

***TABLES***



**Table M2.1 Numbers of Existing Small Dams by Basin**

( Unit : nos. )

Basin	Dam	Pan	Total	Basin	Dam	Pan	Total
<b>Drainage Area 1</b>				<b>Drainage Area 4</b>			
1A	3	25	28	4A	10	25	35
1B	28	190	218	4B	5	25	30
1C	17	82	99	4C	7	42	49
1D	5	11	16	4D	1	10	11
1E	1	2	3	4E	3	26	29
1F	22	32	54	4F	1	5	6
1G	4	27	31	4G	2	44	46
1H	2	69	71	4H	6	74	80
1J	16	96	112	4J	0	0	0
1K	4	96	100	4K	0	0	0
1L	9	28	37				
<b>Total</b>	<b>111</b>	<b>658</b>	<b>769</b>	<b>Total</b>	<b>35</b>	<b>251</b>	<b>286</b>
<b>Drainage Area 2</b>				<b>Drainage Area 5</b>			
2A	0	0	0	5A	28	142	170
2B	0	21	21	5B	34	150	184
2C	0	12	12	5C	20	43	63
2D	3	19	22	5D	79	12	91
2E	20	118	138	5E	0	1	1
2F	3	47	50	5F	0	1	1
2G	18	87	105	5G	0	0	0
2H	0	18	18	5H	0	0	0
2J	0	0	0	5J	0	0	0
2K	1	25	26				
<b>Total</b>	<b>45</b>	<b>347</b>	<b>392</b>	<b>Total</b>	<b>161</b>	<b>349</b>	<b>510</b>
<b>Drainage Area 3</b>				<b>TOTAL</b>			
3A	4	100	104		<b>406</b>	<b>2254</b>	<b>2660</b>
3B	9	75	84				
3C	2	14	16				
3D	4	76	80				
3E	7	253	260				
3F	10	90	100				
3G	0	4	4				
3H	1	0	1				
3J	0	0	0				
3K	0	0	0				
3L	3	9	12				
3M	14	24	38				
3N	0	4	4				
<b>Total</b>	<b>54</b>	<b>649</b>	<b>703</b>				

Note : The above figures were summarized based on dams/pans which marked on topographic map (1:50,000, SOK)

Table M2.2 Exposed Rock Hill Area by Sub-Basin

Drainage Area 1		Drainage Area 2		Drainage Area 3		Drainage Area 4		Drainage Area 5	
Sub-Basin	No. of Exposed Rock Area	Sub-Basin	No. of Exposed Rock Area	Sub-Basin	No. of Exposed Rock Area	Sub-Basin	No. of Exposed Rock Area	Sub-Basin	No. of Exposed Rock Area
1BB	3	2CC	1	3AB	1	4ED	2	5CA	3
1BD	2	2D	2	3BA	4	4FB	14	5CB	4
1DD	14	2FA	1	3BB	3	4GA	5	5CC	9
1HB	14	2FC	5	3EA	4	4GB	7	5DB	1
		2GA	2	3FA	6	4GD	6	5DD	25
		2GB	11	3FB	2	4GE	5	5EC	13
		2H	4	3G	36	4GF	19	5ED	14
				3HA	10	4HA	25	5J	11
				3LA	3	4HB	9		
				3MA	17	4HC	3		
				3N	3				
Subtotal	33		26		89		95		80
Total									323

Source: Topo-maps of 1/50,000 scale, Survey of Kenya

**Table M3.1 Connection Rate by Service Type**

(Unit: %)

	Individual connection Rate			Non-Individual connection Rate		
	Initial	Future	Ultimate	Initial	Future	Ultimate
<b>URBAN AREA</b>						
High and Medium Class Housing	100	100	100	0	0	0
Low Class Housing	10	30	50	90	70	50
<b>RURAL AREA</b>						
High Potential	20	40	80	80	60	20
Medium Potential	10	20	40	90	80	60
Low Potential	5	10	20	95	90	80

Source: Design Manual Table 4.1

**Table M3.2 Unit Consumption Rate**

Consumer	Unit	Rural Areas			Urban Areas		
		High Potential	Medium Potential	Low Potential	High Class Housing	Medium Class Housing	Low Class Housing
People w/ IC	l/c/d	60	50	40	250	150	75
People w/o IC	l/c/d	20	15	10	-	-	20
Livestock Unit	l/LU/d	50	50	50			
Boarding Schools	l/c/d	50	50	50	50	50	50
Day Schools w/ WC	l/c/d	25	25	25	25	25	25
Day Schools w/o WC	l/c/d	5	5	5	5	5	5
<b>Hospitals</b>							
Regional	l/bed/d	400					
District	l/bed/d	200	plus 20 l per outpatient per day (minimum 5,000 l/day)				
Others	l/bed/d	100					
Dispensary and Health Centre	l/d	5,000	5,000	5,000	5,000	5,000	5,000
<b>Hotels</b>							
High Class	l/bed/d	600	600	600	600	600	600
Medium Class	l/bed/d	300	300	300	300	300	300
Low Class	l/bed/d	50	50	50	50	50	50
Administrative Offices	l/c/d	25	25	25	25	25	25
Bars	l/d	500	500	500	500	500	500
Shops	l/d	100	100	100	100	100	100
Unspecified Industry	l/ha/d	20,000	20,000	20,000	20,000	20,000	20,000
Coffee Pulping Factories	l/kg coffee	25	25	25	25	25	25

Source : Design Manual, MOWD

Table M3.3 Unit Water Consumption Rate by Industrial Type : 1989 - 2010

Item	31 Food Beverages & Tobacco	32 Textile Apparel & Leather	33 Wood & Wood Products	34 Paper Products & Printing	35 Chemicals & Petroleum Products	36 Non-metallic Mineral Products	37 Basic Metal Industries	38 Machinery & Equipment	39 Others	All Manufacturing Industry
1. Value Added in 1988 (K-Pound 1000)	321,164	81,511	22,892	61,902	132,129	37,175	47,438	76,372	16,978	797,561
2. Total Units of Manufacturing Establishments (Nos)	678	398	442	283	211	98	19	304	94	2,327
3. Value Added per Establishment (KShs 1000)	9,474	4,096	1,064	4,574	12,574	7,586	49,974	5,024	3,612	6,312
4. Unit Water Consumption Rate per Value Added (cum./day/KShs-billion(at 1989 prices*1))	5.617	8.443	732	19,471	26,521	8,561	51,738	3,654	1,360	13,015
5. Unit Water Replenishment (Raw Water) Rate per Value Added (cum./day/KShs-billion(at 1989 prices*1))	3,300	6,794	655	11,394	5,295	2,327	6,211	698	568	2,387
6. Unit Water Replenishment Rate in the Projection (cum./day/KShs-billion(at 1989 prices*1))										
a. 1989 *2	5,617	8,443	732	19,471	26,521	8,561	51,738	3,654	1,360	13,015
b. 1990	5,582	8,404	730	19,279	26,015	8,413	50,654	3,584	1,341	12,784
c. 1995	5,286	8,207	721	18,517	23,489	7,671	45,234	3,232	1,247	11,626
d. 2000	5,010	8,011	712	17,356	20,962	6,928	39,814	2,880	1,153	10,468
e. 2005	4,734	7,815	703	16,594	18,433	6,186	34,594	2,528	1,058	9,209
f. 2010 *2	4,459	7,618	694	15,433	15,908	5,444	28,974	2,176	964	8,151
7.479	7,460	2,303	4,582	5,847	2,898	2,206	24,312	1,262	58,349	
97	80	72	98	129	88	197	151	86	122	
3,116	931	1,397	2,757	5,956	1,916	8,192	4,248	1,994	3,603	
903	350	511	1,146	2,178	893	2,294	1,368	774	1,195	
14,048	9,391	16,721	15,526	46,490	35,927	103,232	18,025	9,260	22,776	
762	444	56	3,351	8,674	1,148	17,823	751	158	2,396	
448	357	50	1,961	1,732	312	2,140	143	66	590	
41	20	11	42	80	73	88	81	58	75	
36	38	51	84	7	22	9	29	16	21	
1,628	3,177	268	8,094	9,700	3,991	14,491	1,177	328	4,316	
5,617	8,443	732	19,471	26,521	8,561	51,738	3,654	1,360	13,015	
542	473	34	2,477	1,868	320	1,727	416	169	1,026	
957	2,556	240	4,737	1,937	1,085	1,740	225	230	1,090	
3,300	6,794	655	11,394	5,295	2,327	6,211	698	568	2,387	

REFERENCE: Unit Rates for Industrial Development in Japan (1986)

- Number of Samples
- Unit per Firm
  - Employees
  - Production (Million Yen)
  - Value Added (Million Yen)
  - Yard Area(sq.m.)
  - Water Consumption (cum./day)
  - Water Replenishment (cum./day)
- Water Recovery Rate (%)
- Drained-to-Replenished Rate (%)
- Unit Rates (cum./day/KShs-billion(at 1989 prices)\*3)
  - Water Consumption per Production
  - Water Consumption per Value Added
  - Water Consumption per Yard Area (cum./day/ha)
  - Water Replenishment per Production
  - Water Replenishment per Value Added

Remark: \*1 Refer to the below REFERENCE.  
 \*2 Whole water consumed in processing is assumed to be supplied by a water supply system. However, a water recirculation system will be introduced into the manufacturing process, though its recirculation rate is assumed to be a half of volume mention in Row 5 by the year 2010.  
 \*3 To convert the 1986 value to the 1989 value in Japan, the overall wholesale price index of manufacturing industry prices was applied, which was 0.994 between the years. The foreign exchange rate in 1989 was KShs 21.6/US\$ and JY 145/US\$.

Table M3.4 District Distribution of Industrial Water Requirement : 1989-2010

(Unit : cu.m./day)

Code District	1989	1990	1995	2000	2005	2010
110 Nairobi	120,813	128,300	167,417	218,953	249,690	281,668
210 Kiambu	8,843	9,405	12,382	16,362	18,893	21,649
220 Kirinyaga	426	457	624	857	1,039	1,258
230 Murang'a	629	673	915	1,257	1,519	1,833
240 Nyandarua	361	386	524	720	866	1,045
250 Nyeri	2,361	2,521	3,380	4,570	5,417	6,407
310 Kitifi	3,493	3,705	4,794	6,206	6,989	7,762
320 Kwale	160	172	232	317	380	459
330 Lamu	319	341	463	632	759	910
340 Mombasa	28,982	30,768	40,072	52,286	59,458	66,834
350 Taita Taveta	1,052	1,122	1,505	2,033	2,408	2,845
360 Tana River	88	94	129	178	217	264
410 Embu	455	488	659	900	1,078	1,290
420 Isiolo	160	172	233	318	382	458
430 Kitui	176	188	258	356	433	527
440 Machakos	2,880	3,072	4,107	5,525	6,515	7,659
450 Marsabit	480	513	695	950	1,141	1,368
460 Meru	1,530	1,637	2,216	3,024	3,627	4,346
510 Garissa	122	131	181	251	307	376
520 Mandera	160	171	231	316	379	455
530 Wajir	0	0	0	0	0	0
610 Kisii	1,446	1,547	2,093	2,855	3,422	4,100
620 Kisumu	5,516	5,880	7,824	10,472	12,278	14,329
630 Siaya	1,059	1,134	1,533	2,091	2,504	2,998
640 South Nyanza	1,977	2,114	2,862	3,910	4,690	5,625
710 Kajiado	65	69	90	117	132	148
720 Kericho	2,378	2,541	3,437	4,685	5,606	6,702
730 Laikipia	1,143	1,223	1,662	2,278	2,744	3,303
740 Nakuru	9,341	9,922	12,969	16,996	19,429	21,989
750 Narok	212	228	308	422	506	606
760 Trans Nzoia	1,046	1,119	1,519	2,080	2,502	3,009
770 Uasin Gishu	3,313	3,530	4,689	6,267	7,333	8,541
810 Baringo	116	125	169	232	278	336
820 Elgeyo Marakwet	58	62	82	114	136	166
830 Nandi	799	855	1,157	1,581	1,899	2,278
840 Samburu	225	241	322	434	513	606
850 Turkana	319	342	463	632	758	910
860 West Pokot	53	57	77	105	126	152
910 Bungoma	1,282	1,370	1,832	2,468	2,916	3,440
920 Busia	231	247	337	465	564	685
930 Kakamega	1,651	1,767	2,388	3,258	3,899	4,663
000 Unidentified	160	171	231	316	379	455
Total	205,880	218,860	287,061	377,789	434,111	494,454



Table M3.5 Potential Domestic and Industrial Water Demand in 1990

District Code Name	Population		Rural Demand			Urban Demand			Total (m <sup>3</sup> /d)	Livestock Water (m <sup>3</sup> /d)	Industrial Water (m <sup>3</sup> /d)	Total Demand (m <sup>3</sup> /d)	Per Capita (l/d/c)
	Rural (nos)	Urban (nos)	Rural Residences (m <sup>3</sup> /d)	Non-residences (m <sup>3</sup> /d)	Total (m <sup>3</sup> /d)	Rural Residences (m <sup>3</sup> /d)	Non-residences (m <sup>3</sup> /d)	Total (m <sup>3</sup> /d)					
110 Nembu	0	1,413,100	0	0	0	175,048	29,286	204,334	192	128,300	332,626	236	
210 Kirembi	866,410	105,500	20,546	7,191	27,737	13,069	2,186	15,255	4,827	9,405	57,224	59	
220 Kirinyaga	393,482	19,400	8,571	3,264	11,835	2,405	402	2,805	2,764	457	17,861	43	
230 Marang'a	833,776	65,000	19,866	6,922	26,788	8,052	1,348	9,400	4,709	673	41,570	46	
240 Nyandarua	366,106	11,900	7,605	3,041	10,646	1,474	246	1,720	7,716	386	20,468	54	
250 Nyeri	540,096	107,200	11,540	4,494	18,024	13,279	2,221	15,500	3,916	2,521	39,961	62	
310 Kiikii	592,003	62,100	7,486	4,913	12,399	7,693	1,288	8,981	2,821	3,705	27,906	43	
320 Kwana	394,205	14,700	5,994	3,273	9,207	1,821	305	2,126	5,019	172	16,524	40	
330 Lamu	48,236	12,300	629	399	1,028	1,524	255	1,779	341	4256	4,256	70	
340 Mombasa	0	479,600	0	0	0	59,410	9,940	69,350	138	30,768	100,256	209	
350 Taita_Taveta	188,200	27,000	2,240	1,562	3,802	3,345	560	3,905	3,768	1,122	12,597	59	
360 Tana_River	126,203	11,700	1,480	1,049	2,529	1,449	243	1,692	6,966	94	11,281	82	
410 Embu	361,491	20,400	7,020	3,000	10,020	2,527	422	2,949	2,655	488	16,112	42	
420 Isiolo	46,886	27,896	539	389	928	3,456	578	4,034	7,465	172	12,599	168	
430 Kitui	667,267	16,600	7,675	5,539	13,214	2,056	344	2,400	7,895	188	23,697	35	
440 Machakos/Makueni	1,320,332	165,900	17,773	10,957	28,730	20,531	3,439	23,990	9,330	3,072	65,122	44	
450 Mwaridhi	104,305	33,800	1,202	867	2,069	4,187	701	4,888	14,932	513	22,402	162	
460 Meru	1,121,545	91,900	19,651	9,311	28,962	11,384	1,905	13,289	12,751	1,637	56,639	47	
510 Garissa	94,691	32,500	1,088	787	1,875	4,026	674	4,700	7,399	131	14,105	111	
520 Mandera	105,694	21,649	1,216	877	2,093	2,682	430	3,132	7,603	171	12,999	102	
530 Wajir	95,602	30,378	1,099	793	1,892	3,763	639	4,393	6,424	0	12,709	101	
610 Kiuri/Nyeruira	1,142,173	59,700	31,092	9,481	40,573	7,395	1,237	8,632	11,536	1,547	62,288	52	
620 Kisumu	498,124	210,100	10,538	4,135	14,673	26,026	4,354	30,380	6,351	5,830	57,284	81	
630 Siaya	649,980	26,800	15,731	5,393	21,124	3,320	536	3,876	7,925	1,134	34,059	50	
640 South_Nyanza	1,104,838	50,100	22,868	9,166	32,034	6,206	1,039	7,245	5,502	2,114	46,935	41	
710 Kisumu	252,370	34,000	3,046	2,094	5,140	4,212	704	4,916	18,521	69	28,646	100	
720 Kericho	862,960	52,600	21,730	7,162	28,892	6,516	1,090	7,606	17,426	2,541	56,465	62	
730 Laikipia	186,499	41,700	2,576	1,546	4,122	5,166	864	6,030	8,000	1,223	19,575	85	
740 Nakuru	675,156	257,700	13,394	5,605	18,999	31,923	5,342	37,265	13,795	9,922	79,981	86	
750 Narek	407,099	17,500	7,339	3,376	10,715	2,168	362	2,530	32,127	228	45,600	107	
760 Trans_Nzoia	367,719	56,400	6,524	3,052	9,576	6,987	1,168	8,155	4,728	1,119	23,578	56	
770 Uasin_Gishu	346,725	123,600	6,794	2,878	9,672	15,311	2,562	17,875	7,770	3,530	38,845	83	
810 Bungoma	279,859	26,100	4,092	2,324	6,416	3,233	126	3,882	6,382	62	19,407	59	
820 Eg_Marakwet	221,191	61,000	4,246	1,835	6,081	756	126	882	6,664	125	16,979	55	
830 Nandi	458,824	14,500	10,474	3,808	14,282	1,796	301	2,097	9,044	855	26,278	56	
840 Semburu	97,567	24,700	1,190	811	2,001	3,060	512	3,572	6,485	241	12,299	101	
850 Tugen	180,132	9,285	2,072	1,495	3,567	1,151	193	1,344	20,452	342	25,705	136	
860 West_Poitot	224,901	13,200	3,176	1,948	5,124	1,635	274	1,909	4,219	57	11,309	46	
910 Bungoma	719,267	69,800	17,206	5,970	23,176	8,646	1,447	10,093	6,645	1,370	41,284	52	
920 Bura	438,219	15,400	10,745	3,636	14,381	1,908	320	2,228	3,725	247	20,581	45	
930 Kakamega/Viborg	1,393,871	83,300	36,189	11,574	47,763	10,567	1,768	12,335	8,992	1,767	70,837	48	
TOTAL	18,784,004	3,963,118	376,182	155,907	532,089	491,179	82,183	573,362	326,207	218,689	1,650,847	73	

Table M3.6 Potential Domestic and Industrial Water Demand in 2000

District Code Name	Population		Rural Demand			Urban Demand			Livestock		Industrial		Total Demand (m3/d)	Per Capita (l/d)
	Rural (noe)	Urban (noe)	Residences (m3/d)	Non-residences (m3/d)	Total (m3/d)	Residence (m3/d)	Non-residence (m3/d)	Total (m3/d)	Water (m3/d)	Waste (m3/d)	Water (m3/d)	Waste (m3/d)		
110 Narok	0	2,260,869	0	0	0	286,232	46,848	333,080	257	218,953	552,280	944		
210 Kiambu	1,006,986	241,538	30,009	8,358	38,367	30,585	5,005	35,590	5,669	16,562	95,988	77		
220 Kirinyaga	474,035	45,246	12,882	3,924	16,816	12,882	940	6,852	3,355	857	27,710	53		
230 Murang'a	958,614	128,538	28,781	7,958	36,739	16,282	2,664	18,946	5,334	1,257	62,276	57		
240 Nyandarua	485,561	32,048	12,473	4,090	16,503	4,058	666	4,724	10,476	720	32,423	63		
250 Nyeri	560,679	242,904	17,832	4,656	22,488	30,758	5,034	35,792	4,427	4,570	67,277	84		
310 Kilifi	737,699	159,475	10,666	6,118	16,784	20,193	3,304	23,497	3,443	6,206	49,930	56		
320 Kwale	480,292	42,861	8,438	3,987	12,425	5,427	887	6,314	5,725	317	24,781	47		
330 Lamu	58,510	27,775	879	486	1,365	3,517	575	4,092	1,478	632	7,587	88		
340 Mombasa	0	672,934	0	0	0	85,210	13,947	99,157	182	52,286	151,625	225		
350 Taita Taveta	216,380	49,317	2,927	1,797	4,724	6,245	1,022	7,267	4,238	2,033	18,262	69		
360 Tana_River	153,009	33,071	2,033	1,270	3,303	4,188	685	4,873	7,632	178	15,986	86		
410 Embu	450,242	50,537	10,755	3,736	14,491	6,399	1,047	7,446	3,159	900	25,996	52		
420 Isiolo	50,343	79,153	653	418	1,073	10,023	1,641	11,664	11,386	318	26,441	189		
430 Kiuri	838,429	46,271	10,899	6,960	17,859	9,301	988	6,817	9,301	356	34,333	39		
440 Machakos/Makueni	1,590,616	394,597	24,801	13,199	38,000	49,966	8,178	58,144	10,981	5,525	112,650	57		
450 Marsabit	117,172	79,213	1,530	974	2,504	10,030	1,642	11,672	19,020	950	34,146	174		
460 Meru	1,403,040	229,484	29,686	11,646	41,332	29,058	4,737	33,815	15,796	3,024	93,967	58		
510 Centara	98,793	37,193	1,527	974	2,501	12,111	1,982	14,093	8,540	251	26,988	129		
520 Mandera	117,390	95,644	1,284	820	2,104	4,710	770	5,480	6,920	0	18,371	119		
530 Wajir	101,797	62,996	845	1,324	2,169	7,977	1,305	9,282	6,920	0	18,371	111		
610 Kisumu/Nyanza	1,274,837	126,125	44,434	10,582	55,016	15,971	2,614	18,585	12,712	2,855	89,168	64		
620 Kisumu	536,505	434,392	14,033	4,454	18,487	55,005	9,005	64,010	8,454	10,472	101,423	104		
630 Siaya	738,498	50,485	22,551	6,130	28,681	6,393	1,046	7,439	8,660	2,091	46,871	59		
640 South_Nyanza	1,250,972	106,051	31,873	10,381	42,254	13,429	2,199	15,628	6,115	3,910	67,907	50		
710 Kapjajo	362,989	98,051	4,989	3,013	8,002	12,416	2,032	14,448	24,061	117	46,628	101		
720 Kericho	1,069,063	118,460	34,151	8,873	43,024	15,000	2,455	17,455	22,142	4,685	87,506	74		
730 Laikipia	253,030	104,603	4,071	2,102	6,173	13,245	2,167	15,412	11,662	2,278	35,525	99		
740 Nakuru	839,543	704,789	20,506	6,969	27,475	89,244	14,607	103,851	21,379	16,996	169,701	110		
750 Naret	644,338	58,084	14,124	5,348	19,472	7,355	1,204	8,559	44,700	422	73,153	104		
760 Thika_Nzoia	465,648	150,010	10,031	3,863	13,894	18,995	3,110	22,105	5,728	2,080	43,807	71		
770 Uasin_Gishu	369,012	297,004	8,814	3,064	11,878	37,608	6,155	43,763	6,267	71,343	107			
810 Bungoma	348,224	56,908	6,008	2,893	8,901	7,206	1,181	8,387	7,858	232	25,378	63		
820 Elg_Marakwet	287,019	13,612	6,794	2,383	9,177	1,724	281	2,005	10,538	114	21,854	73		
830 Nandi	599,437	38,483	17,119	4,972	22,091	4,873	798	5,671	11,058	1,581	40,401	63		
840 Samburu	121,513	58,670	1,693	1,008	2,701	7,429	1,216	8,645	9,472	434	21,252	118		
850 Turkana	213,521	25,313	2,776	1,774	4,550	3,205	525	3,730	36,286	632	43,198	189		
860 West_Pokot	298,923	31,163	4,715	2,479	7,194	3,946	646	4,592	4,466	105	16,557	50		
910 Bungoma	953,305	196,960	28,128	7,766	35,874	24,940	4,082	29,022	8,482	2,468	75,846	67		
920 Busia	586,867	52,499	18,149	4,870	23,019	6,648	1,087	7,735	10,770	465	36,526	57		
990 Kaberama/Thiga	1,656,632	199,749	55,909	13,999	69,908	25,293	4,140	29,433	5,107	3,258	113,369	60		
TOTAL	22,779,483	7,932,823	560,249	189,069	749,318	1,004,494	164,407	1,168,901	426,498	377,473	2,722,190	89		

Table M3.7 Potential Domestic and Industrial Water Demand in 2010

District Code	Name	Population		Rural Demand			Urban Demand			Livestock		Industrial		Total Demand (m3/d)	Per Capita (l/d/c)
		Rural (nos)	Urban (nos)	Residence (m3/d)	Non-residence (m3/d)	Total (m3/d)	Residence (m3/d)	Non-residence (m3/d)	Total (m3/d)	Water (m3/d)	Water (m3/d)	Water (m3/d)	Demand (m3/d)		
110	Nairobi	0	3,465,334	0	0	0	448,328	71,819	520,147	345	281,668	802,160	251		
210	Kilimbo	1,206,609	276,066	50,652	10,015	60,667	48,656	7,794	56,450	7,144	21,649	145,910	92		
220	Kisumu	559,419	73,805	21,232	4,643	25,875	9,549	1,529	11,078	4,152	1,258	42,363	67		
230	Murang'a	1,126,289	189,256	47,786	9,348	57,134	24,490	3,923	28,413	6,424	1,833	93,804	71		
240	Nyeri	584,678	50,212	20,763	4,851	25,614	6,496	1,041	7,537	19,338	1,045	47,534	75		
250	Nyandarua	672,814	411,576	30,458	5,583	36,041	53,242	8,529	61,771	5,989	6,407	110,208	102		
310	Kuili	896,608	289,640	16,239	7,442	23,681	34,885	5,587	40,472	4,275	7,762	76,190	65		
320	Kwale	566,803	65,482	12,810	4,706	17,516	8,472	1,357	9,829	6,528	459	34,332	54		
330	Lamu	73,771	46,331	1,394	613	2,007	5,994	961	6,955	3,069	910	12,941	108		
340	Mombasa	0	904,302	0	0	0	117,002	18,743	135,745	239	66,834	202,818	224		
350	Taita_Taveta	258,638	72,726	4,333	2,147	6,480	9,409	1,508	10,917	5,105	2,845	25,347	76		
360	Tana_River	184,242	51,170	3,022	1,529	4,551	6,620	1,061	7,681	8,506	264	21,002	89		
410	Embu	537,380	81,776	17,632	4,462	22,094	10,580	1,695	12,275	3,779	1,290	39,438	64		
420	Isiolo	74,480	136,067	1,191	618	1,809	17,604	2,819	20,423	25,802	458	48,492	230		
430	Kiuri	992,838	76,589	15,888	8,241	24,129	9,909	1,588	11,497	10,738	527	46,891	44		
440	Machakos/Makueni	1,924,742	652,477	38,231	15,974	54,205	84,414	13,522	97,936	13,632	7,659	173,432	67		
450	Marsabit	147,232	123,037	2,364	1,223	3,587	15,913	2,530	18,448	34,373	1,568	57,796	214		
510	Meru	1,691,115	375,576	48,087	14,037	62,124	48,590	7,784	56,374	19,739	4,346	142,583	69		
520	Mandera	126,773	144,916	2,028	1,052	3,080	18,749	3,003	21,752	13,287	376	38,495	142		
530	Mandera	141,839	53,955	2,270	1,177	3,447	6,980	1,118	8,098	14,852	455	26,852	137		
540	Wajir	128,101	100,618	2,048	1,061	3,109	13,017	2,085	15,102	9,441	0	27,652	121		
610	Kisii/Nyamira	1,472,952	189,405	73,826	12,224	86,050	24,504	3,925	28,429	15,071	4,100	133,650	80		
620	Kisumu	692,149	689,399	25,024	5,744	30,768	89,191	14,289	103,480	13,886	14,529	162,463	118		
630	Siaya	853,688	76,041	36,874	7,086	43,960	9,838	1,576	11,414	10,034	2,998	68,406	74		
640	South_Nyanza	1,447,519	156,300	50,714	12,014	62,728	20,221	3,240	23,461	7,134	5,625	98,948	62		
710	Kajiado	468,513	183,374	7,999	3,889	11,888	23,724	3,801	27,525	30,142	148	69,703	107		
720	Kencho	1,276,594	189,948	58,057	10,595	68,652	24,575	3,935	28,510	28,253	6,702	132,117	90		
730	Lalipia	329,791	185,586	6,800	2,736	9,536	24,010	3,847	27,857	21,555	3,303	62,251	121		
740	Nakuru	1,159,323	1,304,983	38,952	9,622	48,574	168,832	27,047	195,879	52,317	21,989	318,759	129		
750	Nerok	840,605	112,613	24,950	6,979	31,929	14,569	2,234	16,903	54,809	606	104,247	109		
760	Tiana_Nyira	582,258	260,000	16,974	4,833	21,807	33,638	5,389	39,027	7,574	3,009	71,417	85		
770	Uasin_Gishu	484,246	525,439	15,724	4,019	19,743	67,979	10,890	78,869	15,090	8,541	122,183	121		
810	Baringo	421,170	94,851	9,486	3,496	12,982	12,271	1,963	14,236	9,476	336	37,030	72		
820	Eg_Marakwet	342,735	20,480	11,190	2,846	14,036	2,650	424	3,074	16,625	166	33,901	93		
830	Nandi	719,677	64,159	28,819	5,975	34,794	8,301	1,330	9,631	12,929	2,278	59,632	76		
840	Sembaru	156,610	103,710	2,724	1,201	4,025	13,417	2,149	15,566	14,626	606	34,823	134		
850	Turkana	251,488	38,637	4,025	2,087	6,112	5,001	801	5,802	66,113	910	78,937	272		
860	West_Pokot	359,414	53,031	7,292	2,983	10,275	6,861	1,100	7,961	4,694	152	23,082	56		
910	Bungoma	1,142,153	334,193	48,619	9,480	58,099	43,236	6,927	50,163	10,674	3,440	122,376	83		
920	Busia	710,487	86,124	31,071	5,896	36,967	11,142	1,785	12,927	6,548	685	57,127	72		
930	Kakamega/Uthira	2,001,252	309,108	95,083	16,613	111,696	39,991	6,405	46,396	13,115	4,663	175,870	76		
TOTAL		27,607,015	12,698,392	992,631	229,140	1,221,771	1,642,854	263,175	1,906,029	621,262	493,999	4,183,161	104		

