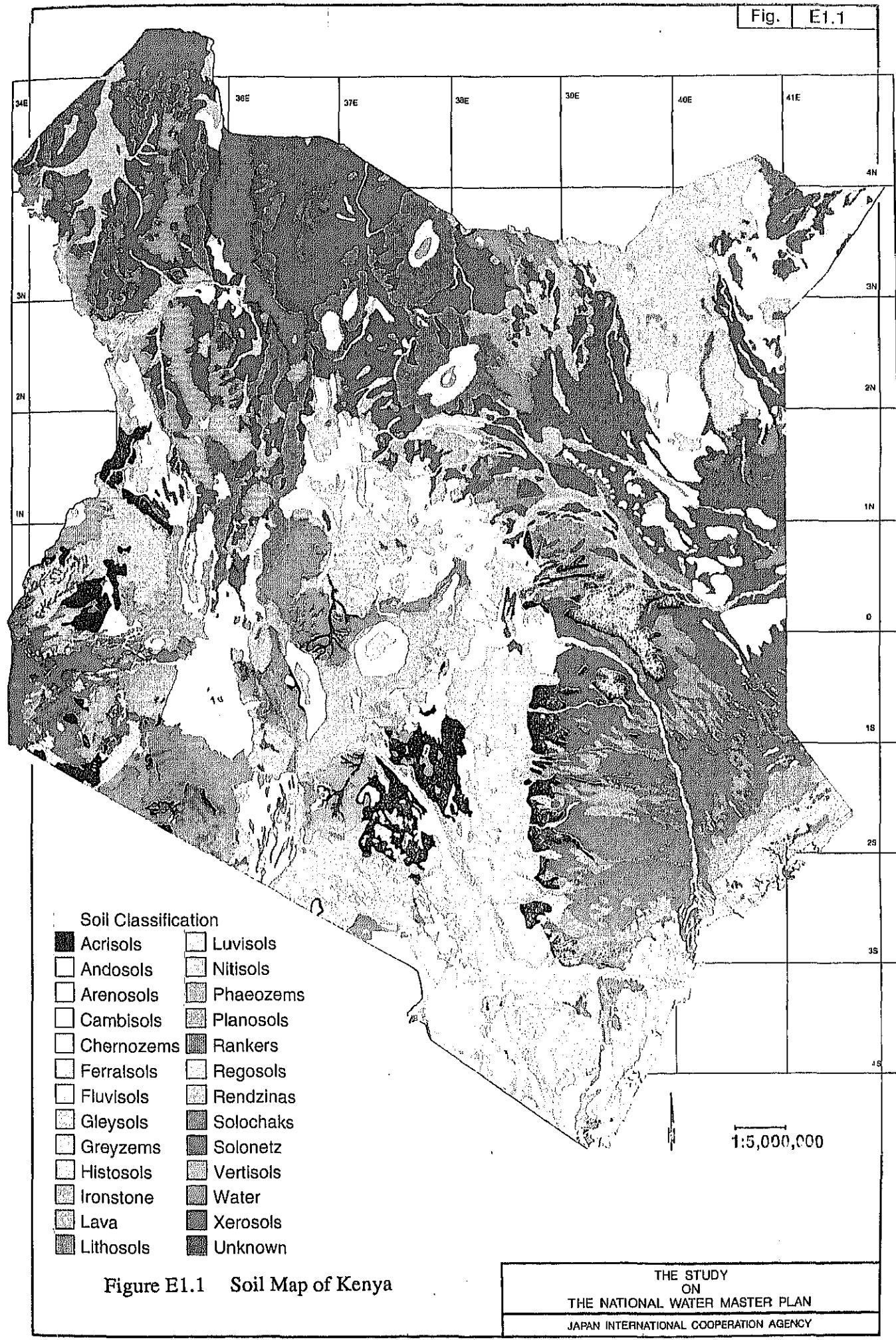
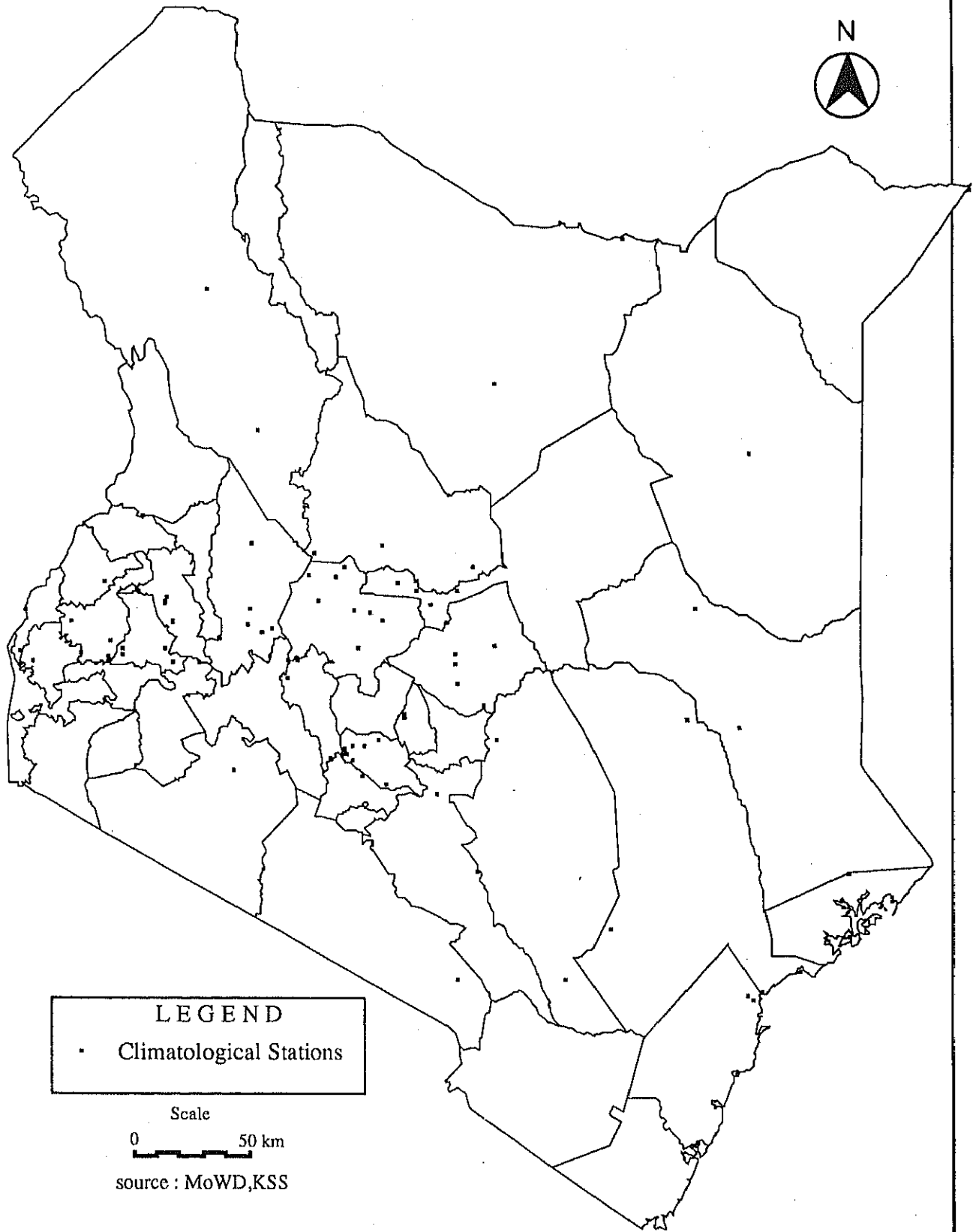


Figure E1.1 Soil Map of Kenya

THE STUDY  
ON  
THE NATIONAL WATER MASTER PLAN  
JAPAN INTERNATIONAL COOPERATION AGENCY





**LEGEND**  
▪ Climatological Stations

Scale  
0 50 km  
source : MoWD,KSS

Figure E1.2 Location of 90's Climatological Stations

THE STUDY  
ON  
THE NATIONAL WATER MASTER PLAN  
JAPAN INTERNATIONAL COOPERATION AGENCY

Belts of Zone	Main Zone							
	0 (perhumid)	1 (humid)	2 (subhumid)	3 (subhumid)	4 (transitional)	5 (semi-arid)	6 (arid)	7 (perarid)
TA Tropical Alpine Zones Ann. mean 2-10C	Glacier							High altitudes deserts
UH Upper High- land Zones Ann. mean 10-15C Seasonal night frosts	Mountain Swamps	Sheep- Dairy Zone	Pyrethrum- Wheat Zone	Wheat- Barley Zone	U Highland Ranching Zone	U. H. Nomadism Zone*		
LH Lower High-land Zone Ann. mean 15-18 C M. min. 8-11C Norm. no frost	Forest Zones	Tea- Dairy Zone	Wheat/ Maize- Pyrethrum Zone	Wheat/Maize- Barley Zone	Cattle- Sheep- Barley zone	L. Highland Ranching Zone	L. H. Nomadism Zone*	
UM Upper Mid- land Zones Ann. mean 18-21 C M. min. 11-14 C		Coffee- Tea Zone	Main Coffee Zone	Marginal Coffee Zone	Sunflower- Maize Zone	Livestock- Sorghum Zone	U. Midland Ranching Zone	U. Midland Nom. Zone
LM Lower Mid- land Zones Ann. mean 21-34 C M. min. > 14 C	*	L. Midl. Sugar- cane Zone	Marginal Sugarcane Zone	L. Midland Cotton Zone	Marginal Cotton Zone	L. Midland Livestock- Millet Zone	L. Midland Ranching Zone	L. Midland Nom. Zone
L. Lowland Zones IL. Inner Lowland Z. Ann. mean > 24 C Mean max. > 31 C	*	Rice- Taro Zone*	Lowland Sugarcane Zone*	Lowland Cotton Zone*	Groundnut Zone*	Lowland Livestock Millet Zone	Lowland Ranching Zone	U. Midland Nom. Zone
CL Coastal Lowl. Z. Ann. mean > 24 C Mean max. < 31 C	*	Cocoa- Oilpalm Zone*	Lowland Sugarcane Zone	Coconut- Cassava Zone	Cashewnut- Cass. Zone	Lowland Livestock Millet Zone	Lowland Ranching Zone	L. Midland Nom. Zone

Note: \* Not in Kenya

Source : Ref. E.17

Figure E1.3 Agro-ecological Zones of Kenya

THE STUDY  
ON  
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JAPAN INTERNATIONAL COOPERATION AGENCY