Table M3.8 Area and Number of Planned Irrigation Schemes by District

Code	District	Small Holder/GOK Managed Schemes	
		Number	Area (ha)
110	Nairobi		
210	Kiambu	7	115
220	Kirinyaga	3	2,930
230	Muranga	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
<b>Total</b>		<b>159</b>	<b>118,337</b>

Source : Ref. E.23, E.37 (Sectoral Report B)

Table M3.9 Future Irrigation Water Demand (1/3)

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

Basin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
IAA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IAB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IAC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IAD	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
IAE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IAF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IAG	0.000	0.013	0.063	0.070	0.000	0.000	0.000	0.000	0.000	0.009	0.056	0.074
IAH	0.000	0.001	0.005	0.007	0.002	0.002	0.002	0.002	0.002	0.003	0.006	0.006
IBA	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037
IBB	0.000	0.000	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
IBC	0.001	0.001	0.001	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.001
IBD	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
IBE	3.661	3.101	3.401	2.651	1.221	2.181	1.101	0.501	2.381	3.831	3.771	4.401
IBG	0.002	0.002	0.002	0.002	0.071	0.071	0.071	0.071	0.071	0.071	0.002	0.002
IBH	0.088	0.288	0.330	0.285	0.023	0.001	0.001	0.001	0.001	0.079	0.044	0.001
ICA	0.251	0.221	1.358	0.515	0.783	0.334	0.011	0.011	0.011	0.018	1.297	1.125
ICB	0.011	0.011	0.011	0.011	0.011	0.011	0.245	0.245	0.245	0.011	0.011	0.011
ICC	0.091	0.138	0.302	0.072	0.100	0.044	0.003	0.003	0.003	0.032	0.165	0.143
ICD	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091
ICE	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
IDA	0.000	0.000	0.000	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
IDB	0.001	0.001	0.001	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041
IDC	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
IDD	0.003	0.004	0.005	0.005	0.004	0.003	0.003	0.003	0.005	0.007	0.006	0.005
IEA	0.000	0.000	0.000	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.000
IEB	0.001	0.027	0.067	0.121	0.113	0.086	0.082	0.079	0.137	0.177	0.168	0.056
IEC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IED	0.000	0.000	0.000	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143
IEE	0.000	0.000	0.000	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
IEF	3.060	2.819	4.072	2.101	2.023	6.135	11.968	14.379	19.652	12.139	8.801	11.198
IEG	0.000	0.000	0.000	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
IEA	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
IFB	0.000	0.000	0.000	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
IFC	0.000	0.000	0.000	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
IFD	0.001	0.001	1.389	1.389	1.389	1.389	1.389	1.389	1.389	1.389	1.389	1.389
IFE	0.000	0.000	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
IFF	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
IFG	1.610	6.864	11.606	9.712	7.259	4.735	4.454	9.284	11.325	11.753	9.441	6.074
IGA	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
IGB	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378
IGC	0.000	0.000	0.000	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.000	0.000
IGD	0.000	0.468	0.716	1.838	1.654	1.628	1.628	1.688	2.583	2.695	1.647	1.628
IGD1	0.042	0.000	0.000	0.000	0.042	0.083	0.124	0.166	0.166	0.166	0.124	0.083
IGD2	0.315	0.000	0.000	0.000	0.315	0.626	0.941	1.256	1.256	1.256	0.941	0.626
IGD3	0.293	0.000	0.000	0.000	0.293	0.582	0.875	1.168	1.168	1.168	0.875	0.582
IGE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IGF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IGG	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IHA	0.000	0.110	0.172	0.197	0.163	0.145	0.143	0.149	0.348	0.391	0.180	0.162
IHB	0.000	0.004	0.006	0.036	0.034	0.034	0.034	0.035	0.043	0.044	0.034	0.034
IHC	0.003	0.010	0.034	0.023	0.017	0.005	0.003	0.003	0.032	0.050	0.046	0.028
IHD	1.740	2.247	2.251	3.371	1.268	1.728	0.728	0.369	0.803	1.725	2.288	2.380
IHE	0.000	0.093	0.142	0.042	0.005	0.000	0.000	0.012	0.189	0.211	0.004	0.000
IHF	0.000	0.023	0.091	0.059	0.062	0.021	0.000	0.001	0.108	0.158	0.135	0.086
IHO	0.000	0.001	0.006	0.004	0.004	0.001	0.000	0.000	0.007	0.010	0.008	0.005
IJA	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000
IJB	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
IJC	0.002	0.002	0.002	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.002	0.002
IJD	0.000	0.000	0.000	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
IJE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IJF	0.001	0.001	0.001	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
IJG	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IKA	4.004	9.814	10.434	9.644	10.829	8.291	4.456	8.460	14.833	16.412	13.254	6.317
IKB	3.096	7.586	8.066	7.456	8.371	6.409	3.444	6.540	11.467	12.688	10.246	4.883
IKB1	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.001	0.000	0.001	0.000	0.000
IKB2	0.000	0.009	0.016	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
IKB3	0.000	0.024	0.042	0.030	0.029	0.031	0.006	0.016	0.035	0.039	0.027	0.015
IKB4	0.000	0.135	0.232	0.166	0.161	0.170	0.036	0.090	0.193	0.213	0.146	0.082
IKB5	0.000	0.354	0.610	0.438	0.423	0.448	0.093	0.236	0.507	0.561	0.384	0.216
IKC	0.000	0.126	0.217	0.156	0.151	0.159	0.033	0.084	0.180	0.200	0.137	0.077
ILA1	0.000	0.081	0.139	0.100	0.096	0.102	0.021	0.054	0.115	0.128	0.087	0.049
ILA2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ILA3	0.000	0.000	0.000	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.000
ILB1	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
ILB2	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 M3.9 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	1.458	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
2EB3	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	0.687	0.687	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
2II	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	0.584	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	0.060	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	0.019	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
3IIA	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
3IIB	0.175	0.334	0.367	0.297	0.276	0.189	0.175	0.205	0.373	0.389	0.289	0.271
3IIC	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215	1.215
3IHD	0.866	0.866	0.003	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
3IHD2	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 M3.9 Future Irrigation Water Demand (3/3)

Unit: m3/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	5.850	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	0.000	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	0.000	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	0.006	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 M3.10 Estimated Carrying Capacity in Each District

Code District Name	Agriculture Land		Land for Livestock		Unit Carrying Capacity			Carrying Capacity			Estimated Fallow Land		Carrying Capacity for		Total Carrying Capacity	
	Crop (km <sup>2</sup> ) (A)	Others (km <sup>2</sup> ) (B)	Managed Pasture (ha) (C)	Grass Land (ha) (D)=(B)-(C)	Managed Pasture (LU/ha) (E)	Wet Grass Land (LU/ha) (F)	Dry Grass Land (LU/ha) (G)	Managed Pasture (LU) (H)=(C)*(E)	Wet Grass Land (LU) (I)=(D)*(F)	Dry Grass Land (LU) (J)=(D)*(G)	Fallow Land (ha) (K)=(A)*0.1	Crop Residue (ha) (L)	(M)=(K)+(L)	(N) & (L) (LU) (M)=(K)+(L)*0.3	Wet (LU)	Dry (LU)
110 Nairobi	63	281	2,183	25,917	2.22	0.66	0.48	4,846	17,105	12,440	630	0	189	22,140	17,475	
210 Kiambu	1,658	69	6,900	0	4.01	1.41	0.82	27,669	0	0	16,580	46,000	18,774	46,443	46,443	
220 Kirinyaga	795	0	0	0	4.92	1.28	0.78	0	0	0	7,950	57,319	19,581	19,581	19,581	
230 Murang'a	1,412	481	27,791	20,309	4.62	1.54	0.92	128,394	31,276	18,684	14,120	74,198	26,495	186,165	179,573	
240 Nyandarua	1,750	497	49,700	0	1.08	0.93	0.66	53,676	0	0	17,500	39,130	16,989	70,665	70,665	
250 Nyeri	1,299	374	27,845	9,555	4	1.28	0.6	111,380	12,230	5,733	12,990	60,542	22,060	145,670	139,173	
310 Kilifi	1,417	7,781	21,853	756,247	2.55	0.46	0.45	55,725	347,874	340,311	14,170	41,785	16,787	420,386	412,923	
320 Kwale	1,177	5,634	13,129	550,271	4.52	0.49	0.64	59,343	269,633	352,173	11,770	18,159	8,979	337,955	420,495	
330 Lamu	235	3,577	9,617	348,083	2.02	0.6	0.32	19,426	208,850	111,387	2,350	1,962	1,294	229,570	132,107	
340 Mombasa	10	0	0	0	2.04	0.51	0.34	0	0	0	100	938	311	311	311	
350 Taita Taveta	941	5,042	15,344	488,856	1.79	0.32	0.26	27,466	156,434	127,103	9,410	9,380	5,637	189,537	160,206	
360 Tana River	281	33,024	74,701	3,227,699	1.44	0.29	0.33	107,569	936,033	1,065,141	2,810	3,258	1,820	1,045,422	1,174,530	
410 Embu	2,407	0	0	0	4.39	0.72	0.57	0	0	0	24,070	91,148	34,565	34,565	34,565	
420 Isiolo	259	21,923	49,983	2,142,317	0.3	0.07	0.06	14,995	149,962	128,539	2,590	671	978	165,935	144,512	
430 Kitui	1,139	21,411	52,231	2,088,869	1.39	0.3	0.2	72,601	626,661	417,774	11,390	163,055	52,334	751,596	542,709	
440 Machakos	5,253	6,716	29,243	642,357	2.05	0.47	0.28	59,948	301,968	179,868	52,530	290,536	102,920	464,776	342,728	
450 Marsabit	100	20,775	46,993	2,030,507	0.28	0.07	0.06	13,158	142,135	121,830	1,000	9,831	3,249	158,542	138,237	
460 Meru	3,263	3,550	45,167	309,833	2.44	0.72	0.43	110,207	223,080	133,228	32,630	151,921	55,365	388,652	298,800	
510 Garissa	14	40,098	91,096	3,918,704	0.74	0.12	0.09	67,411	470,244	352,683	140	286	128	537,783	420,222	
520 Mandera	65	24,504	55,825	2,394,575	0.08	0.04	0.04	4,466	95,783	95,783	650	1,370	606	100,855	100,855	
530 Wajir	29	54,353	122,950	5,312,350	0.1	0.05	0.04	12,295	265,618	212,494	290	290	560	278,473	225,349	
610 Kisii	688	1,468	24,545	122,255	5.68	1.72	1.28	139,416	210,279	156,486	6,880	82,823	26,911	376,606	322,813	
620 Kisumu	930	336	1,260	32,340	5.42	1.38	0.83	6,829	44,629	26,842	9,900	38,834	14,440	65,898	48,111	
630 Siaya	941	137	477	13,223	5.18	1.49	0.88	2,471	19,702	11,636	9,410	83,216	27,788	49,961	41,895	
640 South Nyanza	1,765	2,815	6,649	274,851	4.71	1.3	0.81	31,317	357,306	222,629	17,650	93,081	33,219	421,842	287,165	
710 Kajiado	2,067	14,150	32,008	1,382,992	3.63	0.29	0.29	11,6189	401,068	401,068	20,670	46,827	20,249	537,506	537,506	
720 Kericho	2,741	682	68,200	0	2.32	1.63	1.1	158,224	0	0	27,410	92,706	36,035	194,259	194,259	
730 Laikipia	525	7,899	36,909	752,991	1.09	0.26	0.2	40,231	195,778	150,598	40,230	132,309	12,076	248,085	202,905	
740 Nakuru	4,023	0	0	0	1.25	0.63	0.44	0	0	0	40,230	132,309	51,762	51,762	51,762	
750 Narok	1,529	13,922	44,138	1,348,062	2.33	0.65	0.74	102,842	876,240	997,566	15,290	83,586	29,663	1,008,745	1,130,071	
760 Trans Nzoia	1,792	0	0	0	1.96	0.88	0.74	0	0	0	17,920	83,450	30,411	30,411	30,411	
770 Uasin Gishu	1,467	1,503	137,650	12,650	1.47	0.78	0.57	202,246	9,867	7,211	14,670	111,853	37,957	250,170	247,514	
810 Baringo	1,268	7,474	38,669	708,731	2.04	0.44	0.23	76,835	311,842	163,008	12,680	23,206	10,766	401,493	252,659	
820 Elgeyo Marak	1,562	106	10,600	0	1.68	0.85	0.47	17,808	0	0	15,620	40,906	16,958	34,766	34,766	
830 Naandi	201	2,124	43,436	168,964	3.87	1.47	1.09	168,097	248,377	184,171	2,010	74,949	23,088	439,562	375,356	
840 Samburu	59	13,877	31,392	1,356,308	0.25	0.22	0.19	7,848	298,388	257,699	590	4,252	1,453	307,689	267,000	
850 Turkana	81	45,875	103,770	4,483,730	1.11	0.15	0.11	115,185	672,560	493,210	810	5,507	1,895	789,640	610,290	
860 West Pokot	1,729	5,015	16,005	485,495	1.99	0.46	0.41	31,850	223,328	199,053	17,290	23,376	12,200	267,378	243,103	
910 Bungoma	2,073	0	0	0	5.49	1.62	1.12	11,860	118,267	75,691	20,730	125,232	43,789	43,789	43,789	
920 Busia	535	694	1,819	67,581	6.52	1.75	1.12	0	0	0	5,350	73,409	23,628	153,755	111,179	
930 Kakamega	2,457	0	0	0	6.63	1.57	1.43	0	0	0	24,570	194,588	65,747	65,747	65,747	
Kenya	52,000	368,167	1,340,078	35,476,622	2,181,973	8,242,457	7,022,031	520,000	2,512,178	909,656	11,334,086	10,133,660	11,334,086	10,133,660	10,133,660	



**Table M3.11 Average Live-weight**

Herd Composition	Grade Cattle		Local Cattle		Sheep Goat	Camel
	Proportion (%)	Live- weight (kg)	Proportion (%)	Live- weight (kg)	Live- weight (kg)	Live weight (kg)
Bull	2	400	2	280		
Cow	45	320	28	220		
Heifer	17	240	25	160		
Heifer Calves	14	140	10	100		
Bull Calves	11	140	10	100		
Steer	11	240	25	160		
Average Live- weight LU/head		254 0.56		167 0.37	30 0.07	300 0.67

Source: Ref.F.19 (Sectoral Report F)

Table M3.12 Sub-basin Livestock Water Demand

Unit : l/sec

Subbasin	1990	2000	2010	Subbasin	1990	2000	2010	Subbasin	1990	2000	2010
IAA	7.40	8.87	10.60	2AA	28.64	34.19	40.68	4AA	8.05	9.61	11.32
IAB	5.69	6.78	8.11	2AB	25.33	30.31	36.31	4AB	10.47	12.49	14.73
IAC	3.05	3.63	4.34	2BA	9.40	11.23	13.42	4AC	6.94	8.27	9.73
IAD	7.80	9.42	11.27	2BB	11.29	13.50	16.13	4AD	7.53	8.96	10.55
IAE	1.76	2.13	2.55	2BC	26.75	31.97	38.14	4BA	5.68	6.73	7.93
IAF	10.14	12.17	14.54	2BD	40.33	48.25	57.75	4BB	4.57	5.48	6.44
IAG	9.03	10.84	12.96	2CA	9.59	11.47	13.74	4BC	5.44	6.57	7.72
IAH	12.45	15.06	18.01	2CB	32.40	38.40	46.12	4BD	13.31	15.68	18.47
IBA	13.65	16.16	19.34	2CC	53.29	63.45	76.14	4BE	13.05	15.42	18.17
IBB	16.74	19.83	23.65	2D	49.84	59.49	71.28	4BF	9.20	10.83	12.76
IBC	14.26	16.97	20.21	2EA	6.40	7.63	9.06	4BG	6.64	7.85	9.35
IBD	18.56	22.03	26.26	2EB	9.15	10.90	13.00	4CA	12.66	14.97	17.64
IBE	26.89	32.00	38.05	2EC	13.86	16.52	19.59	4CB	7.67	9.03	10.64
IBG	22.32	26.59	31.67	2ED	5.62	6.66	7.94	4CC	17.09	20.19	23.89
IBH	14.66	17.47	20.87	2EE	4.60	5.46	6.55	4DA	14.94	18.09	21.29
ICA	17.62	20.83	24.77	2EF	2.94	3.50	4.20	4DB	9.72	11.78	13.85
ICB	17.83	21.08	25.07	2EG	6.66	7.94	9.42	4DC	4.19	4.99	6.01
ICC	17.90	21.17	25.16	2EG	11.84	14.08	16.82	4DD	5.21	6.18	7.48
ICD	18.34	21.80	25.84	2EH	4.77	5.67	6.80	4DE	6.29	7.50	9.02
ICE	7.02	8.37	9.97	2EJ	11.45	13.65	16.42	4EA	11.39	13.64	16.28
IDA	14.80	17.69	21.12	2EK	4.45	5.31	6.39	4EB	17.47	20.90	24.98
IDB	18.28	21.78	26.04	2FA	10.30	12.27	14.55	4EC	7.07	8.40	10.16
IDC	10.96	13.08	15.64	2FB	2.56	3.05	3.62	4ED	19.19	22.90	27.56
IDD	9.60	11.46	13.70	2FC	26.91	32.10	38.12	4FA	30.32	36.31	43.32
IEA	13.15	15.73	18.79	2GA	6.67	7.94	9.39	4FB	40.78	48.85	58.29
IEB	11.27	13.48	16.12	2GB	22.42	26.60	31.34	4GA	13.93	16.71	19.92
IEC	6.82	8.16	9.75	2GC	18.16	21.52	25.34	4GB	16.78	20.18	24.14
IED	4.38	5.24	6.26	2GD	20.61	24.59	29.20	4GC	5.13	6.17	7.38
IEE	15.77	18.83	22.60	2H	88.29	105.84	126.61	4GD	33.66	40.51	48.45
IEF	12.08	14.47	17.36	2J	72.92	87.25	104.53	4GE	42.62	51.26	61.27
IEG	21.64	25.82	30.99	2KA	83.78	100.47	120.54	4GF	17.04	20.51	24.54
IFA	6.17	7.28	8.66	2KB	24.70	29.63	35.55	4GG	38.02	45.50	54.48
IFB	14.58	17.35	20.54	2KC	24.05	28.87	34.63	4HA	18.47	22.19	26.53
IFC	10.60	12.61	14.94					4HB	20.45	24.61	29.42
IFD	17.34	20.62	24.43	3AA	5.14	6.32	7.41	4JA	41.44	49.73	59.57
IFE	22.22	26.52	31.58	3AB	15.11	18.14	21.75	4JB	12.04	14.41	17.26
IFF	8.47	10.13	12.11	3AC	7.31	8.80	10.44	4KA	28.04	33.53	40.17
IFG	35.84	42.77	51.38	3BA	11.22	13.60	15.75	4KB	33.02	39.37	47.17
IGA	15.60	18.53	21.97	3BB	5.74	6.79	8.01				
IGB	19.70	23.50	27.92	3BC	11.54	13.62	16.09	5AA	21.24	25.24	29.89
IGC	32.86	38.90	46.07	3BD	7.49	8.85	10.44	5AB	9.32	11.06	13.06
IGD	26.59	31.77	38.00	3CB	9.74	11.50	13.58	5AC	9.02	10.80	13.03
IGE	13.84	16.44	19.53	3DA	7.80	9.30	11.11	5AD	4.73	5.65	6.79
IGF	8.56	10.27	12.34	3DB	5.74	6.86	8.22	5BA	2.97	3.55	4.22
IGG	14.80	17.54	20.81	3EA	7.01	8.37	10.04	5BB	6.67	7.96	9.39
IHA	28.12	33.72	40.42	3EB	6.34	7.57	9.08	5BC	18.89	22.55	26.87
IHB	25.08	30.09	36.21	3EC	5.46	6.52	7.82	5BD	7.72	9.21	10.99
IHC	22.10	26.35	31.66	3ED	4.49	5.36	6.43	5BE	14.40	17.24	20.63
IHD	23.80	28.39	33.92	3FA	81.87	98.22	117.80	5CA	12.96	15.53	18.68
IHE	23.15	27.62	33.00	3FB	28.17	33.67	40.38	5CB	6.90	8.28	9.88
IHF	10.92	13.02	15.56	3G	33.54	40.21	48.19	5CC	6.64	7.96	9.51
IHG	3.77	4.49	5.37	3HA	2.52	3.00	3.59	5DA	29.66	35.53	42.43
IJA	23.31	27.64	32.74	3HB	6.78	8.07	9.68	5DB	9.70	11.62	13.99
IJB	10.00	11.84	14.01	3HC	7.78	9.20	11.09	5DC	9.94	11.90	14.35
IJC	12.37	14.65	17.35	3HD1	1.65	1.95	2.35	5DD	5.38	6.46	7.71
IJD	8.46	10.01	11.85	3HD2	1.04	1.22	1.48	5EA	67.17	80.32	95.35
IJE	28.94	34.35	40.81	3HD3	1.11	1.31	1.58	5EB	84.86	101.43	120.50
IJF	39.76	47.15	55.94	3J	7.83	9.33	11.17	5EC	84.26	100.75	119.91
IJG	13.00	15.51	18.52	3K	34.22	40.74	48.88	5FA	83.64	100.29	119.60
IKA	20.59	24.57	29.36	3L	20.71	24.57	29.51	5FB	37.08	44.46	53.15
IKB	105.80	126.25	150.88	3MA	21.55	25.67	30.75	5G	63.98	76.60	90.77
IKC	50.18	59.97	71.74	3MB	10.62	12.63	15.16	5H	33.48	40.10	47.49
ILA	25.22	29.95	35.55	3MC	7.89	9.40	11.28	5J	77.63	92.68	110.24
ILA	17.32	20.76	24.89	3MD	8.04	9.16	10.62				
ILA	43.97	52.74	63.28	3N	27.04	32.50	38.97				
ILB	28.85	34.39	41.00								
ILB	43.75	52.47	62.96								

**Table M3.13 Summary of Load Forecast - Calendar Year**

Fiscal Year (Jun/Jul)	Low Forecast		Median Forecast		High Forecast	
	Peak Load (MW)	Net Gene. (GWh)	Peak Load (MW)	Net Gene. (GWh)	Peak Load (MW)	Net Gene. (GWh)
1985	381	2,273	381	2,273	381	2,273
1986	409	2,473	410	2,440	410	2,441
1987	434	2,572	436	2,582	438	2,593
1988	459	2,710	462	2,729	467	2,758
1989	483	2,848	489	2,879	499	2,935
1990	509	2,995	517	3,041	533	3,128
1991	533	3,133	546	3,203	570	3,341
1992	557	3,271	574	3,368	608	2,561
1993	582	3,416	605	3,542	649	3,796
1994	609	3,570	637	3,727	694	4,049
1995	636	3,727	670	3,919	741	4,319
1996	665	3,893	706	4,123	791	4,608
1997	696	4,070	743	4,340	846	4,920
1998	727	4,250	783	4,564	903	5,248
1999	762	4,451	826	4,813	967	5,614
2000	798	4,662	871	5,076	1,035	6,006
2001	837	4,883	919	5,353	1,109	6,425
2002	876	5,112	970	5,643	1,187	6,870
2003	917	5,347	1,022	5,943	1,269	7,341
2004	959	5,585	1,076	6,250	1,356	7,834
2005	1,003	5,837	1,133	6,576	1,449	8,363
<b>Average Annual Growth Rate</b>						
1985-1990	6.4%	5.7%	6.3%	6.0%	6.9%	6.6%
1990-2000	4.6%	4.5%	5.4%	5.3%	6.9%	6.7%

Source : National Power Development Plan, Table 4.6

Remark : Base year = 1985

Table M3.14

## Summary of Revised Load Forecast

Fiscal Year (Jun/Jul)	Low Forecast		Median Forecast		High Forecast	
	Peak Load (MW)	Gross Gene. (GWh)	Peak Load (MW)	Gross Gene. (GWh)	Peak Load (MW)	Gross Gene. (GWh)
1988/89	490	2916	490	2916	490	2916
1989/90	514	3047	527	3127	524	3111
1990/91	537	3184	558	3306	560	3320
1991/92	563	3328	589	3483	599	3542
1992/93	589	3477	620	3662	640	3780
1993/94	616	3634	653	3852	684	4033
1994/95	644	3797	687	4051	730	4303
1995/96	674	3968	724	4261	780	4591
1996/97	705	4147	762	4484	833	4899
1997/98	738	4333	803	4718	890	5227
1998/99	771	4528	846	4970	949	5577
1999/00	806	4732	893	5242	1014	5951
2000/01	843	4945	942	5528	1082	6350
2001/02	881	5168	994	5829	1155	6775
2002/03	922	5400	1049	6142	1235	7229
2003/04	965	5643	1105	6464	1319	7714
2004/05	1008	5897	1163	6801	1407	8230
2005/06	1055	6163	1225	7157	1503	8782
<b>Average Annual Growth Rate</b>						
1986/87- 1990/91	4.5%	4.9%	6.5%	6.7%	6.7%	6.9%
1990/91- 2000/01	4.5%	4.6%	5.3%	5.4%	6.7%	6.8%

Source : Feasibility Study for Geothermal Power Station  
at North East Olkaria, Dec. 1989

Remark : (Gross Gen.)=(Net Gen.)+(Gen. Station Use)

Table M3.15

Summary of Updated Load Forecast  
(Update of NPDP)

Fiscal Year (Jun/Jul)	Low Forecast		Medium Forecast		High Forecast	
	Peak Load (MW)	Genera. Energy (GWh)	Peak Load (MW)	Genera. Energy (GWh)	Peak Load (MW)	Genera. Energy (GWh)
1988/89	480	2,904	480	2,904	480	2,904
1989/90	520	3,103	520	3,103	520	3,103
1990/91	566	3,187	566	3,187	566	3,187
1991/92	586	3,289	591	3,313	593	3,327
1992/93	615	3,446	629	3,520	737	3,566
1993/94	644	3,607	668	3,735	683	3,817
1994/95	675	3,775	710	3,963	733	4,084
1995/96	708	3,952	754	4,204	785	4,369
1996/97	741	4,137	801	4,459	841	4,672
1997/98	777	4,332	851	4,729	900	4,998
1998/99	815	4,538	903	5,017	964	5,346
1999/00	854	4,753	959	5,321	1,033	5,717
2000/01	895	4,980	1,018	5,643	1,106	6,115
2001/02	939	5,217	1,081	5,984	1,183	6,538
2002/03	984	5,465	1,147	6,344	1,267	6,990
2003/04	1,031	5,724	1,217	6,725	1,355	7,472
2004/05	1,081	5,996	1,291	7,127	1,450	7,986
2005/06	1,133	6,280	1,369	7,551	1,551	8,533
2006/07	1,187	6,576	1,451	8,000	1,658	9,117
2007/08	1,244	6,887	1,538	8,473	1,773	9,740
2008/09	1,303	7,211	1,630	8,973	1,895	10,404
2009/10	1,365	7,550	1,727	9,501	2,025	11,111
Average Annual Growth Rate						
1989/99- 1999/00	5.08%	4.36%	6.31%	5.54%	7.10%	6.30%
1999/00 2009/10	4.81%	4.74%	6.06%	5.97%	6.97%	6.87%

Source : 1990 Interim Update of National Development Plan  
1991 to 2010, Draft Final Report, Table 4.11,  
April 1991, Acres

Table M4.1 Relationship between Probable Daily Discharges and Flow Duration Curve on Monthly Discharge Basis

Station No.	Nos. of Years	Annual Average Discharge (cms)	2-yr Drought		5-yr Drought		10-yr Drought		Min. Discharge		No. of Records		Deficit (b) (days)	Ratio 100(1-b/a) (%)
			Discharge (cms)	Ratio (%)	Discharge (cms)	Ratio (%)	Discharge (cms)	Ratio (%)	Daily (cms)	Monthly (cms)	(a) (days)	(b) (days)		
IBA01	18	1.1	0.24	89.1	0.18	98.2	0.15	98.4	0.10	0.10	6,559	0	100.0	
IFE02	22	16.6	2.01	99.2	1.01	100.0	0.75	100.0	0.57	1.90	8,018	150	98.1	
IKC03	17	16.0	0.19	99.6	0.05	100.0	0.00	100.0	0.00	0.10	6,156	19	99.7	
ILA03	16	11.2	0.52	97.3	0.21	100.0	0.12	100.0	0.10	0.20	5,815	9	99.8	
2C.05	19	2.2	0.56	97.1	0.39	100.0	0.32	100.0	0.19	0.50	6,921	121	98.3	
4BC02	16	30.5	7.96	98.2	6.36	100.0	5.70	100.0	5.07	6.30	5,780	30	99.5	
4CA02	19	8.9	2.32	95.1	1.81	99.1	1.58	100.0	1.58	1.70	6,896	31	99.6	
4CB04	25	6.4	0.93	96.6	0.58	99.7	0.45	100.0	0.39	0.50	9,091	32	99.6	
4DA02	16	1.8	0.27	98.6	0.15	99.7	0.13	99.9	0.09	0.10	5,817	1	100.0	
4DD01	15	26.2	5.81	99.0	3.75	100.0	2.79	100.0	2.60	4.40	5,408	75	98.6	
4G 01	22	169.6	34.04	98.1	20.11	99.9	14.01	100.0	8.83	18.20	7,996	30	99.6	
4G 04	16	142.5	28.85	89.6	12.07	94.2	4.11	98.3	0.18	1.10	5,820	45	99.2	
5AB04	16	6.4	2.07	90.8	1.29	99.7	1.10	99.7	0.49	0.50	5,822	2	100.0	
5AC08	28	3.2	0.24	91.8	0.13	98.1	0.10	100.0	0.09	0.10	10,160	37	99.6	
5E 03	17	16.6	1.06	93.8	0.26	99.6	0.00	100.0	0.00	0.10	6,150	21	99.7	
Ave.	19	30.6	95.6	99.2	99.8	99.2	99.8	99.8	40.2	99.4	40.2	99.4	99.4	

Note: Discharge : daily discharge basis (cms)  
 Ratio : ratio on flow duration curve prepared on basis of monthly average discharges (%)  
 (a) : number of daily discharge data examined  
 (b) : number of days of which the daily discharge is less than the minimum monthly discharge

**Table M4.2 Runoff Ratio of Perennial Rivers in Kenya**

River Name	Catchment Area (sq. km)	Annual Rainfall (mm)	Annual Runoff (mm)	Runoff Ratio (%)
<b>DRAINAGE AREA 1</b>				
Sio	1,338	1,683	269	16.0
Nzoia	12,903	1,424	310	21.7
Yala	3,240	1,565	163	10.4
Nyando	3,356	1,298	222	17.1
Kibos	833	1,327	414	31.2
Awach Seme	717	1,191	373	31.4
Sondu	3,487	1,497	500	33.4
Gucha	6,824	1,444	266	18.5
Mara	8,608	1,037	217	20.9
<b>DRAINAGE AREA 2</b>				
Turkwel	19,906	532	22	4.1
Kerio	13,460	696	50	7.2
Lake Baringo	5,770	933	147	15.8
Lake Bogoria	1,220	747	121	16.2
Lake Nakuru	1,503	1,048	131	12.5
Lake Elementaita	551	789	133	16.9
Ewaso N'giro	8,652	832	47	5.7
<b>DRAINAGE AREA 3</b>				
Athi	37,836	733	17	2.3
Pemba	1,028	915	77	8.4
Mwachi	7,362	638	31	4.9
Rare	7,729	733	26	3.6
<b>DRAINAGE AREA 4</b>				
Tana	95,989	712	39	5.4
<b>DRAINAGE AREA 5</b>				
Ewaso N'giro (*)	12,107	707	28	3.9
<hr/>				
<b>Weighted Average</b>	<b>254,419</b>	<b>815</b>	<b>77</b>	<b>9.5</b>

Note : (\*) Archer's Post water level gauging station

Table M4.3 Balance between Water Demands and Potential Available Water (1/3)

Sub-Drainage Area	Demand			Safe Yield		Total (6) = (4)+(5)	Deficit			Major Demand Center
	1990	2000	2010	Surface Water	Ground-water		1990	2000	2010	
	(1)	(2)	(3)	(4)	(5)		(6)-(1)	(6)-(2)	(6)-(3)	
IAA	2,693	4,061	6,809	864	463	1,327	-1,366	-2,724	-5,082	Malakisi
IAB	3,061	5,014	7,935	864	393	1,257	-1,804	-3,757	-6,678	Malakisi
IAC	2,829	5,811	9,446	0	388	388	-2,441	-5,423	-9,058	Malakisi
IAD	2,154	3,581	5,388	12,096	666	12,762				
IAE	2,628	6,369	10,705	0	553	553	-2,075	-5,816	-10,152	Busia
IAF	5,459	10,676	17,134	0	1,326	1,326	-4,143	-9,350	-15,808	Nambale
IAO	5,906	10,915	17,794	0	1,190	1,190	-4,716	-9,728	-16,604	Nambale
IAH	7,625	12,201	19,295	0	2,096	2,096	-5,529	-10,105	-17,199	Busia
IBA	3,072	4,757	7,627	68,256	1,373	69,629				
IBB	4,101	5,846	9,197	60,480	2,694	63,174				
IBC	4,897	7,293	11,147	52,704	2,595	55,299				
IBD	2,978	3,808	5,650	56,160	1,117	57,277				
IBE	10,328	21,007	35,108	82,080	2,525	84,605				
IBG	9,106	17,042	27,469	75,168	1,952	77,120				
IBH	6,124	9,929	15,563	60,480	1,908	62,388				
ICA	3,236	4,223	6,722	69,120	834	69,954				
ICB	23,796	51,863	90,887	30,240	688	30,928				
ICC	3,573	4,812	7,681	61,344	419	61,763				
ICD	3,023	4,134	5,701	109,728	1,054	110,782				
ICE	1,475	2,129	3,064	266,976	586	267,562				
IDA	5,987	10,298	15,878	763,776	1,750	765,526				
IDB	10,773	20,760	34,109	819,072	1,710	820,782				
IDC	4,980	7,479	11,629	854,864	1,095	855,959				
IDD	8,351	15,485	24,390	906,336	1,080	907,416				
IEA	4,735	7,797	12,234	2,592	1,351	3,943				
IEB	12,288	23,975	38,522	6,048	1,188	7,236	-792	-3,854	-8,291	Kakamega
IEC	2,937	4,253	6,627	27,648	787	28,435	-5,052	-16,739	-31,286	Kakamega
IED	3,458	5,819	8,914	38,880	415	39,295				
IEE	6,160	8,488	12,990	981,504	1,437	982,941				
IEF	5,054	7,051	10,353	1,063,584	1,200	1,064,784				
IEG	12,138	17,491	26,691	1,029,888	1,888	1,031,776				
IFA	1,318	1,482	2,472	37,152	171	37,323				
IFB	2,742	4,386	6,525	69,120	832	69,952				
IFC	3,084	5,401	8,424	92,448	651	93,099				
IFD	6,062	9,353	14,195	139,968	646	140,614				
IFE	14,520	21,232	32,672	214,272	1,981	216,253				
IFF	12,049	18,524	28,819	245,376	788	246,164				
IFO	13,112	18,442	27,292	356,832	3,456	360,298				
IGA	2,094	2,866	4,471	24,192	249	24,441				
IGB	4,585	6,865	10,439	63,072	1,369	64,441				
IGC	7,335	11,068	17,583	0	713	713	-6,622	-10,355	-16,870	Londiani
IGD	8,100	12,416	19,514	127,008	2,589	129,597				
IGE	4,236	6,108	9,221	229,824	1,227	231,051				
IGF	3,365	4,296	6,706	286,848	1,029	287,877				
IGG	2,782	3,925	5,912	0	247	247				
IHA	25,059	46,261	74,684	44,928	4,891	49,819	-2,535	-3,678	-5,665	Londiani
IHB	28,469	49,722	78,324	47,520	2,554	50,074			-24,865	Kisumu
IHC	4,273	5,218	6,884	49,248	1,462	50,710			-28,250	Maseno
IHD	13,966	19,351	28,369	43,200	2,816	46,016				
IHE	13,500	18,635	27,686	49,248	2,507	51,755				
IHF	6,703	11,488	17,060	61,344	2,640	63,984				
IHO	1,340	1,760	2,336	33,696	799	34,495				
IJA	3,555	6,590	11,641	9,504	331	9,835				
IJB	2,555	3,596	5,493	33,696	202	33,898			-1,806	Kericho
IKC	7,465	14,721	23,969	25,920	258	26,178				
IJD	5,519	9,565	14,933	75,168	485	75,653				
IJE	5,994	8,169	11,940	50,112	1,266	51,378				
IF	13,986	20,894	31,941	90,720	1,520	92,240				
IKO	4,653	5,896	8,661	188,352	1,143	189,495				
1KA	13,357	25,060	38,305	29,376	1,463	30,839				
1KB	45,229	63,030	93,563	188,352	11,031	199,383			-7,466	Kisii
1KC	21,913	32,557	45,936	380,160	9,609	389,769				
1LA1	6,445	9,707	15,437	29,376	1,068	30,444				
1LA2	3,232	4,781	6,246	159,840	2,363	162,203				
1LA3	2,474	3,640	4,719	584,928	7,094	592,022				
1LB1	7,099	10,634	16,664	55,296	2,092	57,388				
1LB2	2,466	3,601	4,618	366,336	6,349	372,685				
2AA	2,402	3,218	5,363	0	18,488	18,488				
2AB	3,478	9,492	16,514	0	25,335	25,335				
2BA	2,683	3,687	5,114	0	3,933	3,933				
2BB	1,603	2,093	2,692	0	6,607	6,607			-1,181	Rural
2BC	5,905	8,900	12,934	0	11,994	11,994				
2BD	8,067	14,860	25,206	122,688	45,466	168,154			-940	Rural
2CA	1,411	2,373	4,178	0	20,900	20,900				
2CB	8,924	13,669	20,712	0	4,897	4,897				
2CC	8,042	12,852	20,488	0	35,730	35,730	-4,027	-8,772	-15,815	Iten & Kabarnet
2D	6,073	8,727	13,466	0	22,136	22,136				

Note: Items (1), (2) and (3) indicate domestic and industrial water demands  
Item (4) shows the safe yield with 10-year probability.



Table M4.3 Balance between Water Demands and Potential Available Water (2/3)

Sub-Drainage Area	Demand			Safe Yield			Deficit			Major Demand Center
	1990	2000	2010	Surface Water	Ground-water	Total (6) = (4)+(5)	1990	2000	2010	
	(1)	(2)	(3)	(4)	(5)	(6)	(6)-(1)	(6)-(2)	(6)-(3)	
2EA	1,958	2,893	5,442	0	297	297	-1,661	-2,596	-5,145	
2EB	2,775	3,885	7,545	0	506	506	-2,269	-3,379	-7,039	
2EC	6,748	11,845	33,905	0	676	676	-6,072	-11,169	-33,229	Rongai & Mogofo
2ED	2,276	3,404	5,627	0	241	241	-2,035	-3,163	-5,386	
2EE	1,258	1,853	2,609	0	784	784	-474	-1,069	-1,825	
2EF	1,927	3,452	5,404	0	591	591	-1,336	-2,861	-4,813	Eldama Ravine
2EO1	4,544	7,962	15,614	0	389	389	-4,255	-3,573	-15,225	Molo & Eiburgon
2EO2	2,698	3,996	6,162	0	2,006	2,006	-692	-1,990	-4,156	
2EH	1,540	3,271	5,068	0	1,087	1,087	-853	-2,184	-3,581	
2EJ	1,915	2,701	4,324	0	2,859	2,859			-1,465	
2EK	1,473	2,106	3,534	0	758	758	-715	-1,348	-2,776	
2FA	2,772	5,008	14,035	864	867	1,731	-1,041	-3,277	-12,304	Gilgil
2FB	913	1,297	2,601	0	56	56	-857	-1,241	-2,545	
2FC	41,664	97,672	161,735	0	1,510	1,510	-40,154	-96,162	-160,225	Nakuru & Njoro
2GA	2,456	5,235	9,340	0	699	699	-1,757	-4,536	-8,641	
2GB	7,293	13,201	20,590	14,688	1,087	15,775			-4,815	
2GC	3,813	6,053	9,160	0	848	848	-2,965	-5,205	-8,312	Gilgil
2GD	7,213	15,654	29,282	3,456	2,402	5,858	-1,355	-9,796	-23,424	Naivasha
2H	11,892	18,401	27,396	0	12,010	12,010		-6,391	-15,386	Magadi
2J	6,035	10,218	17,824	0	80,188	80,188				
2KA	15,351	26,937	41,830	69,984	6,571	76,555				
2KB	1,863	2,661	3,419	0	1,841	1,841	-22	-830	-1,578	Rural
2KC	1,508	2,499	3,618	0	4,433	4,433				
3AA	98,564	165,510	242,896	4,320	283	4,603	-91,961	-160,907	-238,293	Athi River
3AB	3,898	7,519	11,487	2,592	2,468	5,060	1,162	-2,459	-6,427	Nairobi
3AC	48,428	84,098	124,881	864	847	1,711	-46,717	-82,327	-123,170	Nairobi
3BA	204,582	340,091	495,248	21,600	392	21,992	-182,590	-318,099	-473,256	Nairobi, Kiambu
3BB	11,276	18,033	26,773	28,512	131	28,643				
3BC	7,155	11,411	17,766	25,920	464	26,384				
3BD	4,911	7,551	11,531	19,008	328	19,336				
3CB	9,261	17,541	27,629	28,512	410	28,922				
3DA	5,983	9,804	14,511	5,184	2,045	7,229		-2,575	-7,282	
3DB	1,699	2,248	2,970	1,728	2,304	4,032				
3EA	22,880	47,525	78,110	1,728	2,607	4,335	-18,545	-43,190	-73,775	Machakos
3EB	5,104	7,042	10,020	1,728	2,694	4,422	-682	-2,620	-5,598	
3EC	4,342	5,903	8,377	0	2,409	2,409	-1,933	-3,494	-5,968	
3ED	1,344	1,830	2,564	0	1,893	1,893			-671	
3FA	15,092	21,531	30,420	11,232	32,474	43,706				
3FB	3,680	5,179	7,365	864	12,383	13,247				
3O	6,641	9,870	14,265	309,312	18,131	327,443				
3HA	572	745	1,011	9,504	4,352	13,856				
3HB	513	706	921	27,648	11,307	38,955				
3HC	1,035	1,424	1,977	31,968	11,664	43,632				
3HD1	1,789	3,097	4,742	864	2,700	3,564			-1,178	
3HD2	186	285	413	0	1,799	1,799				
3J	3,524	5,393	7,350	0	11,740	11,740				
3K	10,470	16,188	23,071	0	21,280	21,280			-1,791	
3LA	7,867	12,409	18,124	0	26,292	26,292				
3LB	9,148	20,744	34,689	6,912	2,626	9,538		-11,206	-25,151	Malindi
3MA	3,540	4,278	5,477	4,320	19,369	23,689				
3MB	5,327	8,292	11,185	38,016	6,041	44,057				
3MC	1,612	2,909	3,929	0	3,737	3,737			-192	Mombasa
3MD1	106,128	161,234	217,066	0	4,870	4,870	-101,258	-156,364	-212,196	Mombasa
3MD2	1,023	1,354	1,825	0	599	599	-424	-755	-1,226	Mombasa
3N	2,932	4,755	7,217	0	11,680	11,680				
4AA	2,905	3,768	5,866	42,336	217	42,553				
4AB	12,070	25,947	44,069	25,056	451	25,507		-440	-18,562	
4AC	10,133	17,674	29,295	203,040	184	203,224				
4AD	6,661	9,321	14,793	864	316	1,180	-5,481	-8,141	-13,613	
4BA	6,265	8,406	12,892	27,648	405	28,053				
4BB	3,263	4,470	6,945	23,328	143	23,471				
4BC	2,922	4,206	6,331	19,008	204	19,212				
4BD	10,472	15,987	24,814	537,408	1,431	538,839				
4BE	11,060	17,384	26,151	183,168	501	183,669				
4BF	7,769	12,222	17,875	153,792	593	154,385				
4BO	1,191	1,531	2,127	146,016	1,225	147,241				
4CA	6,389	10,318	16,010	184,032	530	184,562				
4CB	4,473	6,121	9,508	99,360	268	99,628				
4CC	8,567	13,844	20,779	162,432	2,295	164,727				
4DA	9,516	15,351	23,823	66,528	609	67,137				
4DB	3,359	4,887	7,461	19,872	601	20,473				
4DC	6,607	12,382	19,867	43,200	411	43,611				
4DD	1,043	1,458	2,010	16,416	1,027	17,443				
4DE	1,312	1,818	2,422	57,024	3,064	60,088				
4EA	5,603	8,195	12,058	35,424	1,487	36,911				
4EB	9,972	14,859	22,316	2,592	2,305	4,897	-5,075	-9,962	-17,419	
4EC	4,850	7,160	10,598	6,912	1,426	8,338			-2,260	

Note: Items (1), (2) and (3) indicate domestic and industrial water demands  
Item (4) shows the safe yield with 10-year probability.

Table M4.3 Balance between Water Demands and Potential Available Water (3/3)

(Unit: m<sup>3</sup>/day)

Sub- Drainage Area	Demand			Safe Yield		Total (6) = (4)+(5)	Deficit			Major Demand Center
	1990	2000	2010	Surface Water	Ground- water		1990	2000	2010	
	(1)	(2)	(3)	(4)	(5)		(6)-(1)	(6)-(2)	(6)-(3)	
4ED	6,173	8,926	12,308	7,459,776	11,361	7,471,137				
4FA	23,972	47,231	75,695	7,635,168	4,140	7,639,308				
4FB	7,861	10,932	15,192	7,681,824	10,676	7,692,500				
4GA	3,231	4,431	7,303	7,752,672	14,047	7,766,319				
4GB	1,628	1,883	2,760	7,567,776	18,192	7,585,968				
4GC	1,879	4,320	6,921	7,531,488	5,847	7,537,335				
4GD	2,218	2,937	3,816	6,732,288	24,437	6,756,725				
4GE	4,733	7,318	10,075	6,380,640	41,208	6,421,848				
4GF	7,672	11,087	14,998	5,828,544	51,580	5,880,124				
4GO	3,354	4,764	6,748	5,205,600	31,545	5,237,145				
4HA	9,584	14,490	20,207	10,368	18,714	29,082				
4HB	1,496	2,153	2,781	0	43,453	43,453				
4HC	541	859	1,166	0	33,798	33,798				
4JA	3,539	7,643	12,299	0	28,454	28,454				
4JB	829	1,141	1,728	0	14,214	14,214				
4KA	1,616	2,625	4,149	0	25,929	25,929				
4KB	2,029	3,190	4,854	0	34,151	34,151				
5AA	9,218	16,074	26,214	1,728	1,321	3,049	-6,169	-13,025	-23,165	Nyahururu & Rumuruti
5AB	1,441	2,033	2,954	2,592	455	3,047				
5AC	1,842	2,822	4,814	0	1,744	1,744	-98	-1,078	-3,070	Rumuruti
5AD	405	556	938	0	907	907				
5BA	376	438	721	12,960	125	13,085				
5BB	816	864	1,373	39,744	461	40,205				
5BC	3,245	6,010	10,367	45,792	2,824	48,616				
5BD	649	918	1,402	17,280	805	18,085				
5BE	3,121	6,304	11,166	4,320	2,636	6,956				
5CA	4,870	9,740	17,028	0	3,418	3,418	-1,452	-6,322	-13,610	
5CB	1,037	1,443	2,198	0	7,145	7,145				
5CC	1,535	2,540	4,202	0	9,441	9,441				
5DA	4,020	8,239	15,128	108,000	8,306	116,306				
5DB	1,696	1,897	3,339	132,192	3,579	135,771				
5DC	1,593	3,368	6,118	175,392	2,894	178,286				
5DD	1,056	2,084	3,557	134,784	5,553	140,337				
5EA	11,215	18,330	29,094	0	80,810	80,810				
5EB	5,806	7,623	12,344	0	77,493	77,493				
5EC	5,834	7,993	13,722	0	73,003	73,003				
5ED	15,309	24,646	42,110	0	59,375	59,375				
5FA	5,057	6,524	10,216	0	76,655	76,655				
5FB	517	553	743	0	29,255	29,255				
5GA	8,689	11,906	17,344	0	70,922	70,922				
5GB	2,757	4,188	6,447	0	9,725	9,725				
5H	2,973	3,925	5,727	0	18,051	18,051				
5I	10,116	16,349	27,545	0	55,378	55,378				

Note: Items (1), (2) and (3) indicate domestic and industrial water demands.  
Item (4) shows the safe yield with 10-year probability.

**Table M6.1 Combination of Water Source Development (Summary)**

Code	Surface Water	Ground-water	Roof Catchment	Small dam	Sub-surface dam	Rock Catchment	Pipeline
<b><u>Domestic/Industrial Water Supply</u></b>							
1. Surface water abundant area (SW)							
SW-1	O						*
SW-2	O			O			*
2. Surface water/groundwater area (SG)							
SG-1	O	O				*	*
SG-2	O	O		O		*	*
SG-3	O	O		O	O	*	*
SG-4	O	O	O			*	*
SG-5	O	O	O	O		*	*
SG-6	O	O	O		O	*	*
SG-7	O	O	O	O	O	*	*
3. Groundwater area (GW)							
GW-1		O	O			*	*
GW-2		O	O	O		*	*
GW-3		O	O		O	*	*
GW-4		O	O	O	O	*	*
<b><u>Livestock Water Supply</u></b>							
1. Surface water area (SW)							
LSW-1	O						
LSW-2	O			O			
LSW-3	O				O		
LSW-2	O			O	O		
2. Surface water/groundwater area (LSG)							
LSG-1	O	O				*	*
LSG-2	O	O		O		*	*
LSG-3	O	O			O	*	*
LSG-4	O	O		O	O	*	*
3. Groundwater area (LGW)							
LGW-1		O				*	*
LGW-2		O		O		*	*
LGW-3		O			O	*	*
LGW-4		O		O	O	*	*

Notes: (1) The above indicates a summary of water development combinations derived thru assessment of water sources availability in each sub-basin.

(2) O Applicable, \* Applicable if the case may be

Table M6.2 Criteria for Source Allocation between Surface Water and Groundwater

Case	PR Index	GA Index	Source Allocation (%)					
			Basic Case: GQ2		Case: GQ1		Case: GQ3	
			Surface Water	Ground-water	Surface Water	Ground-water	Surface Water	Ground-water
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
1	PR1	GA 1	85	15	83	17	87	13
2	(River coverage: 75% ~ )	2	90	10	89	11	91	9
3		3	95	5	94	6	96	4
4		4	100	Nil	100	Nil	100	Nil
5	PR2	GA 1	60	40	56	44	64	36
6	(River coverage: 50 - 75%)	2	65	35	62	38	68	32
7		3	70	30	67	33	73	27
8		4	75	25	73	27	77	23
9	PR3	GA 1	35	65	28	72	41	59
10	(River coverage: 25 - 50%)	2	40	60	34	66	46	54
11		3	45	55	40	60	50	50
12		4	50	50	45	55	55	45
13	PR4	GA 1	15	85	7	93	23	77
14	(River coverage: ~ 25%)	2	20	80	12	88	28	72
15		3	20	80	12	88	28	72
16		4	25	75	17	83	32	68
17	PR5	GA 1	Nil	100	Nil	100	Nil	100
18	(No perennial river/stream)	2	Nil	100	Nil	100	Nil	100
19		3	Nil	100	Nil	100	Nil	100
20		4	Nil	100	Nil	100	Nil	100

Notes:

1. PR: Perennial river/stream coverage index (see Section M6.4)
2. GA: Groundwater development activity index (see Section M6.4)
3. GQ: Groundwater quality index (see Section M6.4)
4. (6):  $(4) \times 1.1$  ..... more dependence on groundwater in view of good water quality
5. (8):  $(4) \times 0.9$  ..... lesser allocation of groundwater source in view of unfavourable water quality. Alternative water sources to be positively sought (e.g. water harvesting, water transfer, etc.)
6. The above represents initial allocation ratios before consideration of other water sources (small dam, rainwater harvesting, etc.).

**Table M6.3 Criteria for Assessing Share of Small Dam Development**

Case	PR Index	ST Index	Share of Small Dam Development (% to total surface water development)	Remarks
1	PR 1	ST 1	5	Lower share in view of lesser requirement of water storages in humid areas where many perennial streams exist.
2		2	4	
3		3	3	
4		4	Nil	
5	PR 2	ST 1	8	
6		2	6	
7		3	4	
8		4	Nil	
9	PR 3	ST 1	12	
10		2	8	
11		3	5	
12		4	Nil	
13	PR 4	ST 1	15	Higher share in view of more dependence on water storages in dry area
14		2	10	
15		3	5	
16		4	Nil	
17	PR 5	ST 1	5 **	Only a marginal number of small dams planned in ST1 area
18	(No perennial rivers)	2	0	
19		3	0	
20		4	0	

**Notes:**

1. PR: Perennial river/stream coverage index (see Section M6.4)
2. ST: Small dam development potential index (see Section M6.4)
3. Maximum extent of small dam development practically attainable was assumed to be 15% of total surface water development.
4. \*\* % to total water development requirement, which implies that a part of groundwater development is substituted by small dam development.

**Table M6.4 Criteria for Assessing Need of Roof Catchment Development**

PR Index	Perennial River/Stream Coverage	Groundwater Quality (GQ)		
		GQ2 (Basic Case)	GQ1	GQ3
PR 1	75% over	Nil	Nil	Nil
PR 2	50 - 75%	Nil	Nil	Nil
PR 3	25 - 50%	20	10 (min.)	30
PR 4	25% under	40	30	50
PR 5	None	60%	50%	70% (max.)

**Notes:**

**PR:** Perennial river/stream coverage index (see Section M6.4)

**GQ:** Groundwater quality index (see Section M6.4)

**%:** in terms of number of rural housings (deemed to include public buildings)

**Table M6.5 Criteria for Assessing Share of Subsurface Dam Development**

<b>TP Index</b>	<b>Share of Development (substitute of groundwater development)</b>
<b>TP 1</b>	<b>5% of groundwater development</b>
<b>TP 2</b>	<b>2% of groundwater development</b>
<b>TP 3</b>	<b>No subsurface dam development</b>

**Note:** TP: Subsurface dam topographical potential index  
(see Section M6.4)

**Table M6.6 Criteria for Pipeline Water Allocation for Livestock Use**

<b>PR Index</b>	<b>Perennial River/ Stream Coverage</b>	<b>Allocation of Pipeline Water</b>
PR 1	75% over	Nil (watering by surface water sources)
PR 2	50 - 75%	Nil (do. above)
PR 3	25 - 50%	25% of livestock water demand
PR 4	25% under	50% of livestock water demand
PR 5	None	100% of livestock water demand

**Note:** PR: Perennial rivers/streams coverage index (see Section M6.4)



Table M7.1 Irrigation Potential by Sub-basin (1/4) (for paddy)  
(in case of monthly mean flow)

Basin 1 Area(ha)	Basin 1 Area(ha)	Basin 2 Area(ha)	Basin 3 Area(ha)	Basin 4 Area(ha)	Basin 5 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	1036	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	2EB1	40	3EB2	347	4DD	1750		
1CD	0	1JC2	0	2EE2	0	3EC	182	4DE	2592		
1CB	0	1JC3	0	2EB3	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	1JO1	987	2EH1	0	3FB	575	4ED2	888		
1EB	10625	1JO2	763	2EH2	0	3G1	1297	4ED3	6583		
1EC	2758	1KA	1049	2EF	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		
1FB	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	3MC1	537	4HA4	136		
				2KC	1930	3MC2	116	4HA5	719		
						3MD1	50	4HB	2382		
						3MD2	88	4HC	1862		
Total	72,879	Total	63,745	Total	47,895	Total	21,879	Total	117,337	Total	14,643

Table M7.1 Irrigation Potential by Sub-basin (2/4) (for upland crop)  
(in case of monthly mean flow)

Basin 1 Area(ha)	Basin 1 Area(ha)	Basin 2 Area(ha)	Basin 3 Area(ha)	Basin 4 Area(ha)	Basin 5 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	5BE 582
1BE 1670	1HD 2299	2EB1 1129	3DA 213	4CB2 3610	5DA1 279
1BG 985	1HE 1929	2EB2 437	3DB 222	4CC 6946	5DA2 402
1BH 1391	1HF 2325	2EB3 330	3EA1 128	4DA1 668	5DA3 713
1CA 1184	1HG 944	2EC 1720	3EA21 96	4DA2 2094	5DB 499
1CB1 384	1JA 4260	2ED1 151	3EA22 0	4DB 1689	5DC1 1470
1CB2 152	1JB 2576	2ED2 874	3EB1 21	4DC 1126	5DC2 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 M7.1 Irrigation Potential by Sub-basin (3/4) (for paddy)  
(in case of 80% dependable monthly flow)

Basin	Area(ha)	Basin 1	Area(ha)	Basin 2	Area(ha)	Basin 3	Area(ha)	Basin 4	Area(ha)	Basin 5	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	2EB1	40	3EB2	1236	4DD	2079		
1CD	0	1JC2	0	2EB2	0	3EC	128	4DE	1603		
1CE	0	1JC3	0	2EB3	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 M7.1 Irrigation Potential by Sub-basin (4/4) (for upland crop)  
(in case of 80% dependable monthly flow)

Basin 1 Area(ha)	Basin 1 Area(ha)	Basin 2 Area(ha)	Basin 3 Area(ha)	Basin 4 Area(ha)	Basin 5 Area(ha)
IAA 627	1GA 1042	2BA 2470	3AA11 9	4AA 933	5AA1 12
IAB 748	1GB 1531	2BB 4360	3AA12 40	4AB 1017	5AA2 0
IAC 301	1GC1 157	2BC 7013	3AA13 9	4AC 2979	5AA3 64
IAD 567	1GC2 1922	2BD 3807	3AA2 39	4AD 3063	5AA4 77
IAE 357	1GD1 257	2CB1 254	3AB 236	4BA 1796	5AB 90
IAF 907	1GD2 1083	2CB2 611	3AC1 20	4BB 1500	5AC 185
IAG 783	1GD3 1217	2CB3 5013	3AC2 428	4BC 1017	5AD 62
IAH 874	1GE 1969	2CC1 786	3BA1 90	4BD 7437	5BA 241
IBA 766	1GF 748	2CC2 118	3BA2 1890	4BE 8163	5BB 797
IBB1 59	1GG 968	2CC3 524	3BB 504	4BF 2237	5BC 2408
IBB2 3054	1HA 4527	2CC4 925	3BC 638	4BG 2648	5BD 692
IBC 4165	1HB 3590	2CC5 1576	3BD 425	4CA 396	5BE 1496
IBD 1446	1HC 2856	2EA 447	3CB 2460	4CB1 1171	5DA1 295
IBE 1386	1HD 1615	2EB1 447	3DA 174	4CB2 1739	5DA2 140
IBO 1171	1HE 1809	2EB2 171	3DB 146	4CC 4294	5DA3 205
IBH 1101	1HF 1868	2EB3 139	3EA1 118	4DA1 1126	5DB 393
ICA 971	1HG 830	2EC 969	3EA21 1017	4DA2 1142	5DC1 281
ICB1 597	1JA 3091	2ED1 60	3EA22 0	4DB 2832	5DC2 717
ICB2 597	1JB 2262	2ED2 349	3EB1 10	4DC 2034	5DD 1184
ICC 1418	1JC1 243	2ED3 147	3EB2 172	4DD 2079	
ICD 1154	1JC2 759	2EE2 0	3EC 128	4DE 1605	
ICE 345	1JC3 1445	2EE3 425	3ED1 10	4EA1 1105	
IDA 1752	1JD 1547	2EF 463	3ED2 53	4EA2 196	
IDB 1750	1JE 2405	2EG1 475	3FA1 730	4EB 2327	
IDC 1407	1JF1 2318	2EG21 530	3FA2 292	4EC 1217	
IDD 1525	1JF2 2062	2EG22 928	3FA3 242	4ED1 215	
IEA 4674	1JG1 1274	2EH1 25	3FB 615	4ED2 449	
IEB 4301	1JG2 974	2EH2 462	3G1 941	4ED3 3340	
IEC 2462	1KA 1209	2EJ 1355	3G2 3160	4ED4 285	
IED 1882	1KB1 311	2EK 570	3G3 544	4FA1 4298	
IEE 5759	1KB2 1879	2FA 630	3G4 52	4FA2 2277	
IEF 3794	1KB3 6525	2FC 1585	3HA 329	4FB 1734	
IEG 5360	1KB4 2047	2GA 326	3HB 905	4GA 1720	
IFA 722	1KB5 6748	2GB1 448	3HC 973	4GB 1747	
IFB 1762	1KC1 1273	2GB2 112	3HD1 148	4CC 579	
IFC 1270	1KC2 1573	2GB3 553	3LA1 392	4GD 2344	
IFD1 1127	1KC3 132	2GC 351	3LA2 724	4GE 3489	
IFD2 87	1LA1 3416	2GD 1282	3LA3 386	4GF 4489	
IFE 4402	1LA2 3868	2KA1 1314	3LA4 265	4GG 1543	
IFP 1373	1LA31 9877	2KA2 479	3LB 261	4HA1 209	
IFG 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 M7.2 Groundwater Availability

Basin	Q	Area	Unit	Basin	Q	Area	Unit	Basin	Q	Area	Unit	Basin	Q	Area	Unit	Basin	Q	Area	Unit
	m <sup>3</sup> /Day	km <sup>2</sup>	l/km <sup>2</sup>		m <sup>3</sup> /Day	km <sup>2</sup>	l/km <sup>2</sup>		m <sup>3</sup> /Day	km <sup>2</sup>	l/km <sup>2</sup>		m <sup>3</sup> /Day	km <sup>2</sup>	l/km <sup>2</sup>		m <sup>3</sup> /Day	km <sup>2</sup>	l/km <sup>2</sup>
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	855	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	4BO	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	0.0112	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	4FC	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	0.0274
IEB	1173	380	0.0357	2GB	1086	963	0.0131	3LB	2626	771	0.0394	4GA	14046	3909	0.0416	5I	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				
IEA	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									4IA	28455	8489	0.0388				
IFF	819	272	0.0348									4IB	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																
IGO	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																
IHO	798	333	0.0277																
IJA	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	0.0274																
Total	121670			Total	316902			Total	224979			Total	430680			Total	685967		

**Table M7.3 Guidelines for Evaluation Irrigation Water Quality**

Type of Problem	Units	Water Quality Guidelines		
		No Problem	Increasing Problem	Severe Problem
<b>SALINITY</b> (affects crop water availability)				
EC <sub>w</sub>	mmhos/cm	< 0.7	0.7 - 3.0	> 3.0
<b>PERMEABILITY</b> (affects infiltration rate into soil)				
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 - Seaquioxides (1:1 crystal lattice)		< 16	16 - 24* <sup>1</sup>	> 24
<b>SPECIFIC ION TOXICITY</b> (affects sensitive crops)* <sup>2</sup>				
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</b> (affect susceptible crops)				
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 (Sectoral Report E)

**Table M7.4 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 of Sectoral Report E

\*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 (Sectoral Report E)

**Table M7.5 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 (Sectoral Report E)



**Table 8.1 Potential Hydropower Resources (Drainage Area 1)**

River	Project	Installed Capacity (MW)	Gross Head (m)	Storage (m <sup>3</sup> x10 <sup>6</sup> )	Flow (m <sup>3</sup> /s)	Firm Energy (GWh/yr)	Average Energy (GWh/yr)
Nzoia	Hemsted Bridge	60	553	226 <sub>l</sub>	8.5 <sub>f</sub>	297	307
Nzoia	Rongai	(12)	(60)	(441)	15.0 <sub>f</sub>	(52)	(72)
Nzoia	Lugari	(15)	(55)	(234)	17.8 <sub>f</sub>	(62)	(86)
Nzoia	Webuye Falls	(30)	(105)	(200) <sub>l</sub> (14%)	17.3 <sub>f</sub>	(115)	(170)
Nzoia	Anyika	(25)	(40)	(756) <sub>l</sub>	42.5 <sub>f</sub>	(95)	(125)
Yala	Nandi Forest - KPT	50	552	275 (89%)	6.6 <sub>f</sub> 7.0 <sub>a</sub>	249	255
Yala	Nandi Forest - Tindingo	(32)	(312)	(275) (89%)	6.8 <sub>f</sub> 7.0 <sub>a</sub>	(139)	(142)
Yala	Mushanqumbo	(8)	(35)	(337) (57%)	7.8 <sub>f</sub> 13.4 <sub>a</sub>	(25)	(29)
Yala	Yala Falls	(12)	(70)	(0)	7.8 <sub>f</sub> 13.8 <sub>a</sub>	(63)	(69)
Yala	Gongo	(12)	55	(0)	13.8 <sub>a</sub>	53	65
Nyando	Koru	5	63.5	204 <sub>l</sub>	5.5 <sub>f</sub>	18.2	na
Nyando	Tinderet	4	43.0	20 <sub>l</sub>	5.5 <sub>f</sub>	17.9	na
Kipsonoi	Orokiat	6	67	577 <sub>l</sub>	6.9 <sub>f</sub> 9.0 <sub>a</sub>	27.1	30.3
Yurith	Yurith	8	73	203 <sub>l</sub> (23%)	8.7 <sub>f</sub>	37.3	53.8
Sondu	Magwagwa (Low)	(28)	(95)	(594) <sub>l</sub>	18.7 <sub>f</sub>	(102)	(163)
Sondu	Magwagwa (High)	95	185	536 <sub>l</sub>	18.7 <sup>6</sup>	276	334
Sondu	Sondu Village	(70)	(230)	(0)	18.7 <sup>6</sup> 7.0	(414.4) (32)	(562.4)
Sondu	Low Miriu	(49)	(163)	(1.1) <sub>l</sub>	18.7 <sup>5</sup>	(237) <sup>6</sup>	(252)
Sondu	High Miriu	100	315	693 <sub>l</sub>	20.0 <sub>f</sub>	423 27.5 <sup>6</sup>	528
Sondu	Fotobiro	(80)	(154)	(135)	8.25	(66.7)	(355.1)
Migori	Namba Kodiro	4	49	139 <sub>l</sub>	4.3 <sub>f</sub>	12.4	24.0
Migori	Ol Ngobor	5	54	450 <sub>l</sub>	5.0 <sub>f</sub>	14.7	23.1
Kuja	Gogo Falls	18	53	1027	20.1 <sub>f</sub>	73.8	88.4
<b>TOTAL</b>		<b>355</b>				<b>1450</b>	<b>1680</b>

Note (1) Bracketed figures are mutually exclusive with others.  
 (2) Subscript 'f' refers to firm, 'a' to average.  
 (3) Subscript 'l' refers to active storage.

Source : NPD, 1987

**Table 8.2 Potential Hydropower Resources (Drainage Area 2)**

River	Project	Installed Capacity (MW)	Gross Head (m)	Storage (m <sup>3</sup> x10 <sup>6</sup> )	Average Energy (GWh/yr)
Sererwa	Arror	60	1100	50	150
Embobut	Embobut	20	na	na	85 <sup>e</sup>
Wei Wei	Wei Wei	5	na	na	20 <sup>e</sup>
Kimwarer	Kimwarer	2	na	na	10 <sup>e</sup>
Kerio	Damsite A	12	na	na	50
Kerio	Damsite B	14	na	na	60
Kerio	Damsite C	14	na	na	60
Ewaso Ngiro South	Lashota	42	265	360	111
Ewaso Ngiro South	Oldorko	76	480	785	193
<b>TOTAL</b>		<b>245</b>			<b>&gt;739</b>

Note : e - rough estimate

Source : NPDP, 1987

**Table 8.3 Potential Hydropower Resources (Drainage Area 3)**

Project	Installed Capacity (MW)	Gross Head (m)	Storage (m <sup>3</sup> x10 <sup>6</sup> )	Average Flow (m <sup>3</sup> /s)	Firm Energy (GWh/yr)	Average Energy (GWh/yr)
Munyu	8	42	625 <sub>g</sub>	23.2	23	40
Fourteen Falls HMZ	10	60	0	23.2	37	56
Fourteen Falls EM3	20	120	0	23.2	73	111
Site A13	10	50	-	-	25	45
Thwake Confluence (A10)	20	75	-	-	75	120
Yatta (A4)	16	65	500 <sub>g</sub>		57	91
<b>TOTAL</b>	<b>84</b>				<b>290</b>	<b>463</b>

Note : Subscript 'g' refers to gross storage

Source : NPDP, 1987

**Table 8.4 Potential Hydropower Resources (Drainage Area 4)**

River	Project	Installed Capacity (MW)	Gross Head (m)	Storage (m <sup>3</sup> x10 <sup>6</sup> )	Flow (m <sup>3</sup> /s)	Firm Energy (GWh/yr)	Average Energy (GWh/yr)
Tana	Karura	50	42	0	91.9 <sub>a</sub>	170	216
Tana	Mutonga	60	37	63 <sub>l</sub>	112.0 <sub>a</sub>	210	262
Tana	Low Grand Falls	120	68	701 <sub>l</sub>	133.2 <sub>a</sub>	421	525
Tana	High Grand Falls	(180)	(106)	(1925) <sub>l</sub>	130.7 <sub>a</sub>	(692)	(802)
Tana	Usueni	70	40	na	na	248	309
Tana	Adamson's Falls	80	40	379 <sub>l</sub>	158.1 <sub>a</sub>	307	358
Tana	Kora	92	46	384 <sub>l</sub>	154.2 <sub>a</sub>	342	401
Subtotal	- Tana River	472				1700	2070
Thika	Ndula	25	90	na	13 <sub>a</sub>	na	120
Thika	Mavoloni	40	125	na	20	na	180
Subtotal	- Thika River	65					300
Mutonga	Kianyonga	30	90	na	na	na	120
Thiba	Gachuriri	16	36	200 <sub>l</sub>	26	na	70
<b>TOTAL</b>	<b>Tana Basin</b>	<b>583</b>				<b>1700+</b>	<b>2560</b>

Note: Bracketed figures are mutually exclusive with Mutonga and Low Grand Falls figures.

Subscript 'a' refers to estimate

Subscript 'l' refers to live storage

Subscript 'a' refers to average

Source: NPDP, 1987

**Table 8.5 Potential Hydropower Resources (Drainage Area 5)**

Project	Site	Installed Capacity (MW)	Gross Head (m)	Live Storage (m <sup>3</sup> x10 <sup>6</sup> )	Firm Energy (GWh/yr)	Average Energy (GWh/yr)
<b>Ewaso Ngiro North River Basin</b>						
Ewaso Ngiro North	Crocodile Jaws	40	115	SA <sup>1</sup>	na	175
Ewaso Ngiro North	Muridjo	25	70	neg <sup>2</sup>	na	100
Ewaso Ngiro North	Kirimun	90	260	neg <sup>2</sup>	na	400
<b>TOTAL</b>		<b>155</b>			<b>na</b>	<b>675</b>

Note : <sup>1</sup> Storage available - several hundred million cubic metres would be created to provide significant annual regulation

<sup>2</sup> Negligible

Source: NPDP, 1987

**Table M10.1 Raw Water Source for Urban Water Supply (1/3)**

Code	Location	Urban Name	Future Raw Water Source	Pipe	Pump
				line	lift
				km	m
110.0	Nairobi	Nairobi	Thika Dam, Ndarugu, Ruiru-A, Chania-B	165.0	150
211.1	Kiambaa	Karuri	Kiambaa Dam (Rui Roaka R.)	2.2	170
211.4	Kiambu Municipality	Kiambu	Kiambaa Dam (Rui Roaka r.)	12.1	0
212.1	Ngenda	Gatundu & Ngenda	Thiririka River	3.2	70
213.1	Limuru	Limuru	Chania P/L	59.7	300
214.1	Ruiru	Ruiru	Ruiru River	7.5	0
214.4	Thika Municipality	Thika	Chania River (Lower)	5.5	0
215.1	Githunguri	Githunguri	Ruiru river	7.2	120
216.6	Kikuyu	Kikuyu	Kikuyu Dam	0.4	0
221.1	Tebere	Wanguru	Thiba River	5.0	0
222.2	Küne	Sagana	Ragati River	4.1	0
222.3	Inoi	Kerugoya	Kiringa River	10.0	0
223.2	Kabare	Kuhus	Thiba River	3.3	0
231.4	Muruka	Kandara	Thika River	4.7	0
232.3	Nginda	Maragua	Githanji river	3.3	0
233.4	Iyego	Kangema	Mathiyoa River	4.5	80
234.3	Mbirĩ	Murung'a	Maragua river	1.8	70
235.1	Makuyu	Makuyu	Motoho river	4.7	80
241.3	Oi Kalou	Oi Kalou	Makwa River	16.0	0
254.2	Kooyu	Karatina	Ragati River	6.9	0
256.1	Karina	Othaya	Tuthi river	5.0	0
257.0	Nyeri Municipality	Nyeri	Chania River	4.1	0
311.2	Mariakani	Mariakani	2nd Mzima P/L	2.4	0
313.2	Tezo	Kisifi	Rare reservoir	13.9	70
314.3	Gede	Wataru	Sabaki pipeline	20.1	0
314.4	Malindi Town	Malindi	Sabaki Pipeline & Rare Dam	49.0	0
314.6	Magarini	Mamburi	Sabaki river	5.5	60
321.1	Shimba North	Kwale	Marere pipeline	7.8	200
323.1	Kinango South	Kinango	Marere pipeline	18.7	130
324.1	Msamwani	Msamwani	Boreholes + Mkurumuji river	375.0	40
324.5	Lungalunga	Lungalunga	Umba river	1.3	40
331.0	Witu	Witu	Mkondo wa Cambi river	11.6	10
333.2	Lamu Town	Lamu	P/L from Tana River + B/II	121.0	40
340.0	Mombasa	Mombasa	2nd Mzima/Mwachi Dam, Pemba Dam	261.9	0
351.1	Taveta	Taveta	Njoro Spring	5.0	60
352.4	Voi	Voi	2nd Mzim pipeline	4.1	10
353.2	Werugha	Wundanyi	Sigaso/Manguri River	7.2	80
362.3	Bura	Bura & Madogo	Tana River	0.2	20
363.3	Zabaki	Hola	Tana River	1.3	20
364.1	Bilisa	Garsen	Tana River	0.6	20
411.8	Kangari South	Runyonyes	Ena river	2.1	0
412.1	Nthawa	Siakigo	Ena River	7.0	70
413.7	Erbu Municipality	Erbu	Lower Kapingazi River + Upper Ropingazi River	1.5	130
421.1	Central	Isiolo	Boreholes + Spring	1,245.0	0
421.2	Oldonyonyiro	Oi Delnyo Ng'iro	Ewaso Ng'iro River	17.0	100
422.1	Garbatula	Garbatula	Boreholes	161.0	0
423.1	Merti	Merti	Ewaso Ng'iro	1.0	10
431.4	Changwithya	Kitui	Masinga Dam	9.8	0
433.2	Mutomo	Mutomo	Sub-Surface dam on Tiva river	16.0	110
434.4	Mwingi	Mwingi	Kiambere Dam	40.5	290
441.1	Muvuti	Machakos	Athi River P/L	56.7	600
441.2	Miteboni	Mitaboni	Keathana River	9.9	130
442.3	Settlement Area	Athi River	Upper Athi Dam	9.9	0
444.3	Kiteta	Uasin/Tawa	Tawa river	4.1	0

**Table M10.1 Raw Water Source for Urban Water Supply (2/3)**

Code	Location	Urban Name	Future Raw Water Source	Pipe	Pump
				line km	lift m
445.1	Kangundo	Kangundo	Pipeline from Athi River	44.0	170
445.2	Matungu	Tala	Pipeline from Athi river	28.3	160
447.4	Kifungu	Nunguni	Kyangojo river	6.2	440
448.1	Makueni	Wote	Kaiti river + Nzuuni river	3.9	180
448.3	Nzaul	Emali	Nol Tresh P/L	7.0	150
449.4	Mitito Andei	Mitito Andei&Kibwezi	Pipeline from Athi river	77.0	70
451.1	North Horr	North Horr	Boreholes	232.0	0
452.2	Kargi	Kargi	Boreholes + Subsurface Dam	756.0	0
453.1	Korr	Korr	Boreholes	593.0	0
454.1	Mountain	Marsabit	Boreholes + Small dams/Sub-surface dam/Spring	1,739.0	0
455.2	Sololo	Sololo	Boreholes	726.0	0
456.1	Moyale	Moyale	Boreholes + Small Dam	608.0	0
461.4	Ntima	Meru	Kathita river	2.2	0
463.1	Nkuene	Nkubu	Thingithu River	2.0	0
464.1	Chogoria	Chogoria	North Mara River	2.8	50
464.3	Karingani	Chuka	Tungu river	7.0	0
467.2	Maua	Maua	Ura river	4.1	250
513.1	Madogasbe	Mudo Gasbe	Boreholes + Subsurface Dam	207.0	0
515.2	Ijara	Ijara	Boreholes + Small dam	104.0	0
515.3	Kotile	Kotile	Boreholes/Subsurface Dam/Tana	199.0	0
515.4	Masalani	Masalani	Tana River	6.3	40
519.1	Sankuri	Garissa	Tana River	3.0	10
521.1	Mandera	Mandera	Daua River	2.2	40
523.1	Elwak	Elwak	Boreholes	750.0	0
524.2	Rhamu	Rhamu	Daua River	2.2	40
532.4	Wajir Township	Wajir	Boreholes + Ewaso Ngiro River	1,456.0	20
536.2	Buna	Buna	Boreholes(Lago Bor river)	1,197.0	0
537.2	Bute	Bute	Boreholes + Small Dams	176.0	0
611.2	Eranga	Manga	Bunyanyu Dam	23.9	90
611.5	East Kitutu	Keroka	Bunyanyu Dam	13.8	320
612.2	East Mugirango	Nyamira + Kebirigo	Kuja river	22.0	220
615.0	Kisii Municipality	Kisii	Bunyanyu Dam	10.9	0
617.1	Majoge Chache	Ogenbo	Kuja river	4.1	0
622.1	West Kisumu	Maseno	Edzawa Dam	13.2	160
622.3	East Kisumu	Kisumu & + Kiboswa	Kibos dam	13.8	0
623.2	South East Karo	Ahero	Nyando river	0.7	20
625.2	Muhoroni	Muhoroni	Nyando River	8.4	0
632.4	West Sakwa	Bondo	Yala river	8.0	100
633.2	East Gem	Yala	Yala river	1.2	20
634.1	East Alego	Siaya	Yala River	22.0	200
635.4	North Agenya	Ukwala	Nzoia River	5.4	100
641.1	Kanyada West	Homa Bay	Lake Victoria	2.0	110
644.3	Suna East	Migori	Migori river	1.1	110
646.3	Bukira East	Kehancha + Taranganya	Migori river	10.8	120
646.8	Bugembe West	Nyabikaye	Boreholes	267.0	0
647.4	Central Kasipul	Oyugis	Isanta river(Awach Tende)	11.3	0
648.1	Central Karachuonyo	Kendu Bay	Lake Victoria	1.5	40
649.4	South Sakwa	Awendo/Sare	Sare river	8.3	0
711.1	Odomeongi	Oloitchick	Nol-Turesh Spring	8.3	340
712.1	Ngong	Ngong	Kerurapon Spring	5.3	120
713.1	Idjamat	Kajiado	Kiserian P/L	53.0	0
713.5	Namanga	Namanga	Namanga Spring	0.8	0
714.1	Magadi	Magadi	Oloibortoto river	34.0	0
723.1	Kepletudo	Sotik	Kipsionoi river	1.1	70

Table M10.1 Raw Water Source for Urban Water Supply (3/3)

Code	Location	Urban Name	Future Raw Water Source	Pipe	Pump
				line	lift
				km	m
725.5	Kericho Township	Kericho	Dimlich Dam, Kitugung Dam	8.3	60
726.1	Kiptelion	Kiptelion	Nyando river	0.0	20
727.1	Londiani	Londiani	Londiani dam	6.2	0
731.5	Nanyuki	Nanyuki	Liki river	5.6	0
733.4	Rumuruti	Rumuruti	Rumuruti Dam + Borehole	120.0	0
733.9	Nyahururu Township	Nyahururu	Nyahururu dam + Borehole	645.0	0
743.2	Gilgil	Gilgil	Turasha P/L & Malewa Dam	0.0	0
744.1	Naivasha	Naivasha	Turasha P/L & Malewa Dam	30.3	0
746.1	Njoro	Njoro	Itare Dam	67.1	350
747.3	El Burgoe	El Burgoe	Itare Dam	49.2	350
747.5	Molo South	Molo	Itare Dam	36.9	350
749.0	Nakuru Municipality	Nakuru	Turasha P/L + Malewa Dam + Itare Dam	90.5	350
752.1	Lower Metili	Narok	Upper Narok Dam	14.9	0
752.5	Keekonyokie	Nairagie Ngare	Nasampolai river	5.0	0
754.4	Uasin Gishu East	Kilgoris	Poroko river	1.9	130
755.1	Siria East	Lokorian	Migori river	7.2	160
762.3	Kitale	Kitale	Koitobos river	4.4	80
762.4	Kiminiini	Kiminiini/Saboti+Spr.Kita	Kabewyan river	23.4	140
763.5	Endebess	Endebess/Kwanza	Koitobos river	2.4	20
771.2	Moi's Bridge	Moi's Bridge	Nzoia river	1.5	40
772.4	Turbo West	Turbo	Sosiani river	10.5	0
772.5	Eldoret Municipality	Eldoret	Moiiben Dam + Nzoia river	100.0	410
774.6	Olare	Burnt Forest	Kipkaren river	0.4	50
812.5	Kabarnet Mosop	Kabarnet	Kirandich Dam	5.8	250
814.3	Maji Mazuri	Maji Mazuri	Maji Mazuri river	4.5	0
814.5	Eldama Ravine	Eldama Ravine	Chemususu Dam	12.7	0
815.1	Lembus Soi	Mogotio	Molo river /Chemususu Dam	3.3	0
816.2	Marigat	Marigat	Ferkera river	1.7	0
822.4	Kiptulung	Iten+Tambach	Moiiben Dam	35.2	40
831.3	Chemelil	Nandi Hills	Mokong River	7.0	170
832.2	Chemundo	Kapsabet+Baraton	Mokong river	8.8	170
841.4	Maralal	Maralal	Loika/Yamo river	9.8	0
842.4	Wamba	Wamba	Boreholes	1033.0	0
843.6	Elbarta	Baragoi	Boreholes + Sub-surface dam	1640.0	0
853.5	Lodwar	Lodwar	Boreholes & sub-surface dam	1343.0	0
861.1	Kapenguria	Kapenguria/Makutano	Kapenguria River	1.7	170
911.4	Malakisi	Mawalie + Malakisi	Malakisi river	1.5	60
912.4	Musikoma	Bungoma	Kuywa River	18.7	60
913.1	Kimilili	Kimilili	Kimilili River	5.5	0
914.2	Webuye	Webuye	Nzoia River	4.8	100
916.1	Cheptais	Cheptais	Saturi river	0.0	20
921.5	South Teso	Busia	Sio river	13.4	100
922.2	Central Bukhayo	Narubale	Sio river	0.7	40
931.3	West Bunyore	Luanda	Edza wa river	9.0	170
932.5	Central Maragoli	Vuhig+Majengo	Edza wa River (Kimondi River)	7.7	170
933.1	Shamakhokho	Kaimosi	Galagoli river	3.5	0
934.3	West Isukha	Khayega	Yala river	4.2	170
935.4	Kakamega Municipality	Kakamega	Isiukha River, Mukulusi Dam	7.7	100
939.2	Central Marama	Butere	Vuratsi River	1.3	80
93A.4	Central Wang'a	Mumias	Nzoia River	5.1	80



Table M10.2 Selected Damsites for Source Development toward year 2010

Item No.	Proprietary Damsite	Sub-River basin (damsite)	Catchment Area (km <sup>2</sup> )	Study Stage	Purpose	Reservoir			Dam Embankment							
						N.W.L. (El.m)	L.W.L. (El.m)	Dead Storage (MCM)	Active Storage (MCM)	Gross Storage Area (PSL) (ha)	Yield (m <sup>3</sup> /day)	Dam Crest Height (El.m)	Dam Embankment Volume (1000 m <sup>3</sup> )	Remarks		
1	Moiben	IBA Moiben	188	D/D	W	2,361.6	2,337.1	1.22	18.38	19.60	137	0.68	56,668	2,366.6	42	414 under D/D
2	Makulut	IEA Makulut	341	M/P	W	1,510.1	1,508.5	11.60	5.39	16.99	227	1.10	95,040	1,515.1	8	21 small dam
3	Lendiam	IGC Xupchoran	71	M/P	W	2,325.6	2,297.2	1.60	49.30	50.90	436	0.47	40,608	2,330.6	50	1,720
4	Kiboo	LHA Kiboo	179	M/P	W	1,482.1	1,471.6	2.20	4.93	7.13	68	0.95	82,080	1,487.1	39	700
5	Iare	LJA Iare	185	M/P	W	2,400.5	2,379.7	1.11	12.48	13.59	97	1.73	149,472	2,405.5	35	623
6	Magwaga	LJG Sondu	3,160	F/S	P/I	1,665.0	1,603.0	107.00	701.00	808.00	2349	-	-	1,670.0	**110	4,388
7	Buyuyayo	LKB Kuya	120	M/P	W	1,834.3	1,832.7	3.40	1.34	4.74	243	0.61	52,704	1,837.3	16	108
8	Malewa	ZGB Malewa	635	F/S	W	2,149.0	2,123.5	15.88	55.85	71.70	332	1.37	118,714	2,154.0	80	1,170
9	Upper Narak	ZKA Ewaso Narak	516	M/P	W	1,983.5	1,973.5	3.10	6.99	10.09	79	1.20	103,680	1,983.5	29	368
10	Oldoto	ZKB Enigro S.	5,696	Pre-F/S	P/I/W	1,900.0	1,272.0	71.20	885.22	956.42	5115	-	-	1,905.0	** 55	4,480
11	Upper Ahi	3AA Ahi	400	Pre-F/S	W	1,551.7	1,542.9	3.00	7.30	10.30	112	0.30	25,920	1,554.7	26	171
12	Ruio-A	3BC Ruio	202	M/P	W	1,898.9	1,855.8	1.21	17.83	19.04	87	0.35	30,240	1,903.9	69	1,528
13	Kikuyu	3BA Nairobi	81	M/P	W	2,006.6	1,989.9	0.49	10.50	10.99	106	0.25	21,000	2,009.6	25	221
14	Ndaruga	3CB Ndaruga	360	M/P	W/I	1,451.3	1,429.8	9.27	214.95	224.22	1876	6.10	527,040	1,456.3	36	1,302
15	Yata	3FB Ahi	20,000	M/P	W	782.1	764.2	100.00	280.20	380.20	2561	13.50	1,166,400	787.1	52	4,988
16	Rare	3LA Rare	6,246	F/S	W	91.1	82.5	6.00	31.27	37.27	551	0.50	43,200	94.1	21	502 Off-stream reservoir
17	Mwachi	3MB Mwachi	7,497	M/P	W	85.6	39.5	8.00	105.00	113.00	526	2.75	237,600	90.6	77	3,217
18	Pembe	3MC Pembe	866	M/P	W	-	-	-	-	-	-	0.23	19,872	-	weir	- run-of-river type weir
19	Charis-B	4CA Charis	338	M/P	W/I	1,790.6	1,720.6	2.03	48.99	51.02	150	1.30	112,320	1,795.6	101	2,816
20	Thiba	4DA Thiba	173	F/S	I	1,380.0	1,359.0	1.30	16.73	18.03	122	-	-	1,385.0	** 35	1,200
21	Mutonga	4FA Tana	15,329	Pre-F/S	P	550.0	542.0	268.26	87.81	356.07	1090	-	-	554.0	42	870
22	Low Gered Falls	4FB Tana	17,459	Pre-F/S	P	512.0	500.0	742.01	857.78	1,599.79	6720	-	-	516.0	79	5,820
23	Rumuruti	5AA Ewaso Narak	673	Pre-F/S	W	2,012.8	2,010.4	2.00	0.95	2.95	63	0.03	2,592	2,015.8	16	109
24	Nyatururu	5AA Nyatururu	29	M/P	W	2,400.0	2,380.9	0.17	10.23	10.40	116	0.26	22,464	2,403.0	20	72
Committed Dam Schemes																
25	Sondu/Micini	LJG Sondu	3,360	D/D	P/I	-	-	-	-	-	-	-	-	-	weir	- run-of-river type weir
26	Chemusau	ZED Petchera	63	D/D	W	2,336.5	2,315.5	1.51	9.44	10.95	82	0.41	35,000	2,340.0	45	757
27	Kirwadich	ZEH Kirwadich	28	D/D	W	1,714.4	1,756.5	0.75	3.25	4.52	28	0.13	11,000	1,780.0	50	420
28	Ruata (Klambas)	3BA Ruata	100	D/D	W	1,753.7	1,747.7	0.60	2.07	2.67	29	0.12	10,000	1,758.7	18	120

Notes: Marked "\*" shows a damsite newly identified in this Study.

Purpose, W = water supply, I = irrigation, P = hydroelectric power.

Study stage, M/P = master plan, Pre-F/S = pre-feasibility study, F/S = feasibility study

∇ Active storage = (required storage capacity for w/h) + (reservoir evaporation loss)

∇ Dam height above riverbed, while marked "weir" shows a dam height from foundation.

∇ Dam features above are based on the detailed design report.

Table M10.3 Intra-basin Water Transfer Schemes

No.	Intra-basin Water Transfer			Yield for D & I Water (m <sup>3</sup> /day)	Remarks
	Sub-Drainage Area	Water Source	Sub-Drainage Area		
1	1AG	Sio River*	1AH	Busia	8,928
2	1BA	Moiben Dam	1CB	Eldoret	51,000
3	1EA	Makulusi Dam	1EB	Kakamega	27,027
4	1GC	Londiani Dam	1GC	Londiani	1,663
5	1HA	Kibos Dam	1HA	Kisumu	72,432
6	1KB	Bunyonyu Dam	1KA	Kisii	20,153
			1KB	Keroka	1,376
7	2ED	Chemususu Dam	2EF	Eldama Ravine	5,596
			2EF	Mogoto	1,209
8	2GB	Majewa Dam	2GC	Gilgil	11,096
			2GD	Naivasha	29,336
9	2KA	Upper Narok Dam	2KA	Narok	13,248
10	3AA	Upper Athi Dam	3AA	Athi River	11,002
11	3BA	Kiloyu Dam	3BA	Kikuyu	9,239
12	3BA	Kiambaa Dam	3BA	Karuri	7,431
			3BA	Kiambu	4,209
13	3BC	Ruiru A Dam	3AA	Nairobi	25,920
14	3CB	Ndarugu Dam	3BA	Nairobi	299,163
15	3AC	Munyu Dam	3BA	Nairobi	299,163
16	3DA	Athi River*	3EA	Machakos	53,078
17	3DA	Athi River*	3EA	Kangundo	6,619
18	3DA	Athi River*	3EA	Tala	1,872
19	3FA	Athi River*	3FC	Mtito Andei	2,015
20	3MC	Pemba Dam	3MD2	Mombasa	2,592
21	3MB	Mwachi Dam	3MD1	Mombasa	103,445
22	3LA	Rare Dam	3LB	Malindi	9,768
23	5AA	Nyahururu Dam	5AA	Nyahururu	8,415
24	5AA	Rumuruti Dam	5AA	Rumuruti	1,539

Note : Marked "\*" means intra-basin water transfer scheme without dam.

Table M10.4 Inter-basin Water Transfer Schemes

No.	Intra-basin Water Transfer			Yield for		Remarks
	Sub-Drainage Area	Water Source	Sub-Drainage Area	Demand Center	D & I Water (m <sup>3</sup> /day)	
1	1BA	Moiben Dam	2CB	Iten & Tambach	2,538	
2	1FF	Edzawa Dam***	1HB	Maseno	17,407	
3	1JA	Itare Dam	2EC	El burgon	9,664	
			2EG1	Molo	8,715	
			2FC	Njoro	7,049	
			2FC	Nakuru	86,400	
4	2GB	Malewa Dam	2FC	Nakuru	17,951	
5	2EH	Kirandich Dam	2CB	Kabarnet	4,147	
6	2KB	Oloibonoto River*	2H	Magadi	2,328	
7	3AA	Kiserian Dam	3FA	Kajiado	5,377	
8	3G	Second Mzima*	3LA	Voi	5,235	
			3MD2	Mombasa	25,920	
9	3HC	Subaki Extension*	3MD2	Mombasa	25,920	Alternative for Mwachi Dam
			3LB	Malindi	18,005	Alternative for Rare Dam
10	4CA	Chania B Dam	3BA	Nairobi	65,664	
11	4CA	Komu transfer**	3CB	Ndarugu Dam	691,200	
12	4CA	Komu transfer**	3DA	Munyu Dam	691,200	Alternative for Ndarugu Dam
13	4CB	Thika Dam System	3AA	Nairobi	224,640	
14	4DE	Masinga Dam**	4HA	Kitui	5,470	
15	4GF	Tana River*	3KB	Lamu	5,719	
16	5ED	Ewaso Ng'iro	5EA	Wajir	6,235	

Note: Marked "\*" means inter-basin water transfer scheme without dam.

Marked "\*\*\*" means existing dam.

Marked "\*\*\*\*" means small dam.

**Table M10.5(1/2) Water Balance Calculation of Urban Water Supply for the Year 2010**

Urban center	Location Name	Code	Total W/D (m <sup>3</sup> /year) (m <sup>3</sup> /day)	Safe Yield Borehole (m <sup>3</sup> /year)	Safe Yield Shallow well (m <sup>3</sup> /year)	Total Safe Yield (m <sup>3</sup> /year)	Water Balance Calculation				
							1.0*B/11	0.9*B/11+ 0.1*S/W	0.75*B/11+ 0.25*S/W	0.5*B/11+ 0.5*S/W	
							[1]	[2]	[3]	[4]	
Msambweni	Msambweni	324.1	974732.5	89165	119279	208444	-885567.5	-882556	-878039	-870511	
	Shirazi/Funzi	324.2	2670.5	38557	43956	82513	-847010.5	-843459	-838132	-829254	
	Pongwe/Kidimu	324.3		120131	130866	250997	-726879.5	-722255	-715318	-703756	
	Kikoneri	324.7		356981	316094	673075	-369898.5	-369362	-368558	-367218	
	Diani	324.8		94421	185946	280367	-275477.5	-265789	-251256	-227035	
	Lukore	322.3		56109	87278	143387	-219368.5	-206563	-187355	-155341	
	Majumboni	322.4		40839	91570	132409	-178529.5	-160651	-133833	-89137	
	Mkongani	322.1		113313	167910	281223	-65216.5	-41878	-6871	51475	
	Mwaluphamba	322.2		118599	149311	267910	53382.5	79792	119406	185430	
	Shimba Hills Nat.	322.5		147700	195156	342856	201082.5	232238	276970	356858	
	Shimba North	321.1			38610	114398	153008	239692.5	278426	336527	433362
	Isiolo	Central	421.1	3410012.5	3551265	430186	3981451	141252.5	-170855	-639017	-1419287
		Kiirua	461.1	9342.5	196205	1530	197735	337457.5	5882	-491481	-1320420
Tunau		469.0		380195	25233	405428	717652.5	350581	-200027	-1117706	
Mitundu		465.8		26312	0	26312	743964.5	374262	-180293	-1104550	
Akithi		465.6		24024	0	24024	767988.5	395883	-162275	-1097538	
Dgwasi		732.1		38324	208451	246775	806312.5	451220	-81419	-969150	
Mukogodo		732.2		217521	384071	601592	1023833.5	685396	177740	-668354	
Garbatula		Garbatula	422.1	517205	1869638	2062643	3932281	1352433	1371734	1400684	1448936
	North Horr	North Horr	451.1	444570	1614052	5510018	7124070	1169482	1559079	2143474	3117465
		Dukana	451.2	1218	1016308	3410604	4426912	2185790	2814816	3758356	5330921
Maikona	451.3		6641398	2301741	8943139	8327188	9022249	9314839	9802491		
Korr	Korr	453.1	1228590	1088507	2165716	3254223	-140083	-32362	129219	398522	
Kargi	Kargi	452.2	1182965	1877868	3680897	5558765	694903	875206	1145660	1596418	
	Maikona	451.3	3241	6641398	2301741	8943139	7336301	7082638	6702144	6067987	
	Korr	451.1		1088507	2165716	3254223	8424808	8278866	8059953	7695099	
Marsabit	Mountain	454.1	3274415	145575	0	145575	-3128840	-3143398	-3165234	-3201628	
	Karare	454.2	8971	86516	0	86516	-3042324	-3065533	-3100347	-3158370	
	Saganie	454.3		77078	0	77078	-2963246	-2996163	-3042538	-3119831	
	Maikona	451.3		6641398	2301741	8943139	3676152	3211269	2513946	1351739	
	Korr	453.1		1088507	2165716	3254223	4764659	4401497	3871755	2978851	
	Logologo	453.2		4300497	4918022	9218519	9065156	8769747	8326633	7588110	
Sololo	Sololo	455.2	1017255	1088507	2165716	3254223	71252	178973	340554	609857	
	Uran	455.1	2787	4300497	4918022	9218519	4371749	4541222	4795433	5219116	
Moyale	Moyale	456.1	2148025	7865	46751	54616	-2140160	-2136271	-2130439	-2120717	
	Bubiye	456.2	5885	164926	937165	1102091	-1975234	-1894122	-1772453	-1569672	
	Godoma	456.3		55563	1048967	1104530	-1919671	-1739218	-1468539	-1017407	
	Sololo	455.2		1088507	2165716	3254223	-831164	-542990	-110730	609705	
	Godoma	537.3		61204	392045	453249	-769960	-448702	33185	836330	
	Bute	537.2		150580	965509	1116089	-619380	-216629	387497	1394374	
	Gorac	537.1		340342	2183086	2523428	-279038	307987	1188525	2656088	
Mado Gashe	Madogashe	513.1	409165	209496	1388865	1598361	-199669	-81732	95173	390016	
	Madogashe/ Fildera	422.4	1121	324512	2186539	2511151	124943	429073	885267	1645591	
	Garufa	513.2		1989299	2754984	4744283	2114242	2491940	3065987	4017733	
Ijara	Ijara	515.2	194910	104677	664941	769618	-90233	-34207	49833	189899	
	Sargailu	515.1	534	301589	1916152	2217741	211356	428839	755063	1298770	
	Masalani	515.4		127271	808577	935848	338627	624240	1052660	1766694	
	Bura	516.0		1072078	6811702	7883780	1410705	2270281	3559644	5708584	
Kotile	Kotile	515.3	194910	174903	821262	996165	-20007	44629	141583	303173	
	Ndera	364.2	534	101245	727895	829140	81238	208539	399490	717743	
	Salana	364.3		93624	675846	769470	174862	360385	638670	1102478	
	Gwano	363.6		149549	238166	387715	324411	518796	810373	1296335	
Elwak	Elwak	523.1	1522050	657232	4144583	4801815	-864818	-516083	7020	878858	
	Kotulo	523.2	4170	1698649	1311485	3010134	833831	1143850	1608878	2383925	

[1]: 100% of the water demand by boreholes

[2]: 90% of the water demand by boreholes and 10% of the water demand by shallow wells

[3]: 75% of the water demand by boreholes and 25% of the water demand by shallow wells

[4]: 50% of the water demand by boreholes and 50% of the water demand by shallow wells

**Table M10.5(2/2) Water Balance Calculation of Urban Water Supply for the Year 2010**

Urban center	Location Name	Code	Total WD (m <sup>3</sup> /year)	Safe Yield Borehole (m <sup>3</sup> /year)	Safe Yield Shallow well (m <sup>3</sup> /year)	Total Safe Yield (m <sup>3</sup> /year)	Water Balance Calculation			
							1.0*B/H	0.9*B/H+	0.75*B/H+	0.5*B/H+
							[1]	[2]	[3]	[4]
Wajir	Wajir	532.4	2244020	19755	131972	151727	-2224265	-2213043	-2196211	-2168157
	Kulale	532.1	6148	895833	3515127	4410960	-1328432	-1055281	-645554	37324
	Wargadud	532.2		270415	1733129	2003544	-1058017	-638595	-9461	1039096
	Tarbaj	532.3		1503058	4054654	5557712	445041	1119623	2131496	3817952
	Wagala	535.1			275563	2061662	2337225	720504	1573796	2853584
Bura	Bura	536.2	1112155	674923	3934488	4609411	-437232	-111276	377659	1192551
	Korondile	536.1	3047	752169	3629873	4382042	314937	928664	1849254	3383572
Bute	Bute	537.2	360985	150580	965509	1116089	-210405	-128912	-6673	197060
	Guzar	537.1	989	340342	2183086	2523428	129937	395704	794355	1458774
	Godoma	537.3		61204	392045	453249	191141	489992	938270	1685398
Nyablaye	Bugembe West	646.8	500050	261359	1295	262654	-238691	-264697	-303707	-368723
	Suna East	644.3	1370	68578	191966	260544	-170113	-183781	-204282	-238451
	Suna West	645.1		104722	269677	374399	-65391	-62563	-58321	-51252
	Burira West	646.4		235370	15680	251050	169979	150838	122126	74274
	Bugembe East	646.7		71611	54018	125629	241590	220690	189339	137088
Wamba	Wamba	842.4	950460	106867	767664	874531	-843593	-777513	-678394	-513195
	Ngilai	842.2	2604	853559	2915929	3769488	9966	282283	690758	1371550
	Lodungokwe	842.3		305715	912618	1218333	315681	648688	1148199	1980716
	Wasa	842.5		419861	2575018	2994879	735542	1284065	2106849	3478156
Baroga	Ebarta	843.6	821980	165303	1039373	1204676	-656677	-569270	-438160	-219642
	Nachola	843.2	2252	75353	220684	296037	-581324	-479384	-326474	-71624
	Kowop	843.3		198683	410643	609326	-382641	-259505	-74801	233040
	Nyiro	843.4		180467	738043	918510	-202174	-23280	245060	692295
	Ndooto	843.5		545312	1237316	1782628	343138	591232	963373	1583609
Lodwar	Lodwar	853.5	2844080	718467	1463628	2182095	-2125613	-2051097	-1939323	-1753033
	Ngisir	853.2	7792	56441	864439	920900	-2069172	-1913854	-1680877	-1292583
	Kalokol	853.3		1016992	1896923	2913915	-1052180	-808869	-443903	164375
	Kangathoda	853.4		6021099	5539463	11560562	4968919	5164066	5456788	5944656
	Kalapata	854.2		829756	2137924	2967680	5798675	6124639	6613586	7428496
Nyahururu	Nyahururu	733.9	1563021	10709	0	10709	-1552312	-1553383	-1554989	-1557667
	Mutara	733.1	4282.25	407081	100070	507151	-1145231	-1177003	-1224661	-1304091
	Sosiari	733.2		602617	232237	834854	-542614	-611424	-714639	-886664
	Rumuruti	733.4		22451	12784	35235	-520163	-589940	-694605	-869047
	Marmaret	733.5		140517	0	140517	-379646	-463474	-589217	-798788
	Salama	733.6		95365	15506	110871	-284281	-376095	-513817	-743353
	Mutitu	733.7		29122	0	29122	-255159	-349886	-491975	-728792
	Igwamiti	733.8		5578	0	5578	-249581	-344865	-487792	-726003
	Dundori	241.1		105183	11636	116819	-144398	-249037	-405996	-667593
	Rurii	241.2		46166	0	46166	-98232	-207488	-371371	-644510
	Ol'Joro Orok	242.1		31090	0	31090	-67142	-179507	-348054	-628965
	Gathaji	242.2		28743	0	28743	-38399	-153638	-326496	-614594
	Shamata	243.2		32318	18063	50381	-6081	-122745	-297742	-589403
	Kiritia	243.3		8866	0	8866	2785	-114766	-291093	-584970
	Ndaragwa	243.1		65780	37254	98034	68565	-52339	-233694	-535953
	Mathingira	243.4		21237	0	21237	89302	-33225	-217766	-525335
	Leshau	243.5		10153	0	10153	99955	-24088	-210152	-520258
	Gituamba	734.1		127935	0	127935	227890	91054	-114200	-456291
	Weseges	741.1		25025	0	25025	252915	113576	-95432	-443778
	Maji Tamu	741.2		13585	0	13585	266500	125803	-85243	-436986
Subokia	741.3		14372	0	14372	281372	139188	-74089	-429550	
Kabazi	742.1		73050	0	73050	354422	204933	-19301	-393025	
Rumuruti	Rumuruti	733.4	284864	22451	12784	35235	-262413	-263380	-264830	-267247
	Mutara	733.1	780.45	407081	100070	507151	144668	113000	65499	-13671
	Sosiari	733.2		602617	232237	834854	747285	678579	575521	403756
	Marmaret	733.5		140517	0	140517	887802	805045	680908	474015
	Salama	733.6		95365	15506	110871	983167	892424	756309	529450

[1]: 100% of the water demand by boreholes

[2]: 90% of the water demand by boreholes and 10% of the water demand by shallow wells

[3]: 75% of the water demand by boreholes and 25% of the water demand by shallow wells

[4]: 50% of the water demand by boreholes and 50% of the water demand by shallow wells

Table M10.6 Water Source Allocation for Rural and Livestock Water Supply

Drainage Area	Purpose on water supply	Surface Water			Groundwater		Water Harvesting				Existing Pipeline		Total
		426,672	129,697	556,369	Borehole	S. well	Roof Catch	Small Dam	S. Surface		Sand Dam	Rock Catch	
									Dam	Dam			
1	Domestic	426,672	46,296	83,403	15,492	19,676	286	277	530	14,071	606,703		
	Livestock	129,697	12,046	23,174	0	6,183	98	98	0	149	171,445		
	Total	556,369	58,342	106,577	15,492	25,859	384	375	530	14,220	778,148		
2	Domestic	42,916	34,103	13,457	8,169	3,005	469	366	285	15,019	117,789		
	Livestock	51,952	59,179	50,964	0	4,014	1,663	1,831	0	1,980	171,583		
	Total	94,868	93,282	64,421	8,169	7,019	2,132	2,197	285	16,999	289,372		
3	Domestic	52,319	22,995	31,960	10,279	3,319	634	561	277	35,336	157,680		
	Livestock	20,190	13,234	16,904	0	1,358	243	273	0	531	52,733		
	Total	72,509	36,229	48,864	10,279	4,677	877	834	277	35,867	210,413		
4	Domestic	159,459	24,374	24,641	6,879	8,008	470	382	601	6,917	231,731		
	Livestock	30,214	13,192	19,183	0	1,539	360	306	0	154	64,948		
	Total	189,673	37,566	43,824	6,879	9,547	830	688	601	7,071	296,679		
5	Domestic	14,261	16,762	8,681	3,057	969	312	331	454	990	45,817		
	Livestock	16,436	36,024	41,095	0	1,310	1,109	1,748	0	300	98,022		
	Total	30,697	52,786	49,776	3,057	2,279	1,421	2,079	454	1,290	143,839		
Total	Domestic	695,627	144,530	162,142	43,876	34,977	2,171	1,917	2,147	72,333	1,159,720		
	Livestock	248,489	153,675	151,320	0	14,404	3,473	4,256	0	3,114	558,731		
	Total	944,116	278,205	313,462	43,876	49,381	5,644	6,173	2,147	75,447	1,718,451		

(Unit: m<sup>3</sup>/day)

**Table M10.7 Watering Points in Nomadic Pasturage Area**

District Code	Project	Assumed Nomadic Pasturage Area (km <sup>2</sup> )	No. of Watering Points (Nos)	Cost (million US\$)
<u>Nairobi Province</u>				
110	Nairobi	-	-	-
<u>Central Province</u>				
210	Kiambu	-	-	-
220	Kirinyaga	-	-	-
230	Murang'a	-	-	-
240	Nyandarua	-	-	-
250	Nyeri	-	-	-
<u>Coast Province</u>				
310	Kilifi	7,562	12	2.0
320	Kwale	5,503	9	1.6
330	Lamu	3,481	6	1.0
340	Mombasa	-	-	-
350	Taita Taveta	4,889	8	1.3
360	Tana River	32,277	52	7.8
<u>Eastern Province</u>				
410	Embu	-	-	-
420	Isiolo	21,423	34	4.3
430	Kitui	20,889	33	4.6
440	Machakos	6,424	10	1.4
450	Marsabit	20,305	32	4.2
460	Meru	3,098	5	0.7
<u>Northeastern Province</u>				
510	Garissa	39,187	63	10.0
520	Mandera	23,946	38	4.6
530	Wajir	53,124	85	9.6
<u>Nyanza Province</u>				
610	Kisii/Nyamira	-	-	-
620	Kisumu	-	-	-
630	Siaya	-	-	-
640	South Nyanza	-	-	-
<u>Rift Valley Province</u>				
710	Kajiado	13,830	22	2.7
720	Kericho	-	-	-
730	Laikipia	7,530	12	1.7
740	Nakuru	-	-	-
750	Narok	13,481	22	2.8
760	Trans Nzoia	-	-	-
770	Uasin Gishu	-	-	-
810	Baringo	7,087	11	1.7
820	Elgeyo Marakwet	-	-	-
830	Nandi	1,690	3	0.4
840	Samburu	13,563	22	2.1
850	Turkana	44,837	72	7.9
860	West Pokot	4,855	8	0.9
<u>Western Province</u>				
910	Bungoma	-	-	-
920	Busia	-	-	-
930	Kakamega/Vihiga	-	-	-
Total		348,981	559	73.3

Note : Nomadic pasturage area assumed to be bushland and grassland in ASAL area after deleting area for managed pasture. (see Table F1.9 of Sectoral Report F)

Table M10.8 Preliminary Screening Results of Hydroelectric Projects

Projects	Capacity		Annual Energy		Capital Cost		Cost of Capacity		Long Term Energy Cost		
	Installed (MW)	Firm (MW)	Firm (GWh)	Average (GWA)	Generat. (MUSS)	Transm. (MUSS)	Total (MUSS)	Installed (S/KW)	Firm (S/KW)	Firm Average (S/KWh)	
Muronga (2)	2 x 30	40.8	202	234	153.8	5.3	159	2,677	3,898	0.099	0.085
Low Grand Falls (2)	2 x 60	88.3	482	594	290.8	14.7	306	2,572	3,460	0.085	0.073
High Grand Falls (2)	3 x 60	141.4	692	802	589.3	9.0	598	3,357	4,231	0.129	0.123
Adamson's Falls (2)	2 x 40	62.8	307	358	225.2	9.2	234	2,959	3,732	0.100	0.086
Kora (2)	2 x 46	68.2	342	401	250.8	20.9	272	2,983	3,984	0.101	0.088
Magwagwa (3)	2 x 47.3	48.9	333	438	352.6	16.3	369	3,939	7,544	0.145	0.113
Low Miriu (4)	2 x 24.3	48.6	140	261	100.2	5.0	105	2,186	2,164	0.101	0.054
Mid Miriu	2 x 33 + 2 x 8	131.0	175	670	213.5	19.6	213	1,575	1,780	0.179	0.048
High Moriu (3)	2 x 42 + 2 x 8	72.0	342	675	329.5	9.7	339	3,392	4,711	0.130	0.071
Low Miriu+Magwagwa (3)	143.2	97.5	473	699	452.8	21.3	474	3,310	4,862	0.122	0.089
Nandi Forest	2 x 25	46.0	249	255	189.3	3.9	193	3,903	4,200	0.101	0.099
Leshota	2 x 21	35.7	86	111	195.7	0.0	196	4,707	5,482	0.278	0.215
Oideriko (1)	2 x 38	69.4	149	236	206.3	0.0	206	2,742	2,973	0.153	0.131
Serewa	2 x 30	60.0	161	161	82.0	0.0	82	1,367	1,367	0.065	0.065

1 - Not including transmission costs.

2 - Not including additional transmission from Tana to Nairobi.

3 - Not including additional transmission from Lessos to Nairobi.

4 - Not including benefits of irrigation water supply.

Sources : National Power Development Plan (1987), Main Report Table 8.2



Table M10.9 Preliminary Screening Results of Hydroelectric Candidate Projects  
(Update of NPDP, 1991)

Project	Capa city (MW)	Annual Energy		Project Cost			Unit cost of Energy (UCE)		UCE Adjusted for Irrigal Benefit	
		Firm (GWh)	Avg (GWh)	Genera tion	T/L	Total	Avg (mills/kWh)	Firm	Avg (mills/kWh)	Firm
(\$x10 <sup>6</sup> )										
Miriu	2x30	176	335	115.8	2.6	104.5	39.9	76.0	27.2	51.9
Low Grand Falls	2x60	535	620	276.1	14.7	257.2	50.3	58.3		
Mutonga	2x30	219	286	143.6	5.3	131.5	57.2	74.7		
Magwagwa(after Miriu)	2x51	564	546	334.1	5.9	299.8	72.2	69.9	56.1	54.3
Leshota	2x23	139	144	219.5	3.9	196.9	176.5	182.9		
Oldorko	2x36	77	200	61.6	9.2	63.1	53.4	138.8		
Leshota plus Oldorko	118	367	372	281.1	13.1	260.1	93.4	94.7	89.3	90.5
Arror	2x35	166	152	108.3	11.2	106.2	90.2	82.6		
Magwagwa(w/o Miriu)	2x51	324	802	334.1	5.9	299.8	81.3	121.7		
High Grand Falls	3x59	692	485	589.2	9.0	527.2	98.7	114.4		

Source : 1990 Interim Update of National Development Plan 1991 to 2010  
Draft Final Report, Table 7.2, April 1991, Acres

Table M10.10

**Recommended Generation Expansion Plan  
(Update of NPDP,1991)**

Fiscal Year	Hydro	Geo-thermal	Low-Speed Diesel	M-Speed Diesel	Gas Turbine
1990/91					
1991/92	Turkwel				
1992/93					
1993/94				90	
1994/95		2 x 32			
1995/96					1 x 60
1996/97		1 x 55			
1997/98	Sondu/Miriu				
1998/99		1 x 55			
1999/00			50		
2000/01	Low G.Falls				
2001/02		1 x 55			
2002/03	Oldorko			50	
2003/04	Gitaru #3	1 x 55			
2004/05				100	
2005/06	Mutonga				
2006/07		1 x 55			
2007/08				100	
2008/09		1 x 55			
2009/10				100	
<b>Total</b>	<b>384MW</b>	<b>394MW</b>	<b>400MW</b>	<b>90MW</b>	<b>60MW</b>

Source : Interim Report of Update of National Development Plan (1990)  
Draft Final Report, Table 2.1, April 1991, Acres

Table M11.1 Total Cost for Urban Water Supply (1/3)

Code	Location	Urban Name	Population in 2010 (nos)	Demand in 2010 (m3/day)	Present Coverage (%)	Incremental Cost (US\$ 1,000)
110.0	Nairobi	Nairobi	3,465,400	802,168	54	865,133
211.1	Kiambaa	Karuri	46,400	7,557	0	8,964
211.4	Kiambu Municipality	Kiambu	16,600	4,803	35	7,385
212.1	Ngenda	Gatundu & Ngenda	2,000	460	100	314
213.1	Limuru	Limuru	4,600	2,337	22	14,167
214.1	Ruiru	Ruiru	40,900	7,456	15	9,678
214.4	Thika Municipality	Thika	217,500	39,416	100	21,339
215.1	Githunguri	Githunguri	14,100	2,444	23	4,968
216.6	Kikuyu	Kikuyu	22,500	10,567	28	6,616
221.1	Tebere	Wanguru	1,500	490	100	1,179
222.2	Kiine	Sagana	11,100	1,950	57	3,562
222.3	Inoi	Kerugoya	34,100	5,443	78	8,350
223.2	Kabaré	Kutus	23,500	3,575	98	4,891
231.4	Muruka	Kandara	1,800	272	100	482
232.3	Nginda	Maragua	91,200	13,813	1	15,066
233.4	Iyego	Kangema	3,900	590	100	1,208
234.3	Mbiri	Murang'a	70,100	12,449	78	11,378
235.1	Makuyu	Makuyu	16,500	2,499	0	4,792
241.3	Ot Kalou	Ot Kalou	37,900	6,662	70	10,714
254.2	Konyu	Karatina	20,700	3,606	100	3,883
256.1	Karima	Ochaya	18,400	2,796	36	5,000
257.0	Nyeri Municipality	Nyeri	370,700	59,718	38	50,344
311.2	Mariakani	Mariakani	33,100	10,502	16	4,621
313.2	Tezo	Kilifi	54,500	8,994	100	9,645
314.3	Gede	Watamu	9,200	1,389	0	5,151
314.4	Malindi Town	Malindi	159,800	25,408	100	29,252
314.6	Magarini	Mamburi	14,400	2,092	0	4,479
321.1	Shimba North	Kwale	15,200	2,325	86	4,755
323.1	Kinango South	Kinango	5,800	885	97	4,773
324.1	Msambweni	Msambweni	34,500	5,427	46	45,479
324.5	Lungalunga	Lungalunga	8,200	1,404	68	2,355
331.0	Witu	Witu	12,500	1,987	30	5,403
333.2	Lamu Town	Lamu	34,000	6,317	30	37,534
340.0	Mombasa	Mombasa	904,400	202,823	68	343,462
351.1	Taveta	Taveta	28,900	5,449	16	7,219
352.4	Voi	Voi	36,000	6,565	56	7,669
353.2	Werugha	Wundanyi	8,000	1,237	100	935
362.3	Bura	Bura & Madogo	2,800	450	81	947
363.3	Zabaki	Hola	34,800	5,862	36	6,850
364.1	Bilisa	Garsen	11,700	1,882	30	2,989
411.8	Kangaari South	Runyenjes	6,100	1,228	33	2,337
412.1	Nthawa	Siakago	800	120	100	0
413.7	Embu Municipality	Embu	72,900	11,899	100	8,849
421.1	Central	Isiolo	88,100	18,914	41	152,573
421.2	Oldonyonyiro	Oi Doinyo Ng'iro	17,600	3,681	0	8,323
422.1	Garbatula	Garbatula	7,600	1,590	44	40,389
423.1	Merti	Merti	22,700	4,757	7	5,460
431.4	Charigwithya	Kitui	40,800	6,759	76	9,415
433.2	Mutomo	Mutomo	1,600	242	100	0
434.4	Mwingi	Mwingi	32,000	4,888	5	16,141
441.1	Muyuti	Machakos	356,400	56,631	19	78,112
441.2	Mitaboni	Mitaboni	114,000	17,296	0	20,293
442.3	Settlement Area	Athi River	98,200	17,649	100	13,139
444.3	Kiteta	Uaani/fawa	700	105	11	1,113

Table M11.1 Total Cost for Urban Water Supply (2/3)

Code	Location	Urban Name	Population in 2010 (nos)	Demand in 2010 (m <sup>3</sup> /day)	Present Coverage (%)	Incremental Cost (US\$ 1,000)
445.1	Kangundo	Kangundo	43,900	6,812	4	19,537
445.2	Matungulu	Taja	6,400	1,951	7	8,437
447.4	Kilungu	Nunguri	1,000	151	73	1,498
448.1	Makueri	Wote	9,000	1,629	36	3,263
448.3	Nzaui	Emaji	800	121	0	1,691
449.4	Mtito Andei	Mtito Andei & Kibwezi	13,500	2,049	0	19,537
451.1	North Horr	North Horr	6,300	1,244	7	22,017
452.2	Kargi	Kargi	16,600	3,290	7	66,779
453.1	Korr	Korr	17,200	3,411	39	56,810
454.1	Mountain	Marsabit	42,700	9,078	14	177,736
455.2	Soloto	Soloto	14,300	2,832	3	63,277
456.1	Moyale	Moyale	26,200	5,956	30	68,275
461.4	Ntjma	Meru	319,900	53,093	23	43,544
463.1	Nkuene	Nkubu	20,300	3,102	41	4,639
464.1	Chogoria	Chogoria	2,900	443	0	1,716
464.3	Karingani	Chuka	12,400	1,894	68	4,158
467.2	Maua	Maua	12,400	1,894	29	3,827
513.1	Madogashe	Mudo Gashe	6,700	1,141	19	19,616
515.2	Ijara	Ijara	3,200	545	0	10,682
515.3	Kotile	Kotile	3,200	545	0	15,628
515.4	Masalani	Masalani	3,200	545	35	2,370
519.1	Sankuri	Garissa	115,300	20,030	100	12,918
521.1	Mandera	Mandera	18,100	3,602	100	3,136
523.1	Elwak	Elwak	24,400	4,242	6	75,481
524.2	Rhamu	Rhamu	10,200	1,772	69	2,866
532.4	Wajir Township	Wajir	75,500	12,493	1	172,266
536.2	Buna	Buna	18,700	3,094	0	94,774
537.2	Bute	Bute	6,100	1,008	3	18,378
611.2	Eranga	Manga	2,100	320	22	3,545
611.5	East Kitutu	Keroka	6,100	1,537	24	4,958
612.2	East Mugirango	Nyamira + Kebirigo	32,400	5,090	24	11,590
615.0	Kisii Municipality	Kisii	138,500	24,020	45	23,590
617.1	Majoge Chache	Ogembo	2,700	412	0	1,734
622.1	West Kisumu	Maseno	50,600	19,934	32	15,551
622.3	East Kisumu	Kisumu & + Kiboswa	578,700	89,344	60	81,004
623.2	South East Kano	Ahero	26,900	4,864	0	5,869
625.2	Muhoroni	Muhoroni	26,700	4,720	7	7,633
632.4	West Sakwa	Bondo	8,600	1,771	23	4,172
633.2	East Gem	Yala	6,500	1,751	31	2,526
634.1	East Alego	Siaya	57,200	9,778	37	15,975
635.4	North Agenya	Ukwala	2,700	411	31	1,914
641.1	Kanyada West	Homa Bay	73,900	12,741	30	12,521
644.3	Suna East	Migori	24,100	4,253	10	5,446
646.3	Bukira East	Kehancha + Tarang'anya	9,800	1,481	2	4,757
646.8	Bugembe West	Nyabikaye	9,300	1,405	0	27,046
647.4	Central Kasipul	Oyugis	9,800	1,629	32	4,938
648.1	Central Karachuonyo	Kendu Bay	8,700	1,974	24	2,970
649.4	South Sakwa	Awendo/Sare	11,000	2,877	0	5,263
711.1	Odomongi	Oloitokitok	24,500	4,034	22	7,032
712.1	Ngong	Ngong	81,800	13,474	13	14,608
713.1	Ildamat	Kajiado	34,100	5,617	15	19,742
713.5	Namanga	Namanga	27,300	4,496	13	5,666
714.1	Magadi	Magadi	16,000	2,781	76	10,688
723.1	Kepletudo	Sotik	16,600	3,640	12	4,481

Table M11.1 Total Cost for Urban Water Supply (3/3)

Code	Location	Urban Name	Population in 2010 (nos)	Demand in 2010 (m3/day)	Present Coverage (%)	Incremental Cost (US\$ 1,000)
725.5	Kericho Township	Kericho	145,000	27,497	35	24,233
726.1	Kipkelion	Kipkelion	7,800	1,210	35	2,083
727.1	Londiani	Londiani	11,300	1,816	24	4,086
731.5	Nanyuki	Nanyuki	114,900	20,546	61	18,615
733.4	Rumuruti	Rumuruti	8,200	1,651	19	4,893
733.9	Nyahururu Township	Nyahururu	60,000	11,055	94	20,112
743.2	Gilgil	Gilgil	73,800	12,065	33	11,347
744.1	Naivasha	Naivasha	194,500	31,924	34	38,519
746.1	Njoro	Njoro	46,000	7,608	30	26,104
747.3	El Burgon	El Burgon	62,700	10,239	21	24,732
747.5	Molo South	Molo	55,100	9,259	22	19,937
749.0	Nakuru Municipality	Nakuru	869,900	151,718	57	189,656
752.1	Lower Melili	Narok	85,700	14,516	50	17,751
752.5	Keekonyoike	Nairagie Ngare	2,500	413	61	1,774
754.4	Uasin Gishu East	Kilgoris	16,200	2,686	24	4,282
755.1	Siria East	Lolkorian	8,400	1,391	25	3,734
762.3	Kitale	Kitale	249,200	40,986	60	34,757
762.4	Kiminiini	Kiminiini/Saboti+Spr Kita	4,200	642	0	3,963
763.5	Endebess	Endebess/Kwanza	6,700	1,029	0	2,412
771.2	Moi's Bridge	Moi's Bridge	10,100	1,577	6	2,934
772.4	Turbo West	Turbo	14,000	2,185	23	5,480
772.5	Eldoret Municipality	Eldoret	486,800	84,415	80	122,112
774.6	Otare	Burnt Forest	7,200	1,124	20	2,091
812.5	Kabarnet Mesop	Kabarnet	34,700	5,558	89	7,324
814.3	Maji Mazuri	Maji Mazuri	19,200	2,991	12	5,180
814.5	Eldama Ravine	Eldama Ravine	20,700	3,372	58	9,945
815.1	Lembus Soi	Mogotio	10,700	1,662	100	2,421
816.2	Marigat	Marigat	8,600	1,340	38	2,549
822.4	Kiptotlong	Iten+Yambach	19,700	3,194	58	11,782
831.3	Chemelil	Nandi Hills	4,200	2,467	23	4,008
832.2	Chemundu	Kapsabet+Baraton	56,300	9,002	39	11,817
841.4	Maralal	Maralal	74,800	13,177	20	16,040
842.4	Wamba	Wamba	15,600	2,651	17	81,960
843.6	Elbart	Baragoi	13,500	2,294	10	123,684
853.5	Lodwar	Lodwar	33,400	7,881	66	132,580
861.1	Kapenguria	Kapenguria/Makutano	48,200	7,538	10	8,920
911.4	Malakisi	Mawalie + Malakisi	10,700	2,084	0	3,319
912.4	Musikoma	Bungoma	142,700	23,561	49	26,771
913.1	Kimilili	Kimilili	31,500	4,795	16	7,318
914.2	Webuye	Webuye	128,700	19,991	31	20,038
916.1	Cheptais	Chaptais	10,000	1,675	0	2,693
921.5	South Teso	Busia	70,200	11,113	95	14,087
922.2	Central Bukhayo	Nambale	8,100	1,233	50	2,219
931.3	West Bunyore	Luanda	12,600	2,478	100	1,759
932.5	Central Maragoli	Vihiga+Majengo	14,400	2,332	15	5,086
933.1	Shamakhokho	Kaimosi	1,300	498	100	0
934.3	West Isukha	Khayega	1,400	513	0	1,774
935.4	Kakamega Municipality	Kakamega	187,500	30,259	35	28,202
939.2	Central Marama	Butere	7,400	1,121	46	2,196
93A.4	Central Wanga	Mumias	75,900	11,814	23	13,496
<b>TOTAL</b>			<b>12,537,900</b>	<b>2,414,293</b>	<b>53</b>	<b>4,371,922</b>

Table M11.2 Total Cost of Urban Sewerage Development (1/2)

Code	Urban Name	City Code	Population in 2010 (no)	Urban Area in 2010 (ha)	Coverage (%)	Sewer Cost (US\$'000)	Demand in 2010 (m <sup>3</sup> /day)	Required Area (ha)	Treatment Cost (US\$'000)	Development Cost (US\$'000)
110.0	Nairobi	U- 1	3,463,400	25,891	50	136,766	320,500	4,445	78,046	214,811
211.1	Nairobi	U- 2	46,400	347	25	916	7,027	60	670	1,585
211.4	Nairobi	U- 3	16,600	114	25	328	2,515	21	243	572
212.1	Gatunda & Nganda	U- 4	2,500	15	25	39	303	3	30	69
213.1	Limuru	U- 5	4,600	34	25	91	696	6	68	159
214.1	Ruiru	U- 6	40,900	305	25	807	6,091	52	583	1,390
214.4	Thika	U- 7	217,500	1,624	50	8,584	32,944	281	5,542	14,126
215.1	Githunguri	U- 8	14,100	105	25	278	2,133	18	208	486
216.6	Kiambu	U- 9	22,500	168	25	444	3,408	29	330	774
221.1	Wangari	U- 10	1,500	11	25	30	226	2	22	52
222.2	Sugata	U- 11	11,100	83	25	219	1,686	14	165	384
222.3	Kerugoya	U- 12	34,100	255	25	673	5,179	44	498	1,171
223.1	Kutus	U- 13	23,500	176	25	464	3,567	30	346	809
231.4	Karaka	U- 14	1,800	13	25	36	272	2	27	62
231.5	Muragua	U- 15	91,200	681	25	1,800	13,813	118	1,277	3,076
231.4	Karagema	U- 16	3,900	29	25	77	590	5	58	135
234.3	Muranga's	U- 17	70,100	524	25	1,383	10,616	91	996	2,379
235.1	Makuyu	U- 18	16,500	123	25	326	2,499	21	243	569
241.3	Oi Kaloo	U- 19	37,900	283	25	748	5,898	50	565	1,313
254.2	Karatina	U- 20	20,700	155	25	408	3,146	27	305	714
256.1	Odessa	U- 21	18,400	137	25	363	2,796	24	272	635
257.0	Nyeri	U- 22	370,700	2,758	50	14,630	56,356	481	9,111	23,742
311.2	Mariakani	U- 23	33,100	247	25	653	5,055	43	482	1,135
313.2	Kidii	U- 24	54,500	407	25	1,075	8,239	70	781	1,857
314.3	Wajima	U- 25	9,200	69	25	182	1,389	12	136	317
314.4	Malindi	U- 26	159,800	1,193	50	6,307	24,162	206	4,249	10,536
314.6	Mamburi	U- 135	14,400	108	25	284	2,092	18	204	488
321.1	Kwale	U- 27	15,200	114	25	300	2,325	20	226	526
323.1	Kisumu	U- 28	5,800	43	25	114	885	8	87	201
324.1	Masambweni	U- 29	34,500	258	25	681	5,275	45	507	1,188
324.5	Lungwinda	U- 136	8,200	61	25	162	1,252	11	123	284
331.0	Witu	U- 30	12,500	93	25	247	1,987	17	194	441
333.2	Lamu	U- 31	34,000	254	25	671	5,407	46	519	1,190
340.0	Mombasa	U- 32	904,400	6,754	50	35,693	133,989	1,161	21,712	57,406
351.1	Taveta	U- 137	28,900	216	25	570	4,470	38	431	1,002
352.4	Voi	U- 33	36,000	269	25	710	5,369	48	535	1,245
353.2	Wundanyi	U- 34	8,000	60	25	158	1,237	11	121	279
362.3	Bura & Madaga	U- 35	2,800	21	25	55	450	4	44	99
363.3	Hala	U- 36	34,800	260	25	687	5,358	48	537	1,224
364.1	Garsen	U- 37	11,700	87	25	231	1,882	16	184	415
411.8	Rumonge	U- 38	4,100	45	25	120	925	8	91	211
412.1	Sikonge	U- 39	800	6	25	16	120	1	12	28
413.7	Eziba	U- 40	72,900	544	25	1,439	11,064	94	1,036	2,474
414.6	Isiolo	U- 41	88,100	658	25	1,738	18,456	158	1,669	3,407
421.2	Oi Donyo Ng'wo	U- 42	17,600	131	25	347	3,681	31	356	704
422.1	Garbaula	U- 138	7,600	57	25	150	1,590	14	155	305
423.1	Merti	U- 139	22,700	170	25	448	4,357	41	458	906
431.4	Kisumu	U- 43	40,800	305	25	825	6,232	53	596	1,402
433.1	Mulomo	U- 44	1,600	12	25	32	242	2	24	55
434.4	Mwingi	U- 45	32,000	239	25	631	4,888	42	471	1,102
441.1	Machakos	U- 46	356,400	2,662	50	14,066	54,076	462	8,746	22,812
441.2	Mtamboni	U- 47	114,000	851	50	4,409	17,296	148	3,145	7,644
442.3	Athi River	U- 48	98,200	733	25	1,938	14,901	127	1,370	3,308
444.3	Uasin/Taba	U- 49	700	5	25	14	105	1	10	24
445.1	Kerugundo	U- 50	43,900	328	25	866	6,660	57	636	1,502
445.2	Tala	U- 140	6,400	48	25	126	969	8	95	221
447.4	Nunguri	U- 51	1,000	7	25	20	151	1	15	35
448.1	Wote	U- 141	9,000	67	25	178	1,365	12	134	311
448.3	Emali	U- 52	800	6	25	16	121	1	12	28
449.4	Mtito Andaki Kibwezi	U- 53	13,500	101	25	266	2,049	17	200	466
451.1	North Horr	U- 142	6,300	47	25	124	1,244	11	122	246
452.2	Kaji	U- 54	16,600	124	25	328	3,290	28	319	647
453.1	Koror	U- 143	17,200	128	25	339	3,411	29	331	670
454.1	Marsabit	U- 55	42,700	319	25	843	8,471	72	803	1,645
455.2	Sololo	U- 56	14,200	107	25	282	2,232	24	275	557
456.1	Moyale	U- 57	26,200	196	25	517	5,193	44	500	1,017
461.4	Mera	U- 58	319,300	2,389	50	12,625	48,899	418	7,915	20,340
463.1	Nairobi	U- 59	20,200	152	25	401	3,102	26	301	702
464.1	Chogoria	U- 60	1,900	22	25	57	443	4	44	101
464.3	Chuka	U- 61	11,400	83	25	245	1,834	16	185	430
467.1	Maua	U- 62	12,400	93	25	245	1,834	16	185	430
513.1	Mado Gado	U- 63	6,700	50	25	132	1,141	10	113	244
515.2	Ijara	U- 64	3,200	24	25	63	545	5	54	117
515.3	Kotole	U- 65	3,200	24	25	63	545	5	54	117
515.4	Masalani	U- 66	3,200	24	25	63	545	5	54	117
518.1	Garissa	U- 67	115,300	861	50	4,550	19,654	168	3,533	8,084
521.1	Mandera	U- 68	18,100	135	25	357	3,147	27	305	663
523.1	Eldoret	U- 69	24,400	182	25	481	4,242	36	410	891
524.2	Ruarua	U- 70	10,200	76	25	201	1,722	15	173	374

Table M11.2 Total Cost of Urban Sewerage Development (2/2)

Code	Urban Name	City Code	Population in 2010 (no)	Urban Area in 2010 (ha)	Coverage (%)	Sewer Cost (US\$'000)	Demand in 2010 (m <sup>3</sup> /day)	Required Area (ha)	Treatment Cost (US\$'000)	Development Cost (US\$'000)
5324	Wajir	U- 71	75,500	564	25	1,490	12,493	107	1,162	2,652
5362	Bura	U- 72	18,700	140	25	369	3,094	26	300	669
5372	Bute	U- 73	6,100	46	25	120	1,008	9	99	219
6112	Manga	U- 74	2,100	16	25	41	320	3	31	73
6115	Keroka	U- 75	6,100	46	25	120	930	8	91	212
6122	Nyamira + Kibirigo	U- 144	32,400	242	25	639	4,942	42	476	1,115
6150	Kisil	U- 76	138,500	1,034	50	3,466	21,131	180	3,772	9,238
6171	Ogembo	U- 77	2,700	20	25	53	412	4	41	94
6221	Maseno	U- 78	50,600	378	25	998	7,958	67	741	1,740
6223	Kisumu & + Kibora	U- 79	578,700	4,322	50	22,839	89,192	762	14,346	37,185
6232	Ahero	U- 80	26,900	201	25	531	4,145	35	401	931
6252	Muharuni	U- 81	26,700	199	25	527	4,113	35	397	924
6324	Bondo	U- 145	8,600	64	25	170	1,316	11	129	298
6332	Yala	U- 82	6,500	49	25	128	993	8	97	226
6341	Siaya	U- 83	57,200	427	25	1,129	8,748	75	828	1,956
6354	Ukwala	U- 84	2,700	20	25	53	411	4	40	94
6411	Homa Bay	U- 85	73,900	552	25	1,458	11,180	95	1,046	2,504
6443	Migori	U- 86	24,100	180	25	476	3,646	31	353	829
6453	Kehancha + Tarung'anya	U- 146	9,800	73	25	193	1,481	13	145	338
6468	Nyabikaye	U- 147	9,200	69	25	184	1,405	12	137	321
6474	Oyugis	U- 148	9,800	73	25	193	1,481	13	145	338
6481	Kendu Bay	U- 87	8,700	65	25	172	1,316	11	129	300
6494	Awendo/Sare	U- 149	11,000	82	25	217	1,664	14	163	380
7111	Olocheitok	U- 88	24,500	183	25	483	4,034	34	390	873
7121	Ngong	U- 89	81,800	611	25	1,614	13,474	115	1,247	2,861
7131	Kajiado	U- 90	34,100	255	25	673	5,617	48	539	1,212
7135	Naranga	U- 91	77,300	204	25	539	4,436	38	434	972
7141	Magadi	U- 92	16,000	119	25	316	2,633	22	256	572
7231	Sotik	U- 93	16,600	124	25	328	2,578	22	251	578
7255	Kericho	U- 94	145,000	1,083	50	5,723	22,536	192	3,985	9,718
7261	Kipkelion	U- 95	7,800	58	25	154	1,210	10	118	272
7271	Londiani	U- 96	11,500	84	25	223	1,755	15	171	394
7315	Nanyuki	U- 97	114,900	858	50	4,535	18,892	161	3,409	7,943
7334	Rumuruti	U- 150	8,200	61	25	162	1,348	12	132	294
7339	Nyahururu	U- 98	60,000	448	25	1,184	9,866	84	929	2,113
7432	Gigiri	U- 99	73,800	551	25	1,456	11,726	100	1,094	2,551
7441	Naivasha	U- 100	194,500	1,453	50	7,676	30,906	264	5,254	12,930
7461	Njoro	U- 101	46,000	344	25	908	7,309	62	696	1,604
7473	Elburgon	U- 102	62,700	468	25	1,237	9,961	85	937	2,175
7475	Molo	U- 103	55,100	412	25	1,087	8,755	75	828	1,916
7490	Nakuru	U- 104	869,900	6,497	50	34,331	132,328	1,130	21,140	55,472
7521	Narok	U- 105	85,700	640	25	1,691	14,213	121	1,311	3,002
7525	Nairagie Ngave	U- 106	2,500	19	25	49	413	4	41	90
7544	Kiboria	U- 151	16,200	121	25	320	2,686	23	261	581
7551	Lodwar	U- 152	8,400	63	25	166	1,391	12	136	302
7623	Kilale	U- 107	249,200	1,861	50	9,835	38,132	326	6,243	16,078
7624	Kiminini/Saboti + Spr. Kira	U- 108	4,200	31	25	83	642	5	63	146
7635	Endebess/Kwanza	U- 109	4,700	35	25	132	1,026	9	101	233
7712	Moi's Bridge	U- 153	10,100	75	25	199	1,577	13	154	353
7724	Turbo	U- 154	14,000	105	25	276	2,185	19	213	489
7725	Eldoret	U- 110	486,800	3,636	50	19,212	76,040	649	12,256	31,468
7746	Burnt Forest	U- 111	7,200	54	25	142	1,124	10	110	252
8125	Kabarot	U- 112	34,700	259	25	685	5,390	46	518	1,203
8143	Maji Mazui	U- 113	19,200	143	25	379	2,983	25	290	669
8145	Eldama Ravine	U- 114	20,700	155	25	408	3,215	27	312	720
8151	Mogotio	U- 115	10,700	80	25	211	1,662	14	162	374
8162	Marigat	U- 155	8,600	64	25	170	1,337	11	131	300
8224	Isini/Tambach	U- 116	19,700	147	25	389	3,189	27	309	698
8313	Nandi Hills	U- 117	4,200	31	25	83	647	6	64	146
8322	Kapsabet/Barot	U- 118	56,300	420	25	1,111	8,666	74	823	1,934
8414	Marsabit	U- 119	74,800	559	25	1,476	12,723	109	1,182	2,658
8424	Wamba	U- 120	15,600	117	25	308	2,651	23	258	566
8436	Baragoi	U- 121	13,500	101	25	266	2,294	20	223	490
8535	Lodwar	U- 122	33,400	249	25	659	5,123	61	679	1,338
8611	Kajunguria/Makutano	U- 123	48,200	360	25	951	7,386	63	703	1,654
9114	Mwasini + Malakisi	U- 156	10,700	80	25	211	1,629	14	159	370
9124	Burgome	U- 124	142,700	1,066	50	5,632	21,730	186	3,867	9,499
9131	Kimilili	U- 125	31,500	235	25	622	4,795	41	462	1,084
9142	Webuye	U- 126	128,700	961	50	5,079	19,597	167	3,524	8,603
9161	Chagata	U- 157	10,000	75	25	197	1,523	13	149	346
9215	Bura	U- 127	70,200	524	25	1,385	10,692	91	1,003	2,388
9222	Narade	U- 158	8,100	60	25	160	1,231	11	121	281
9313	Luanda	U- 128	12,600	94	25	249	1,911	16	187	435
9323	Vihiga/Majengo	U- 129	14,400	108	25	284	2,184	19	213	497
9331	Keimosi	U- 130	1,300	10	25	26	195	2	19	45
9343	Khayega	U- 131	1,400	10	25	28	210	2	21	48
9354	Kakamega	U- 132	187,500	1,400	50	7,400	28,439	243	4,896	12,295
9392	Bulere	U- 133	7,400	55	25	145	1,121	10	110	256
93A.4	Mumias	U- 134	75,900	567	25	1,498	11,511	98	1,075	2,573
Total			12,337,900	93,636		430,134	1,935,324	16,527	274,820	704,955

Table M11.3 Unit Water Exploitation Cost by Sub-drainage Area (1/3)

Subbasin	Groundwater		Water Harvesting				
	Borehole	Shallow well	Roof Catch	Small Dam	Sand Dam	Subsurface Dam	Rock Catch
1AA	0.53	0.14	1.52	0.11	0.53	0.39	0.18
1AB	0.51	0.14	1.56	0.11	0.53	0.39	0.19
1AC	0.50	0.14	1.52	0.11	0.53	0.39	0.18
1AD	0.52	0.14	1.47	0.11	0.53	0.39	0.18
1AE	0.48	0.14	1.50	0.11	0.53	0.39	0.19
1AF	0.50	0.14	1.45	0.10	0.53	0.39	0.17
1AG	0.48	0.21	1.44	0.10	0.53	0.39	0.17
1AH	0.51	0.14	1.54	0.11	0.53	0.39	0.19
1BA	0.50	0.13	2.42	0.15	0.53	0.39	0.32
1BB	0.49	0.14	2.24	0.10	0.53	0.39	0.29
1BC	0.56	0.13	2.53	0.13	0.53	0.39	0.33
1BD	0.53	0.14	2.58	0.12	0.53	0.39	0.34
1BE	0.55	0.11	2.32	0.12	0.53	0.39	0.30
1BG	0.53	0.13	2.17	0.11	0.53	0.39	0.28
1BH	0.47	0.14	1.80	0.10	0.53	0.39	0.22
1CA	0.52	0.13	2.69	0.12	0.53	0.39	0.35
1CB	0.53	0.13	2.55	0.12	0.53	0.39	0.33
1CC	0.52	0.13	2.14	0.11	0.53	0.39	0.27
1CD	0.54	0.13	2.14	0.11	0.53	0.39	0.26
1CE	0.53	0.14	2.38	0.12	0.53	0.39	0.31
1DA	0.51	0.14	1.59	0.09	0.53	0.39	0.19
1DB	0.50	0.14	1.60	0.10	0.53	0.39	0.19
1DC	0.48	0.21	1.48	0.08	0.53	0.39	0.17
1DD	0.42	0.25	1.47	0.09	0.53	0.39	0.17
1EA	0.53	0.14	1.46	0.08	0.53	0.39	0.18
1EB	0.57	0.14	1.35	0.07	0.53	0.39	0.17
1EC	0.49	0.21	1.41	0.08	0.53	0.39	0.17
1ED	0.45	0.26	1.46	0.07	0.53	0.39	0.18
1EE	0.52	0.16	1.48	0.07	0.53	0.39	0.17
1EF	0.53	0.13	1.88	0.08	0.53	0.39	0.22
1EG	0.52	0.14	1.54	0.07	0.53	0.39	0.18
1FA	0.52	0.12	1.91	0.10	0.53	0.39	0.24
1FB	0.50	0.14	1.70	0.09	0.53	0.39	0.20
1FC	0.54	0.14	1.65	0.09	0.53	0.39	0.20
1FD	0.54	0.13	1.70	0.12	0.53	0.39	0.21
1FE	0.52	0.14	1.37	0.08	0.53	0.39	0.17
1FF	0.53	0.14	1.35	0.08	0.53	0.39	0.16
1FG	0.52	0.12	1.86	0.08	0.53	0.39	0.22
1GA	0.52	0.12	1.90	0.13	0.53	0.39	0.23
1GB	0.52	0.12	1.45	0.12	0.53	0.39	0.17
1GC	0.55	0.13	2.02	0.13	0.53	0.39	0.25
1GD	0.53	0.09	1.43	0.11	0.53	0.39	0.17
1GE	0.52	0.10	1.34	0.11	0.53	0.39	0.16
1GF	0.51	0.07	1.27	0.10	0.53	0.39	0.15
1GG	0.53	0.12	2.05	0.14	0.53	0.39	0.26
1HA	0.50	0.10	1.38	0.09	0.53	0.39	0.16
1HB	0.51	0.12	1.61	0.10	0.53	0.39	0.19
1HC	0.52	0.12	1.87	0.10	0.53	0.39	0.23
1HD	0.52	0.12	1.71	0.10	0.53	0.39	0.18
1HE	0.51	0.13	1.47	0.10	0.53	0.39	0.16
1HF	0.53	0.08	1.65	0.11	0.53	0.39	0.20
1HG	0.52	0.10	1.69	0.11	0.53	0.39	0.21
1JA	0.52	0.13	1.56	0.08	0.53	0.39	0.18
1JB	0.53	0.12	1.44	0.07	0.53	0.39	0.17
1JC	0.51	0.12	1.46	0.08	0.53	0.39	0.17
1JD	0.51	0.13	1.33	0.08	0.53	0.39	0.16
1JE	0.55	0.14	1.61	0.10	0.53	0.39	0.19
1JF	0.52	0.13	1.46	0.08	0.53	0.39	0.17
1JO	0.50	0.10	1.38	0.09	0.53	0.39	0.16
1KA	0.54	0.13	1.35	0.09	0.53	0.39	0.15
1KB	0.53	0.13	1.29	0.10	0.53	0.39	0.14
1KC	0.52	0.12	1.38	0.12	0.53	0.39	0.15
1LA1	0.52	0.12	1.57	0.10	0.53	0.39	0.18
1LA2	0.51	0.11	1.82	0.14	0.53	0.39	0.22
1LA3	0.52	0.13	2.34	0.17	0.53	0.39	0.29
1LB1	0.52	0.11	1.65	0.12	0.53	0.39	0.19
1LB2	0.51	0.12	2.04	0.14	0.53	0.39	0.25



Table M11.3 Unit Water Exploitation Cost by Sub-drainage Area (2/3)

Subbasin	Groundwater		Water Harvesting				
	Borehole	Shallow well	Roof Catch	Small Dam	Sand Dam	Subsurface Dam	Rock Catch
2AA	0.54	0.12	5.68	0.26	0.53	0.39	0.75
2AB	0.52	0.12	6.09	0.26	0.53	0.39	0.81
2BA	0.53	0.13	2.88	0.18	0.53	0.39	0.38
2BB	0.52	0.12	3.46	0.21	0.53	0.39	0.65
2BC	0.55	0.13	3.44	0.19	0.53	0.39	0.45
2BD	0.51	0.12	5.89	0.26	0.53	0.39	0.81
2CA	0.39	0.12	5.55	0.26	0.53	0.39	0.74
2CB	0.52	0.10	2.50	0.14	0.53	0.39	0.35
2CC	0.49	0.12	3.71	0.26	0.53	0.39	0.49
2D	0.55	0.10	2.94	0.26	0.53	0.39	0.38
2EA	0.53	0.12	2.97	0.18	0.53	0.39	0.40
2EB	0.51	0.10	3.14	0.20	0.53	0.39	0.43
2EC	0.54	0.12	2.55	0.16	0.53	0.39	0.34
2ED	0.50	0.13	2.57	0.16	0.53	0.39	0.36
2EE	0.51	0.11	2.80	0.18	0.53	0.39	0.41
2EF	0.52	0.07	2.69	0.17	0.53	0.39	0.38
2EG1	0.53	0.13	2.33	0.15	0.53	0.39	0.31
2EG2	0.51	0.08	2.98	0.18	0.53	0.39	0.41
2EH	0.52	0.11	3.00	0.18	0.53	0.39	0.43
2EJ	0.54	0.07	3.04	0.22	0.53	0.39	0.41
2EK	0.54	0.10	3.23	0.21	0.53	0.39	0.44
2FA	0.59	0.12	2.40	0.15	0.53	0.39	0.31
2FB	0.53	0.12	2.56	0.19	0.53	0.39	0.34
2FC	0.55	0.13	2.31	0.15	0.53	0.39	0.30
2GA	0.58	0.11	2.31	0.17	0.53	0.39	0.30
2GB	0.56	0.09	2.14	0.17	0.53	0.39	0.27
2GC	0.55	0.10	1.93	0.14	0.53	0.39	0.23
2GD	0.68	0.08	2.68	0.17	0.53	0.39	0.34
2H	0.53	0.12	3.28	0.25	0.53	0.39	0.41
2J	0.50	0.11	5.47	0.26	0.53	0.39	0.73
2KA	0.54	0.11	1.87	0.19	0.53	0.39	0.22
2KB	0.54	0.12	2.54	0.24	0.53	0.39	0.31
2KC	0.51	0.13	3.06	0.23	0.53	0.39	0.38
3AA	0.38	0.09	3.34	0.23	0.53	0.39	0.44
3AB	0.52	0.14	3.76	0.24	0.53	0.39	0.51
3AC	0.46	0.12	3.58	0.23	0.53	0.39	0.49
3BA	0.25	0.06	2.86	0.20	0.53	0.39	0.37
3BB	0.55	0.10	2.55	0.15	0.53	0.39	0.32
3BC	0.54	0.11	2.36	0.15	0.53	0.39	0.29
3BD	0.52	0.12	2.34	0.15	0.53	0.39	0.29
3CB	0.52	0.12	2.39	0.14	0.53	0.39	0.30
3DA	0.50	0.14	3.96	0.24	0.53	0.39	0.58
3DB	0.58	0.12	4.64	0.26	0.53	0.39	0.72
3EA	0.51	0.14	4.57	0.25	0.53	0.39	0.72
3EB	0.57	0.14	4.72	0.26	0.53	0.39	0.76
3EC	0.51	0.12	4.71	0.26	0.53	0.39	0.75
3ED	0.53	0.11	4.69	0.26	0.53	0.39	0.74
3FA	0.53	0.12	5.00	0.26	0.53	0.39	0.78
3FB	0.53	0.13	5.17	0.26	0.53	0.39	0.80
3G	0.52	0.11	4.88	0.26	0.53	0.39	0.73
3HA	0.46	0.13	3.29	0.26	0.53	0.39	0.43
3HB	0.48	0.13	3.08	0.26	0.53	0.39	0.39
3HC	0.51	0.12	3.31	0.26	0.53	0.39	0.44
3HD1	0.48	0.12	3.06	0.26	0.53	0.39	0.38
3HD2	0.41	0.12	3.39	0.26	0.53	0.39	0.43
3J	0.45	0.13	4.35	0.26	0.53	0.39	0.59
3K	0.46	0.13	2.29	0.26	0.53	0.39	0.31
3LA	0.50	0.13	2.78	0.26	0.53	0.39	0.35
3LB	0.51	0.13	3.28	0.25	0.53	0.39	0.34
3MA	0.56	0.13	3.48	0.26	0.53	0.39	0.46
3MB	0.51	0.11	2.62	0.24	0.53	0.39	0.35
3MC	0.51	0.12	2.42	0.24	0.53	0.39	0.33
3MD1	0.49	0.13	2.76	0.23	0.53	0.39	0.34
3MD2	0.57	0.14	2.47	0.23	0.53	0.39	0.33
3N	0.53	0.11	5.28	0.26	0.53	0.39	0.82
4AA	0.57	0.12	2.02	0.13	0.53	0.39	0.25
4AB	0.53	0.13	1.94	0.16	0.53	0.39	0.22

Table M11.3 Unit Water Exploitation Cost by Sub-drainage Area (3/3)

Subbasin	Groundwater		Water Harvesting				
	Borehole	Shallow well	Roof Catch	Small Dam	Sand Dam	Subsurface Dam	Rock Catch
4AC	0.53	0.12	1.68	0.11	0.53	0.39	0.19
4AD	0.54	0.12	1.63	0.09	0.53	0.39	0.19
4BA	0.52	0.13	2.22	0.09	0.53	0.39	0.27
4BB	0.55	0.13	2.13	0.10	0.53	0.39	0.27
4BC	0.52	0.13	2.20	0.09	0.53	0.39	0.28
4BD	0.53	0.13	2.09	0.03	0.53	0.39	0.26
4BE	0.52	0.13	2.33	0.06	0.53	0.39	0.30
4BF	0.53	0.13	3.40	0.10	0.53	0.39	0.49
4BG	0.52	0.14	3.45	0.12	0.53	0.39	0.50
4CA	0.56	0.12	2.09	0.09	0.53	0.39	0.26
4CB	0.53	0.12	2.25	0.06	0.53	0.39	0.29
4CC	0.51	0.13	3.52	0.14	0.53	0.39	0.51
4DA	0.54	0.13	2.31	0.11	0.53	0.39	0.29
4DB	0.50	0.13	2.38	0.13	0.53	0.39	0.29
4DC	0.51	0.13	2.93	0.13	0.53	0.39	0.38
4DD	0.53	0.14	3.18	0.14	0.53	0.39	0.42
4DE	0.48	0.14	3.65	0.17	0.53	0.39	0.50
4EA	0.53	0.13	3.44	0.18	0.53	0.39	0.47
4EB	0.54	0.13	2.75	0.17	0.53	0.39	0.34
4EC	0.53	0.13	3.00	0.18	0.53	0.39	0.38
4ED	0.50	0.14	4.07	0.21	0.53	0.39	0.56
4FA	0.52	0.13	4.01	0.22	0.53	0.39	0.58
4FB	0.48	0.13	5.22	0.26	0.53	0.39	0.80
4GA	0.47	0.12	5.95	0.26	0.53	0.39	0.91
4GB	0.51	0.12	6.03	0.26	0.53	0.39	0.89
4GC	0.51	0.12	5.78	0.26	0.53	0.39	0.79
4GD	0.51	0.12	4.70	0.26	0.53	0.39	0.63
4GE	0.52	0.11	3.71	0.26	0.53	0.39	0.49
4GF	0.52	0.11	3.39	0.26	0.53	0.39	0.44
4GO	0.50	0.12	3.55	0.26	0.53	0.39	0.45
4HA	0.53	0.13	4.39	0.26	0.53	0.39	0.64
4HB	0.46	0.12	3.39	0.26	0.53	0.39	0.42
4HC	0.46	0.12	3.44	0.26	0.53	0.39	0.42
4JA	0.50	0.12	5.69	0.26	0.53	0.39	0.71
4JB	0.45	0.13	4.16	0.26	0.53	0.39	0.54
4KA	0.51	0.13	4.00	0.26	0.53	0.39	0.51
4KB	0.51	0.14	3.55	0.26	0.53	0.39	0.45
5AA	0.52	0.10	2.74	0.25	0.53	0.39	0.37
5AB	0.53	0.08	2.73	0.25	0.53	0.39	0.36
5AC	0.54	0.11	3.36	0.25	0.53	0.39	0.43
5AD	0.53	0.12	2.98	0.25	0.53	0.39	0.39
5BA	0.52	0.13	2.02	0.18	0.53	0.39	0.24
5BB	0.54	0.13	1.81	0.15	0.53	0.39	0.22
5BC	0.51	0.13	2.49	0.22	0.53	0.39	0.32
5BD	0.53	0.12	2.69	0.24	0.53	0.39	0.35
5BE	0.50	0.14	2.86	0.24	0.53	0.39	0.37
5CA	0.61	0.11	3.42	0.26	0.53	0.39	0.44
5CB	0.55	0.12	3.79	0.26	0.53	0.39	0.48
5CC	0.64	0.12	3.42	0.26	0.53	0.39	0.44
5DA	0.51	0.14	3.88	0.25	0.53	0.39	0.52
5DB	0.54	0.14	2.98	0.25	0.53	0.39	0.37
5DC	0.57	0.12	3.30	0.25	0.53	0.39	0.42
5DD	0.62	0.13	3.29	0.25	0.53	0.39	0.41
5EA	0.57	0.13	5.70	0.26	0.53	0.39	0.71
5EB	0.58	0.12	5.45	0.26	0.53	0.39	0.70
5EC	0.53	0.12	5.39	0.26	0.53	0.39	0.71
5ED	0.52	0.12	5.45	0.26	0.53	0.39	0.71
5FA	0.52	0.12	6.60	0.26	0.53	0.39	0.80
5FB	0.64	0.11	7.15	0.26	0.53	0.39	0.79
5GA	0.50	0.13	6.01	0.26	0.53	0.39	0.74
5GB	0.42	0.14	7.44	0.26	0.53	0.39	0.75
5H	0.52	0.13	7.12	0.26	0.53	0.39	0.88
5J	0.55	0.12	5.62	0.26	0.53	0.39	0.74

Table M11.4 Source Development Plan for Rural Water Supply (1/4)

Code	District	Source Development Plan									Total
		Surface Water	Borehole	Shallow Well	Roof Catch	Small Dam	Subsurface Dam	Sand Dam	Rock Catch	Existing Pipeline	
Nairobi Province											
110	Nairobi										
	- Quantity (m3/d)	0	0	0	0	0	0	0	0	0	0
	- No. of Facilities	0	0	0	0	0	0	0	0	0	0
	- Cost (mill.US\$)	0	0	0	0	0	0	0	0	0	0
	(mill.K£)	0	0	0	0	0	0	0	0	0	0
Central Province											
210	Kiambu										
	- Quantity (m3/d)	39,127	2,726	83	135	2,169	0	0	30	16,360	60,630
	- No. of Facilities	0	93	17	3,718	25	0	0	3	0	3,856
	- Cost (mill.US\$)	0	10.54	0.08	2.24	1.87	0	0	0.05	0	14.77
	(mill.K£)	0	13.28	0.1	2.82	2.35	0	0	0.06	0	18.63
220	Kirinyaga										
	- Quantity (m3/d)	23,036	758	76	40	973	0	0	0	977	25,860
	- No. of Facilities	0	17	16	889	12	0	0	0	0	934
	- Cost (mill.US\$)	0	2.64	0.08	0.53	0.58	0	0	0	0	3.82
	(mill.K£)	0	3.33	0.09	0.67	0.73	0	0	0	0	4.82
230	Muranga										
	- Quantity (m3/d)	52,242	1,031	474	82	2,819	0	0	0	458	57,106
	- No. of Facilities	0	28	96	2,828	24	0	0	0	0	2,976
	- Cost (mill.US\$)	0	3.91	0.47	1.68	0.99	0	0	0	0	7.05
	(mill.K£)	0	4.93	0.59	2.12	1.25	0	0	0	0	8.89
240	Nyandarua										
	- Quantity (m3/d)	16,155	6,917	255	545	1,160	0	0	164	380	25,576
	- No. of Facilities	0	250	27	11,081	20	0	0	13	0	11,391
	- Cost (mill.US\$)	0	28.17	0.12	6.65	1.09	0	0	0.23	0	36.26
	(mill.K£)	0	35.53	0.16	8.39	1.37	0	0	0.28	0	45.73
250	Nyeri										
	- Quantity (m3/d)	34,264	163	58	0	1,473	0	0	0	51	36,009
	- No. of Facilities	0	6	12	0	28	0	0	0	0	46
	- Cost (mill.US\$)	0	0.58	0.06	0	0.87	0	0	0	0	1.5
	(mill.K£)	0	0.73	0.07	0	1.09	0	0	0	0	1.89
	Sub-total										
	- Quantity (m3/d)	164,824	11,595	946	802	8,594	0	0	194	18,226	205,181
	- No. of Facilities	0	394	168	18,516	109	0	0	16	0	19,203
	- Cost (mill.US\$)	0	45.84	0.81	11.1	5.4	0	0	0.28	0	63.4
	(mill.K£)	0	57.8	1.01	14	6.79	0	0	0.34	0	79.96
Coast Province											
310	Kilifi										
	- Quantity (m3/d)	765	3,957	6,123	3,195	30	51	55	0	9,449	23,625
	- No. of Facilities	0	104	1,219	83,244	6	11	11	0	0	84,595
	- Cost (mill.US\$)	0	13.77	5.91	50.23	0.04	0.14	0.11	0	0	70.21
	(mill.K£)	0	17.37	7.46	63.34	0.05	0.18	0.14	0	0	88.53
320	Kwale										
	- Quantity (m3/d)	1,566	5,038	4,775	2,720	101	49	133	0	3,071	17,453
	- No. of Facilities	0	119	944	59,067	10	13	21	0	0	60,174
	- Cost (mill.US\$)	0	18.14	4.38	35.34	0.14	0.14	0.27	0	0	58.41
	(mill.K£)	0	22.88	5.52	44.57	0.17	0.17	0.35	0	0	73.65
330	Lamu										
	- Quantity (m3/d)	0	652	777	259	0	0	0	0	299	1,987
	- No. of Facilities	0	22	160	8,053	0	0	0	0	0	8,235
	- Cost (mill.US\$)	0	2.19	0.76	5.13	0	0	0	0	0	8.08
	(mill.K£)	0	2.76	0.96	6.47	0	0	0	0	0	10.19
340	Mombasa										
	- Quantity (m3/d)	0	0	0	0	0	0	0	0	0	0
	- No. of Facilities	0	0	0	0	0	0	0	0	0	0
	- Cost (mill.US\$)	0	0	0	0	0	0	0	0	0	0
	(mill.K£)	0	0	0	0	0	0	0	0	0	0
350	Taita Tabet										
	- Quantity (m3/d)	1,971	1,310	1,481	551	74	25	25	174	838	6,449
	- No. of Facilities	0	35	296	17,923	5	5	5	24	0	18,293
	- Cost (mill.US\$)	0	4.5	1.44	10.79	0.1	0.07	0.05	0.42	0	17.37
	(mill.K£)	0	5.67	1.81	13.61	0.13	0.09	0.06	0.53	0	21.91
360	Tana River										
	- Quantity (m3/d)	948	918	1,906	541	21	15	15	40	97	4,501
	- No. of Facilities	0	32	328	18,534	9	4	4	8	0	18,919
	- Cost (mill.US\$)	0	3.31	1.52	11.14	0.03	0.04	0.03	0.14	0	16.21
	(mill.K£)	0	4.18	1.92	14.05	0.03	0.05	0.04	0.18	0	20.44
	Sub-total										
	- Quantity (m3/d)	5,250	11,875	15,062	7,266	226	140	228	214	13,754	54,015
	- No. of Facilities	0	312	2,947	186,821	30	33	41	32	0	190,216
	- Cost (mill.US\$)	0	41.91	14.01	112.63	0.31	0.39	0.46	0.56	0	170.28
	(mill.K£)	0	52.86	17.67	142.04	0.38	0.49	0.59	0.71	0	214.72

Table M11.4 Source Development Plan for Rural Water Supply (2/4)

Code	District	Source Development Plan									Total
		Surface Water	Borehole	Shallow Well	Roof Catch	Small Dam	Subsurface Dam	Sand Dam	Rock Catch	Existing Pipeline	
Eastern Province											
410	Embu										
	- Quantity (m3/d)	14,378	3,120	2,668	638	646	23	23	0	555	22,051
	- No. of Facilities	0	83	537	18,126	18	6	6	0	0	18,776
	- Cost (mill.US\$)	0	11.39	2.64	10.96	0.51	0.06	0.05	0	0	25.41
	- Cost (mill.K£)	0	14.11	3.33	13.82	0.64	0.08	0.06	0	0	32.04
420	Isiolo										
	- Quantity (m3/d)	301	545	673	155	2	8	25	61	12	1,782
	- No. of Facilities	0	20	115	7,776	1	6	8	14	0	7,940
	- Cost (mill.US\$)	0	1.91	0.58	4.71	0	0.02	0.05	0.24	0	7.52
	- Cost (mill.K£)	0	2.41	0.73	5.94	0	0.03	0.06	0.31	0	9.48
430	Kitui										
	- Quantity (m3/d)	846	5,506	10,782	3,029	104	325	292	539	2,622	24,045
	- No. of Facilities	0	177	2,149	114,343	3	44	40	96	0	116,852
	- Cost (mill.US\$)	0	20.46	10.17	68.71	0.14	0.93	0.62	1.65	0	102.68
	- Cost (mill.K£)	0	25.79	12.83	86.64	0.18	1.18	0.78	2.08	0	129.48
440	Machakos										
	- Quantity (m3/d)	12,589	10,501	19,777	3,746	1,234	496	332	50	5,344	54,069
	- No. of Facilities	0	312	3,860	157,275	34	63	47	13	0	161,604
	- Cost (mill.US\$)	0	38.62	18.6	94.38	1.69	1.42	0.69	0.2	0	155.59
	- Cost (mill.K£)	0	48.7	23.45	119.01	2.13	1.79	0.87	0.25	0	196.2
450	Marsabit										
	- Quantity (m3/d)	54	1,502	1,270	365	9	64	70	13	206	3,553
	- No. of Facilities	0	55	238	18,436	3	11	11	3	0	18,757
	- Cost (mill.US\$)	0	6	1.14	11.05	0.01	0.18	0.14	0.05	0	18.58
	- Cost (mill.K£)	0	7.56	1.44	13.94	0.02	0.23	0.18	0.06	0	23.43
460	Meru										
	- Quantity (m3/d)	34,311	16,661	4,596	2,199	1,882	174	47	21	2,147	62,038
	- No. of Facilities	0	481	923	90,443	39	21	9	5	0	91,921
	- Cost (mill.US\$)	0	60.91	4.56	54.59	2.08	0.5	0.1	0.08	0	122.82
	- Cost (mill.K£)	0	76.8	5.74	68.84	2.63	0.63	0.12	0.11	0	154.87
	Sub-total										
	- Quantity (m3/d)	62,479	37,835	39,766	10,132	3,877	1,090	789	684	10,886	167,538
	- No. of Facilities	0	1,128	7,822	406,399	98	151	121	131	0	415,850
	- Cost (mill.US\$)	0	139.09	37.69	244.4	4.43	3.11	1.65	2.22	0	432.6
	- Cost (mill.K£)	0	175.37	47.52	308.19	5.6	3.94	2.07	2.81	0	545.5
North Eastern Province											
510	Garissa										
	- Quantity (m3/d)	35	847	1,770	353	0	20	9	0	2	3,036
	- No. of Facilities	0	31	343	16,174	0	10	5	0	0	16,563
	- Cost (mill.US\$)	0	3.02	1.59	9.68	0	0.06	0.02	0	0	14.36
	- Cost (mill.K£)	0	3.81	2.01	12.21	0	0.07	0.02	0	0	18.11
520	Mandera										
	- Quantity (m3/d)	191	606	2,159	303	0	51	99	0	1	3,410
	- No. of Facilities	0	28	437	17,573	0	10	15	0	0	18,063
	- Cost (mill.US\$)	0	2.2	2.13	10.64	0	0.14	0.21	0	0	15.32
	- Cost (mill.K£)	0	2.78	2.69	13.41	0	0.18	0.26	0	0	19.32
530	Wajir										
	- Quantity (m3/d)	0	744	1,899	318	0	28	75	0	0	3,064
	- No. of Facilities	0	40	369	16,739	0	10	20	0	0	17,178
	- Cost (mill.US\$)	0	3.12	1.75	10.1	0	0.08	0.15	0	0	15.19
	- Cost (mill.K£)	0	3.94	2.2	12.73	0	0.09	0.19	0	0	19.16
	Sub-total										
	- Quantity (m3/d)	226	2,197	5,828	974	0	99	183	0	3	9,510
	- No. of Facilities	0	99	1,149	50,486	0	30	40	0	0	51,804
	- Cost (mill.US\$)	0	8.34	5.47	30.42	0	0.28	0.38	0	0	44.87
	- Cost (mill.K£)	0	10.53	6.9	38.35	0	0.34	0.47	0	0	56.59

Table M11.4 Source Development Plan for Rural Water Supply (3/4)

Code	District	Source Development Plan								Total
		Surface Water	Borehole	Shallow Well	Roof Catch	Small Dam	Subsurface Dam	Sand Dam	Rock Catch	
Nyanza Province										
610	Kisii									
	- Quantity (m3/d)	65,503	5,329	7,590	0	3,203	0	0	0	4,373
	- No. of Facilities	0	137	1,525	0	26	0	0	0	0
	- Cost (mill.US\$)	0	19.78	7.43	0	1.68	0	0	0	0
	(mill.K£)	0	24.95	9.37	0	2.12	0	0	0	0
620	Kisumu									
	- Quantity (m3/d)	14,808	4,350	8,238	2,629	593	0	0	116	0
	- No. of Facilities	0	115	1,084	34,621	15	0	0	7	0
	- Cost (mill.US\$)	0	16.23	5.31	20.93	0.32	0	0	0.12	0
	(mill.K£)	0	20.47	6.69	26.39	0.41	0	0	0.16	0
630	Siaya									
	- Quantity (m3/d)	18,041	6,380	15,369	1,827	1,134	0	0	98	1,041
	- No. of Facilities	0	220	2,983	30,004	27	0	0	7	0
	- Cost (mill.US\$)	0	23.95	14.32	18.11	0.46	0	0	0.12	0
	(mill.K£)	0	30.2	18.06	22.83	0.58	0	0	0.16	0
640	South Nyanza									
	- Quantity (m3/d)	24,460	11,171	17,346	7,043	1,924	176	176	0	292
	- No. of Facilities	0	342	3,050	92,293	51	27	27	0	0
	- Cost (mill.US\$)	0	42.01	15.24	55.54	1.05	0.5	0.36	0	0
	(mill.K£)	0	52.97	19.22	70.03	1.32	0.63	0.46	0	0
	Sub-total									
	- Quantity (m3/d)	122,812	27,230	48,543	11,499	6,854	176	176	214	5,706
	- No. of Facilities	0	814	8,642	156,918	119	27	27	14	0
	- Cost (mill.US\$)	0	101.97	42.3	94.58	3.51	0.5	0.36	0.24	0
	(mill.K£)	0	128.59	53.34	119.25	4.43	0.63	0.46	0.32	0
Rift Valley Province										
710	Kajiado									
	- Quantity (m3/d)	2,381	3,312	2,501	995	125	56	58	43	2,357
	- No. of Facilities	0	123	431	38,954	9	16	15	9	0
	- Cost (mill.US\$)	0	12.99	2.15	23.39	0.17	0.16	0.12	0.14	0
	(mill.K£)	0	16.39	2.71	29.49	0.21	0.2	0.15	0.17	0
720	Kericho									
	- Quantity (m3/d)	60,499	2,605	1,641	0	2,678	0	0	0	1,189
	- No. of Facilities	0	68	324	0	27	0	0	0	0
	- Cost (mill.US\$)	0	9.93	1.44	0	1.42	0	0	0	0
	(mill.K£)	0	12.52	1.81	0	1.79	0	0	0	0
730	Laikepia									
	- Quantity (m3/d)	2,819	4,626	722	822	373	63	46	8	0
	- No. of Facilities	0	156	145	22,725	19	18	14	1	0
	- Cost (mill.US\$)	0	17.73	0.69	13.71	0.48	0.17	0.09	0.02	0
	(mill.K£)	0	22.35	0.88	17.29	0.6	0.22	0.12	0.02	0
740	Nakuru									
	- Quantity (m3/d)	18,557	14,086	298	2,629	1,547	166	98	72	11,058
	- No. of Facilities	0	409	31	63,406	21	24	19	8	0
	- Cost (mill.US\$)	0	52.93	0.15	38.18	1.26	0.48	0.2	0.13	0
	(mill.K£)	0	66.75	0.19	48.15	1.59	0.6	0.26	0.17	0
750	Narok									
	- Quantity (m3/d)	13,271	6,889	6,433	3,911	900	86	79	0	279
	- No. of Facilities	0	245	1,128	60,853	28	13	13	0	0
	- Cost (mill.US\$)	0	26.44	5.47	36.62	0.72	0.24	0.16	0	0
	(mill.K£)	0	33.34	6.9	46.18	0.91	0.31	0.2	0	0
760	Trans Nzola									
	- Quantity (m3/d)	19,082	456	1,015	0	781	0	0	35	410
	- No. of Facilities	0	31	205	0	15	0	0	3	0
	- Cost (mill.US\$)	0	1.87	0.93	0	0.5	0	0	0.05	0
	(mill.K£)	0	2.36	1.17	0	0.63	0	0	0.07	0
770	Uasin Gishu									
	- Quantity (m3/d)	16,940	129	101	0	693	0	0	18	1,838
	- No. of Facilities	0	4	21	0	20	0	0	2	0
	- Cost (mill.US\$)	0	0.4	0.1	0	0.42	0	0	0.04	0
	(mill.K£)	0	0.5	0.12	0	0.53	0	0	0.04	0
810	Baringo									
	- Quantity (m3/d)	4,246	3,907	1,588	1,081	209	50	37	7	1,759
	- No. of Facilities	0	119	173	27,659	29	26	17	1	0
	- Cost (mill.US\$)	0	14.21	0.85	16.64	0.18	0.13	0.07	0.02	0
	(mill.K£)	0	17.91	1.07	20.99	0.23	0.17	0.09	0.02	0
820	Elgey Marakwet									
	- Quantity (m3/d)	6,769	1,751	3,475	503	272	15	0	9	1,193
	- No. of Facilities	0	68	628	12,995	23	3	0	1	0
	- Cost (mill.US\$)	0	6.74	3.11	7.78	0.22	0.04	0	0.02	0
	(mill.K£)	0	8.5	3.92	9.81	0.27	0.05	0	0.02	0

Table M11.4 Source Development Plan for Rural Water Supply (4/4)

Code	District	Source Development Plan									Total	
		Surface Water	Borehole	Shallow Well	Roof Catch	Small Dam	Subsurface Dam	Sand Dam	Rock Catch	Existing Pipeline		
830	Nandi											
	- Quantity (m3/d)	31,085	481	1,679	0	1,130	0	0	0	375	34,750	
	- No. of Facilities	0	25	340	0	23	0	0	0	0	388	
840	Samburu											
	- Quantity (m3/d)	0	1,85	1.62	0	0.63	0	0	0	0	4.1	
	- Cost (mill.US\$)	0	2.33	2.04	0	0.79	0	0	0	0	5.17	
850	Turkana											
	- Quantity (m3/d)	240	1,174	1,607	529	15	17	18	375	6	3,981	
	- No. of Facilities	0	67	319	16,898	4	8	8	57	0	17,361	
860	West Pokot											
	- Quantity (m3/d)	0	5.18	1.47	10.19	0.02	0.05	0.04	0.99	0	17.93	
	- Cost (mill.US\$)	0	6.53	1.83	12.85	0.02	0.06	0.05	1.25	0	22.61	
860	Sub-total											
	- Quantity (m3/d)	289	1,871	2,956	690	3	102	127	15	6	6,060	
	- No. of Facilities	0	77	500	31,371	1	20	22	2	0	31,993	
860	Sub-total											
	- Quantity (m3/d)	0	6.78	2.49	18.88	0	0.29	0.26	0.03	0	28.74	
	- Cost (mill.US\$)	0	8.55	3.14	23.81	0.01	0.36	0.33	0.03	0	36.24	
860	Sub-total											
	- Quantity (m3/d)	3,077	1,522	4,456	961	129	49	25	0	0	10,219	
	- No. of Facilities	0	79	882	28,553	14	11	9	0	0	29,548	
860	Sub-total											
	- Quantity (m3/d)	0	6.46	4	17.18	0.12	0.14	0.05	0	0	27.95	
	- Cost (mill.US\$)	0	8.15	5.05	21.66	0.15	0.17	0.06	0	0	35.24	
860	Sub-total											
	- Quantity (m3/d)	179,255	42,809	28,472	12,121	8,855	604	488	583	20,470	293,657	
	- No. of Facilities	0	1,471	5,127	303,414	233	139	117	84	0	310,585	
860	Sub-total											
	- Cost (mill.US\$)	0	164	24	183	6	2	1	1	0	381	
	- Cost (mill.K£)	0	206	31	230	8	2	1	2	0	480	
Western Province												
910	Bungoma											
	- Quantity (m3/d)	46,022	2,867	5,728	0	2,210	0	0	258	977	58,062	
	- No. of Facilities	0	75	1,150	0	18	0	0	15	0	1,258	
920	Busia											
	- Quantity (m3/d)	0	9.71	5.68	0	1.19	0	0	0.25	0	16.83	
	- Cost (mill.US\$)	0	12.24	7.16	0	1.51	0	0	0.31	0	21.22	
920	Sub-total											
	- Quantity (m3/d)	18,134	4,956	10,319	1,082	899	62	53	0	1,420	36,925	
	- No. of Facilities	0	161	1,991	16,717	16	9	8	0	0	18,902	
930	Kakamega											
	- Quantity (m3/d)	0	19.04	9.92	10.1	0.51	0.18	0.11	0	0	39.86	
	- Cost (mill.US\$)	0	24.01	12.51	12.74	0.65	0.22	0.14	0	0	50.27	
930	Sub-total											
	- Quantity (m3/d)	96,625	3,166	7,478	0	3,462	0	0	0	891	111,622	
	- No. of Facilities	0	122	1,514	0	41	0	0	0	0	1,677	
930	Sub-total											
	- Quantity (m3/d)	0	11.24	9.42	0	1.47	0	0	0	0	22.12	
	- Cost (mill.US\$)	0	14.17	11.87	0	1.85	0	0	0	0	27.89	
930	Sub-total											
	- Quantity (m3/d)	160,781	10,989	23,525	1,082	6,571	62	53	258	3,288	206,609	
	- No. of Facilities	0	358	4,655	16,717	75	9	8	15	0	21,837	
930	Sub-total											
	- Cost (mill.US\$)	0	39.99	25.02	10.1	3.17	0.18	0.11	0.25	0	78.81	
	- Cost (mill.K£)	0	50.42	31.54	12.74	4.01	0.22	0.14	0.31	0	99.38	
Total	Total											
	- Quantity (m3/d)	695,627	144,530	162,142	43,876	34,977	2,171	1,917	2,147	72,333	1,159,720	
	- No. of Facilities	0	4,576	30,510	1,139,271	664	389	354	292	0	1,176,056	
Total	Sub-total											
	- Cost (mill.US\$)	0	540.65	149.77	685.8	22.96	6.16	3.95	4.99	0	1,414.2	
	- Cost (mill.K£)	0	681.75	188.83	864.8	28.91	7.76	4.99	6.29	0	1,783.32	

Table M11.5 Construction Cost for Rural Water Supply System

Code	District Name	District Area (km <sup>2</sup> )	Effect. Area (km <sup>2</sup> )	Demand in 2010 (m <sup>3</sup> /day)	Water Source (m <sup>3</sup> /day)		Construction Cost (1000 US\$)			
					Surface water & Water harvesting	Groundwater	Supply Cost	Exploitation Cost	Total	
110	Nairobi	719		0	0	0	0	0	0	0
210	Kiambu	2,549	2,012	60,667	57,821	2,809	65,686	14,774	80,460	
220	Kirinyaga	1,510	1,042	25,875	25,026	834	28,081	3,823	31,904	
230	Murang'a	2,555	2,091	57,134	55,601	1,505	62,064	7,046	69,110	
240	Nyandarua	3,295	2,352	25,614	18,404	7,172	26,685	36,261	62,946	
250	Nyeri	3,324	1,497	36,041	35,788	221	39,262	1,500	40,762	
310	Kilifi	12,546	9,697	23,681	13,545	10,080	24,058	70,210	94,268	
320	Kwale	8,193	7,300	17,516	7,640	9,873	17,368	58,408	75,776	
330	Lamu	6,287	3,469	2,007	558	1,429	1,928	8,079	10,007	
340	Mombasa	198		0	0	0	0	0	0	
350	Taita Taveta	17,324	5,381	6,480	3,658	2,791	6,563	17,372	23,935	
360	Tana River	39,311	28,545	4,551	1,677	2,824	4,432	16,213	20,645	
410	Embu	2,789	2,345	22,094	16,263	5,788	23,076	25,411	48,487	
420	Isiolo	25,375	21,934	1,809	564	1,218	1,740	7,515	9,255	
430	Kitui	30,580	19,446	24,129	7,757	16,288	23,453	102,677	126,130	
440	Machakos	14,209	12,066	54,205	23,791	30,278	53,820	155,589	209,409	
450	Marsabit	70,598	61,609	3,587	781	2,772	3,406	18,582	21,988	
460	Meru	9,533	6,680	62,124	40,781	21,257	64,062	122,818	186,880	
510	Garissa	43,721	38,828	3,080	419	2,617	2,869	14,364	17,233	
520	Mandera	26,181	25,700	3,447	645	2,765	15,324	15,324	18,575	
530	Wajir	56,744	53,382	3,109	421	2,683	2,895	15,192	18,087	
610	Kisii	2,170	2,198	86,050	73,079	12,919	91,637	28,897	120,534	
620	Kisumu	2,068	1,890	30,768	18,146	12,588	31,386	42,912	74,298	
630	Siaya	2,418	2,383	43,960	22,141	21,749	44,173	56,960	101,133	
640	South Nyanza	5,750	5,203	62,728	34,071	28,517	63,418	114,688	178,106	
710	Kajiado	21,960	17,919	11,888	6,015	5,813	11,915	39,102	51,017	
720	Kenya	4,995	3,785	68,652	64,366	4,246	74,151	12,782	86,933	
730	Lalipia	9,734	8,225	9,536	4,131	5,348	9,432	32,887	42,319	
740	Nakuru	7,480	4,429	48,574	34,127	14,384	50,478	93,333	143,811	
750	Narok	18,025	13,837	31,929	18,526	13,322	32,476	69,660	102,136	
760	Trans Nzoia	2,509	1,383	21,807	20,308	1,471	23,519	3,352	26,871	
770	Uasin Gishu	5,723	2,958	19,743	19,489	230	21,483	949	22,432	
810	Baringo	10,784	8,629	12,982	7,389	5,495	13,122	32,094	45,216	
820	Elgey Marakwet	2,843	1,263	14,036	8,761	5,226	14,372	17,906	32,278	
830	Nandi	2,773	2,199	34,794	32,590	2,160	37,556	4,099	41,655	
840	Samburu	21,140	15,677	4,025	1,200	2,781	3,872	17,928	21,800	
850	Turkana	67,549	62,193	6,112	1,233	4,827	5,790	28,739	34,529	
860	West Pokot	9,157	8,367	10,275	4,241	5,978	27,947	27,947	38,078	
910	Bungoma	2,981	2,496	58,099	49,467	8,595	61,893	16,827	78,720	
920	Busia	1,725	1,433	36,967	21,650	15,275	37,682	39,863	77,545	
930	Kakamega	3,604	3,122	111,696	100,978	10,644	119,990	22,116	142,106	
Total		580,909	477,465	1,161,771	853,048	306,672	1,213,176	1,414,199	2,627,375	

Note: Effective area is area excluding parks, forests, etc.  
Cost estimate was made on Location basis.

Table M11.6 Source Development Plan for Livestock Water Supply (1/4)

Code	District	Source Development Plan							Total	
		Surface Water	Borehole	Shallow Well	Small Dam	Subsurface Dam	Sand Dam	Existing Pipeline		
Nairobi Province										
110	Nairobi									
	- Quantity (m3/d)	0	0	0	0	0	0	0	0	0
	- No. of Facilities	0	0	0	0	0	0	0	0	0
	- Cost (mill.US\$)	0	0	0	0	0	0	0	0	0
	(mill.K£)	0	0	0	0	0	0	0	0	0
Central Province										
210	Kiambu									
	- Quantity (m3/d)	5,949	286	8	333	0	0	21		6,597
	- No. of Facilities	0	13	2	28	0	0	0		43
	- Cost (mill.US\$)	0	1.07	0.01	0.3	0	0	0		1.37
	(mill.K£)	0	1.35	0.01	0.37	0	0	0		1.73
220	Kirinyaga									
	- Quantity (m3/d)	3,779	58	14	154	0	0	0		4,005
	- No. of Facilities	0	2	3	12	0	0	0		17
	- Cost (mill.US\$)	0	0.22	0.01	0.08	0	0	0		0.32
	(mill.K£)	0	0.28	0.02	0.11	0	0	0		0.4
230	Muranga									
	- Quantity (m3/d)	5,734	19	79	305	0	0	0		6,137
	- No. of Facilities	0	1	16	23	0	0	0		40
	- Cost (mill.US\$)	0	0.07	0.08	0.11	0	0	0		0.26
	(mill.K£)	0	0.09	0.1	0.14	0	0	0		0.33
240	Nyanjarua									
	- Quantity (m3/d)	10,186	1,855	49	881	0	0	51		13,022
	- No. of Facilities	0	71	7	21	0	0	0		99
	- Cost (mill.US\$)	0	7.43	0.02	0.86	0	0	0		8.31
	(mill.K£)	0	9.36	0.03	1.09	0	0	0		10.48
250	Nyeri									
	- Quantity (m3/d)	4,969	0	0	200	0	0	0		5,169
	- No. of Facilities	0	0	0	27	0	0	0		27
	- Cost (mill.US\$)	0	0	0	0.11	0	0	0		0.11
	(mill.K£)	0	0	0	0.14	0	0	0		0.14
	Sub-total									
	- Quantity (m3/d)	30,617	2,218	150	1,873	0	0	72		34,930
	- No. of Facilities	0	87	28	111	0	0	0		226
	- Cost (mill.US\$)	0	8.79	0.12	1.46	0	0	0		10.37
	(mill.K£)	0	11.08	0.16	1.85	0	0	0		13.08
Coast Province										
310	Kilifi									
	- Quantity (m3/d)	237	1,255	2,371	8	8	7	39		3,925
	- No. of Facilities	0	47	482	4	5	5	0		543
	- Cost (mill.US\$)	0	4.39	2.26	0.01	0.02	0.01	0		6.7
	(mill.K£)	0	5.54	2.85	0.01	0.03	0.02	0		8.44
320	Kwale									
	- Quantity (m3/d)	921	2,639	2,529	65	17	49	75		6,295
	- No. of Facilities	0	68	504	12	10	15	0		609
	- Cost (mill.US\$)	0	9.57	2.29	0.08	0.04	0.1	0		12.07
	(mill.K£)	0	12.06	2.88	0.1	0.05	0.12	0		15.23
330	Lamu									
	- Quantity (m3/d)	0	1,203	1,442	0	0	0	0		2,645
	- No. of Facilities	0	32	293	0	0	0	0		325
	- Cost (mill.US\$)	0	4.04	1.41	0	0	0	0		5.44
	(mill.K£)	0	5.09	1.77	0	0	0	0		6.86
340	Mombasa									
	- Quantity (m3/d)	0	0	0	0	0	0	0		0
	- No. of Facilities	0	0	0	0	0	0	0		0
	- Cost (mill.US\$)	0	0	0	0	0	0	0		0
	(mill.K£)	0	0	0	0	0	0	0		0
350	Taita Taveta									
	- Quantity (m3/d)	1,876	1,167	1,468	96	22	22	87		4,738
	- No. of Facilities	0	33	295	7	9	9	0		353
	- Cost (mill.US\$)	0	4.06	1.43	0.13	0.06	0.04	0		5.72
	(mill.K£)	0	5.11	1.8	0.17	0.08	0.06	0		7.22
360	Tana River									
	- Quantity (m3/d)	2,100	1,852	3,779	65	47	47	30		7,920
	- No. of Facilities	0	56	649	10	9	9	0		733
	- Cost (mill.US\$)	0	6.64	3.02	0.09	0.13	0.1	0		9.98
	(mill.K£)	0	8.37	3.81	0.11	0.17	0.12	0		12.58
	Sub-total									
	- Quantity (m3/d)	5,134	8,116	11,589	234	94	125	231		25,523
	- No. of Facilities	0	236	2,223	33	33	38	0		2,563
	- Cost (mill.US\$)	0	28.7	10.41	0.31	0.25	0.25	0		39.91
	(mill.K£)	0	36.17	13.11	0.39	0.33	0.32	0		50.33



Table M11.6 Source Development Plan for Livestock Water Supply (2/4)

Code	District	Source Development Plan							Total
		Surface Water	Borehole	Shallow Well	Small Dam	Subsurface Dam	Sand Dam	Existing Pipeline	
Eastern Province									
410	Embu								
	- Quantity (m3/d)	2,176	596	710	102	3	3	12	3,602
	- No. of Facilities	0	20	146	17	3	3	0	189
	- Cost (mill.US\$)	0	2.13	0.7	0.08	0.01	0.01	0	2.92
	(mill.K£)	0	2.68	0.88	0.1	0.01	0.01	0	3.68
420	Isiolo								
	- Quantity (m3/d)	3,736	5,949	7,507	46	113	332	10	17,693
	- No. of Facilities	0	182	1,241	2	14	37	0	1,476
	- Cost (mill.US\$)	0	21.01	6.47	0.07	0.33	0.7	0	28.57
	(mill.K£)	0	26.49	8.15	0.08	0.41	0.89	0	36.03
430	Kisumu								
	- Quantity (m3/d)	542	3,111	6,236	74	224	197	84	10,468
	- No. of Facilities	0	103	1,251	6	36	34	0	1,430
	- Cost (mill.US\$)	0	11.46	5.91	0.1	0.64	0.4	0	18.5
	(mill.K£)	0	14.44	7.45	0.12	0.8	0.51	0	23.33
440	Machakos								
	- Quantity (m3/d)	3,927	2,726	5,032	444	95	65	154	12,443
	- No. of Facilities	0	96	994	34	33	28	0	1,185
	- Cost (mill.US\$)	0	9.93	4.69	0.6	0.26	0.13	0	15.61
	(mill.K£)	0	12.52	5.91	0.75	0.33	0.17	0	19.69
450	Marsabit								
	- Quantity (m3/d)	753	14,425	11,587	132	539	711	262	28,409
	- No. of Facilities	0	471	2,128	3	59	77	0	2,738
	- Cost (mill.US\$)	0	57.43	10.48	0.19	1.56	1.51	0	71.17
	(mill.K£)	0	72.42	13.21	0.24	1.97	1.91	0	89.75
460	Meru								
	- Quantity (m3/d)	10,891	5,417	1,622	624	61	13	2	18,630
	- No. of Facilities	0	171	331	39	11	8	0	560
	- Cost (mill.US\$)	0	19.7	1.6	0.71	0.17	0.03	0	22.21
	(mill.K£)	0	24.85	2.02	0.89	0.22	0.03	0	28.01
	Sub-total								
	- Quantity (m3/d)	22,025	32,224	32,694	1,422	1,035	1,321	524	91,245
	- No. of Facilities	0	1,043	6,091	101	156	187	0	7,578
	- Cost (mill.US\$)	0	121.66	29.85	1.75	2.97	2.78	0	158.98
	(mill.K£)	0	153.4	37.62	2.18	3.74	3.52	0	200.49
North Eastern Province									
510	Garissa								
	- Quantity (m3/d)	150	3,246	6,781	0	79	48	1	10,305
	- No. of Facilities	0	91	1,305	0	13	13	0	1,422
	- Cost (mill.US\$)	0	11.61	6.13	0	0.22	0.1	0	18.06
	(mill.K£)	0	14.63	7.73	0	0.28	0.12	0	22.77
520	Mandera								
	- Quantity (m3/d)	951	2,620	9,342	0	216	400	0	13,529
	- No. of Facilities	0	94	1,875	0	28	45	0	2,042
	- Cost (mill.US\$)	0	9.55	9.26	0	0.62	0.85	0	20.28
	(mill.K£)	0	12.04	11.67	0	0.78	1.07	0	25.57
530	Wajir								
	- Quantity (m3/d)	0	2,138	5,427	0	87	205	0	7,857
	- No. of Facilities	0	98	1,040	0	19	31	0	1,188
	- Cost (mill.US\$)	0	8.99	5.01	0	0.24	0.43	0	14.67
	(mill.K£)	0	11.34	6.32	0	0.31	0.54	0	18.5
	Sub-total								
	- Quantity (m3/d)	1,101	8,004	21,550	0	382	653	1	31,691
	- No. of Facilities	0	283	4,220	0	60	89	0	4,652
	- Cost (mill.US\$)	0	30.15	20.4	0	1.08	1.38	0	53.01
	(mill.K£)	0	38.01	25.72	0	1.37	1.73	0	66.84

Table M11.6 Source Development Plan for Livestock Water Supply (3/4)

Code	District	Source Development Plan							Total	
		Surface Water	Borehole	Shallow Well	Small Dam	Subsurface Dam	Sand Dam	Existing Pipeline		
Nyanza Province										
610	Kisi									
	- Quantity (m3/d)	13,430	275	299	563	0	0	0	14,567	
	- No. of Facilities	0	10	63	26	0	0	0	99	
	- Cost (mill.US\$)	0	1.01	0.29	0.29	0	0	0	1.58	
	(mill.K£)	0	1.27	0.37	0.36	0	0	0	2	
620	Kisumu									
	- Quantity (m3/d)	6,489	1,377	2,940	287	0	0	0	11,093	
	- No. of Facilities	0	41	384	16	0	0	0	441	
	- Cost (mill.US\$)	0	5.09	1.83	0.15	0	0	0	7.07	
	(mill.K£)	0	6.42	2.3	0.19	0	0	0	8.92	
630	Siaya									
	- Quantity (m3/d)	4,776	1,484	3,221	263	0	0	13	9,757	
	- No. of Facilities	0	62	623	28	0	0	0	713	
	- Cost (mill.US\$)	0	5.55	2.94	0.1	0	0	0	8.59	
	(mill.K£)	0	6.99	3.71	0.13	0	0	0	10.83	
640	South Nyanza									
	- Quantity (m3/d)	3,025	1,428	2,148	209	8	8	0	6,826	
	- No. of Facilities	0	68	366	47	8	8	0	497	
	- Cost (mill.US\$)	0	5.38	1.77	0.1	0.02	0.02	0	7.28	
	(mill.K£)	0	6.79	2.23	0.13	0.02	0.02	0	9.18	
	Sub-total									
	- Quantity (m3/d)	27,720	4,564	8,608	1,322	8	8	13	42,243	
	- No. of Facilities	0	181	1,436	117	8	8	0	1,750	
	- Cost (mill.US\$)	0	17.03	6.83	0.64	0.02	0.02	0	24.52	
	(mill.K£)	0	21.47	8.61	0.81	0.02	0.02	0	30.93	
Rift Valley Province										
710	Kajiado									
	- Quantity (m3/d)	9,193	9,559	7,539	593	160	190	174	27,408	
	- No. of Facilities	0	328	1,311	11	25	30	0	1,705	
	- Cost (mill.US\$)	0	37.2	6.52	0.8	0.46	0.4	0	45.37	
	(mill.K£)	0	46.91	8.22	1.01	0.57	0.5	0	57.21	
720	Kericho									
	- Quantity (m3/d)	25,541	281	238	1,148	0	0	0	27,208	
	- No. of Facilities	0	10	50	27	0	0	0	87	
	- Cost (mill.US\$)	0	1.12	0.22	0.61	0	0	0	1.94	
	(mill.K£)	0	1.41	0.27	0.77	0	0	0	2.44	
730	Laikipia									
	- Quantity (m3/d)	6,650	9,227	1,816	943	113	91	0	18,840	
	- No. of Facilities	0	279	360	20	21	18	0	698	
	- Cost (mill.US\$)	0	35.51	1.75	1.22	0.32	0.19	0	38.99	
	(mill.K£)	0	44.77	2.21	1.53	0.4	0.24	0	49.16	
740	Nakuru									
	- Quantity (m3/d)	19,604	14,484	2,694	1,925	182	117	1,762	40,768	
	- No. of Facilities	0	470	277	26	25	22	0	820	
	- Cost (mill.US\$)	0	56.82	1.44	1.64	0.52	0.24	0	60.66	
	(mill.K£)	0	71.65	1.81	2.07	0.66	0.3	0	76.49	
750	Narok									
	- Quantity (m3/d)	25,717	11,730	13,201	1,954	151	139	77	52,969	
	- No. of Facilities	0	392	2,326	28	22	21	0	2,789	
	- Cost (mill.US\$)	0	44.52	11.27	1.63	0.43	0.29	0	58.14	
	(mill.K£)	0	56.14	14.22	2.05	0.54	0.37	0	73.32	
760	Trans Nzoia									
	- Quantity (m3/d)	6,529	0	0	268	0	0	0	6,797	
	- No. of Facilities	0	0	0	15	0	0	0	15	
	- Cost (mill.US\$)	0	0	0	0.17	0	0	0	0.17	
	(mill.K£)	0	0	0	0.21	0	0	0	0.21	
770	Uasin Gishu									
	- Quantity (m3/d)	11,335	0	0	466	0	0	0	11,801	
	- No. of Facilities	0	0	0	22	0	0	0	22	
	- Cost (mill.US\$)	0	0	0	0.28	0	0	0	0.28	
	(mill.K£)	0	0	0	0.35	0	0	0	0.35	

Table M11.6 Source Development Plan for Livestock Water Supply (4/4)

Code	District	Source Development Plan							Total
		Surface Water	Borehole	Shallow Well	Small Dam	Subsurface Dam	Sand Dam	Existing Pipeline	
810	Baringo								
	- Quantity (m3/d)	3,932	3,067	1,574	210	30	26	51	8,890
	- No. of Facilities	0	97	172	31	16	12	0	328
	- Cost (mill.US\$)	0	11.11	0.84	0.18	0.08	0.05	0	12.25
	(mill.K£)	0	14.01	1.05	0.23	0.1	0.07	0	15.45
	820	Elgey Marakwet							
- Quantity (m3/d)	9,895	1,730	4,028	455	24	0	207	16,339	
- No. of Facilities	0	63	675	25	3	0	0	766	
- Cost (mill.US\$)	0	6.61	3.46	0.39	0.07	0	0	10.52	
(mill.K£)	0	8.33	4.36	0.49	0.09	0	0	13.27	
830	Nandi								
	- Quantity (m3/d)	12,211	0	0	414	0	0	0	12,625
	- No. of Facilities	0	0	0	23	0	0	0	23
- Cost (mill.US\$)	0	0	0	0.22	0	0	0	0.22	
(mill.K£)	0	0	0	0.28	0	0	0	0.28	
840	Samburu								
	- Quantity (m3/d)	909	4,702	6,544	86	112	155	2	12,510
	- No. of Facilities	0	242	1,287	6	21	24	0	1,580
- Cost (mill.US\$)	0	20.68	5.98	0.12	0.32	0.32	0	27.42	
(mill.K£)	0	26.07	7.54	0.15	0.4	0.41	0	34.57	
850	Turkana								
	- Quantity (m3/d)	3,781	22,265	34,948	64	1,157	1,417	0	63,632
	- No. of Facilities	0	796	5,765	2	124	150	0	6,837
- Cost (mill.US\$)	0	80.87	29.46	0.09	3.35	3.02	0	116.78	
(mill.K£)	0	101.97	37.15	0.11	4.22	3.8	0	147.26	
860	West Pokot								
	- Quantity (m3/d)	1,588	692	2,095	75	20	10	0	4,480
	- No. of Facilities	0	38	417	14	10	7	0	486
- Cost (mill.US\$)	0	2.85	1.88	0.07	0.05	0.02	0	4.87	
(mill.K£)	0	3.6	2.37	0.09	0.07	0.03	0	6.14	
Sub-total	- Quantity (m3/d)	136,885	77,737	74,677	8,601	1,949	2,145	2,273	304,267
	- No. of Facilities	0	2,715	12,640	250	267	284	0	16,156
	- Cost (mill.US\$)	0	297.29	62.82	7.42	5.6	4.53	0	377.61
	(mill.K£)	0	374.86	79.2	9.34	7.05	5.72	0	476.15
Western Province									
910	Bungoma								
	- Quantity (m3/d)	8,921	167	409	425	0	0	0	9,922
	- No. of Facilities	0	9	84	19	0	0	0	112
- Cost (mill.US\$)	0	0.57	0.4	0.22	0	0	0	1.19	
(mill.K£)	0	0.72	0.5	0.28	0	0	0	1.5	
920	Busia								
	- Quantity (m3/d)	3,860	645	1,643	162	5	4	0	6,319
	- No. of Facilities	0	28	308	16	3	2	0	357
- Cost (mill.US\$)	0	2.5	1.53	0.09	0.01	0.01	0	4.14	
(mill.K£)	0	3.16	1.92	0.11	0.02	0.01	0	5.22	
930	Kakamega								
	- Quantity (m3/d)	12,226	0	0	365	0	0	0	12,591
	- No. of Facilities	0	0	0	41	0	0	0	41
- Cost (mill.US\$)	0	0	0	0.14	0	0	0	0.14	
(mill.K£)	0	0	0	0.17	0	0	0	0.17	
Sub-total	- Quantity (m3/d)	25,007	812	2,052	952	5	4	0	28,832
	- No. of Facilities	0	37	392	76	3	2	0	510
	- Cost (mill.US\$)	0	3.07	1.93	0.45	0.01	0.01	0	5.47
	(mill.K£)	0	3.88	2.42	0.56	0.02	0.01	0	6.89
Total	- Quantity (m3/d)	248,489	133,675	151,320	14,404	3,473	4,256	3,114	558,731
	- No. of Facilities	0	4,582	27,030	688	527	608	0	33,435
	- Cost (mill.US\$)	0	506.69	132.36	12.03	9.93	8.97	0	669.87
	(mill.K£)	0	638.87	166.84	15.13	12.53	11.32	0	844.71

Table M11.7 Allocation of Dam Costs

(Unit : thousand US\$)

No.	Name of Dam	Construction Cost	Allocation of Dam Cost		
			Hydropower	Irrigation	Water Supply
1	Moiben	14,724			1 13,779 (Eldoret)
					2 945 (Iten)
					964 (Kakamega)
2	Mukulosi	964			54,550 (Londiani)
3	Londiani	54,550			23,836 (Kisumu)
4	Kibos	23,836			1 17,125 (Nakuru)
5	Itare	21,425			2 1,195 (Njoro)
					3 1,633 (El Burgon)
					4 1,472 (Molo)
6	Magwagwa	169,702	169,702	- (Kano Plain)	
7	Bunyonyu	4,284			1 3,958 (Kisii)
					2 270 (Keroka)
					3 56 (Manga)
8	Malewa	47,628			1 10,478 (Naivasha)
					2 31,910 (Gilgil)
					3 5,240 (Nakuru)
9	Upper Narok	13,192			13,192 (Narok)
10	Oldorko	121,620	121,620	- (E. Ng'iro)	- (Magadi)
11	Upper Athi	6,519			6,519 (Athi River)
12	Ruiru-A	48,920			48,920 (Nairobi)
13	Kikuyu	8,250			8,250 (Kikuyu)
14	Ndarugu	42,227		8,167 (Kanzalu)	34,060 (Nairobi)
15	Yatta	145,235		145,235 (Kibwezi)	
16	Rare	35,117			35,117 (Malindi)
17	Mwachi	97,013			97,013 (Mombasa)
18	Pemba	1,100			1,100 (Mombasa)
19	Chania-B	113,527			113,527 (Nairobi)
20	Thiba	22,208		22,208 (Mwea)	
21	Mutonga	117,944	117,944		
22	Low Grand Falls	242,260	242,260		
23	Rumuruti	4,310			4,310 (Rumuruti)
24	Nyahururu	2,943			2,943 (Nyahururu)
25	Sondu/Miriu *	5,200	5,200		
26	Chemususu *	20,197			1 16,607 (E. Ravine)
					2 3,590 (Mogotio)
27	Kirandich *	20,000			20,000 (Kabarnet)
28	Kiambaa *	4,708			1 3,006 (Karuri)
					2 1,702 (Kiambu)
<b>TOTAL</b>		<b>1,409,603</b>	<b>656,726</b>	<b>175,610</b>	<b>577,268</b>

Note : 1) Cost is tentatively allocated in proportion to water use quantity.

2) Whole cost by power in case of hydropower dam scheme.

3) Marked "\*" is committed scheme.