

WRMA Catchment	No.	Name of Project	Project Status	Capacity to be developed (m ³ /day)			Implementation Schedule																			
							Short Term					Medium Term					Long Term									
							2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
				13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31					
Total	Initial Develop	Ratio																								
LVS	1	Kisumu and Surrounding Area	WSB, MTP, F/S*	166,352	60,000	36%																				
							Kisumu	WSB, F/S*	124,289	37,287	30%															
												Ahero, Awasi, Kipkelion, Londiani, Muhoroni (6 UC)	WSB, F/S*													
	2	Kisii and Surrounding Area	WSB, MTP, F/S	29,501	24,000	81%																				
							Kisii	WSB, F/S	128,708	2,000	2%															
												Rongo, Suneka, Keroka, Awendo, Tabaka, Ogembo (6 UC)	WSB, D/D													
	3	Kericho	WSB, F/S	48,026	14,000	29%																				
	4	Bomet	WSB, F/S	49,706	8,000	16%																				
	5	Homabay	WSB, F/S*	20,475	2,000	10%																				
	6	Nyamira, Oyugis (2 UC)	WSB, D/D	41,076	36,000	88%																				
	7	Mbita Point	WSB, F/S	7,182	4,000	56%																				
	8	Litein, Sotik (2 UC)	WSB, F/S	8,000	8,000	100%																				
	9	Migori	WSB, D/D	15,752	4,726	30%																				
10	Kehancha	-	17,716	5,315	30%																					
11	Kendu Bay	-	8,114	2,434	30%																					
12	Nyansiongo	-	2,777	833	30%																					
Rehabilitation for 22 Urban Centres																										
Total Urban Water Supply Projects			667,674	208,594	31%																					
Water Resources Development for Rural Water Supply																										
Rural Water Supply Projects																										

Note: As for “Project Status”, “WSB” means a project proposed by WSB, “MTP” means a flagship project proposed in the First Medium Term Plan (2008 – 2019) of Kenya Vision 2030, and “F/S” means a project proposed in the completed F/S.

Source: JICA Study Team

全国水資源マスタープラン 2030 策定プロジェクト 国際協力機構	図 15.2.1 上水道開発計画の実実施スケジュール(2/6) (LVSCA)
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WRWA Catchment	No.	Name of Project	Project Status	Capacity to be developed (m ³ /day)			Implementation Schedule																						
							Short Term					Medium Term				Long Term													
				Total	Initial Develop.	Ratio	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030					
							13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31					
RV	1	Greater Nakuru Area					Itare Dam					Londiani Dam				Malewa Dam (for Naivasha)				Transmission from Itare Dam and Londiani Dam									
		Nakuru, Naivasha, Molo, Gilgil, Njoro, Eldama Ravine (6UC)	WSB, F/S	192,374	100,000	52%																							
	2	Kabarnet	WSB, F/S	1,221	1,221	100%																							
	3	Oi Kalou	WSB, MTP	34,858	10,000	29%																							
	4	Narok	WSB, MTP	21,274	4,600	22%	Upper Narok Dam																						
	5	Lodwar	MTP	4,018	1,205	30%																							
	6	Mai Mahiu	-	6,984	2,095	30%																							
	7	Kakuma	-	5,408	1,622	30%																							
	8	Lokichogio	-	2,595	779	30%																							
		Rehabilitation for 11 Urban Centres																											
Total Urban Water Supply Projects				268,732	121,522	45%	322.6					435.6				420.8													
	Water Resources Development for Rural Water Supply								Arros Dam			Oletukat Dam			Leshota Dam			Oldorko Dam			Kimwarer Dam			Embobut Dam			Waseges Dam		
Rural Water Supply Projects in RVCA																													

Note: As for "Project Status", "WSB" means a project proposed by WSB, "MTP" means a flagship project proposed in the First Medium Term Plan (2008 - 2019) of Kenya Vision 2030, and "F/S" means a project proposed in the completed F/S.

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.1
上水道開発計画の実施スケジュール(3/6)
(RVCA)

WRWA Catchment	No.	Name of Project	Project Status	Capacity to be developed (m ³ /day)			Implementation Schedule																																		
				Total	Initial Develop.	Ratio	Short Term					Medium Term					Long Term																								
							2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030																	
	1	Nairobi and Satellite Towns																																							
		Nairobi	WSB, MTP, F/S	961,207	635,000	66%																																			
		Ruiru, Kikuyu, Kangundd-Tala, Mavoko, Thika, Karuri, Ngong, Kiambu, Limuru, Kileleshwa, Juja, Ongata Rongai, Kiserian, Githunguri (14UC)	WSB, MTP, F/S	86,505	5,000	6%																																			
		Machakos	WSB, MTP, F/S																																						
	2	Mombasa and Coastal Area																																							
		Mombasa	WSB, MTP, F/S	449,919	363,000	81%																																			
		Mtwapa, Mariakani, Kwale, Malindi, Ukunda, Kilifi, Watamu, Msambweni (8UC)	WSB, MTP, F/S																																						
	3	Kajiado	WSB	7,902	1,000	13%																																			
	4	Wote	WSB, MTP, F/S	5,390	2,000	37%																																			
	5	Wundanyi	-	21,331	6,399	30%																																			
	6	Tavela	-	11,900	3,570	30%																																			
	7	Voi	-	9,574	2,872	30%																																			
	8	Loitoktok	-	6,727	2,018	30%																																			
	9	Mitto Andei	-	0	0	0%																																			
		Rehabilitation for 27 Urban Centres																																							
		Total Urban Water Supply Projects		1,560,456	1,020,860	65%																																			
		Water Resources Development for Rural Water Supply																																							
		Rural Water Supply Projects																																							

Note: As for "Project Status", "WSB" means a project proposed by WSB, "MTP" means a flagship project proposed in the First Medium Term Plan (2008 - 2019) of Kenya Vision 2030, and "F/S" means a project proposed in the completed F/S.

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.1
上水道開発計画の実施スケジュール(4/6)
(ACA)

WRWA Catchment	No.	Name of Project	Project Status	Capacity to be developed (m ³ /day)			Implementation Schedule																		
							Short Term					Medium Term					Long Term								
				Total	Initial Develop.	Ratio	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
			13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31					
Tana	Upstream of Tana Catchment																								
	1	Nyeri	WSB, F/S	49,587	49,587		Nyeri County Bulk Water Supply																		
	2	Karatina																							
	3	Olhaya																							
	4	Embu	WSB, F/S	36,048	36,048		Embu Bulk Water Supply																		
	5	Runyenjes																							
	6	Muranga	WSB, F/S, MTP	37,943	37,943		Meru Bulk Water Supply																		
	7	Maua																							
	8	Chuka	WSB, F/S, MTP	39,761	39,761		Tharaka Nithi Bulk Water Supply																		
	9	Chogoria																							
	10	Muranga	WSB, F/S	44,549	44,549		Muranga/Maragua Bulk Water Supply																		
	11	Maragua																							
	12	Makuyu																							
	13	Kerugoya/Kutus	WSB, F/S	18,129	18,129		Kirinyaga Bulk Water Supply																		
	14	Wanguru																							
15	Sagana																								
Other Area																									
16	Lamu	MTP	105,350	31,605	30%	High Grand Fall Dam and Transmission																			
17	Garissa	-	4,418	4,418	100%																				
18	Madogo	-	2,298	2,298	100%																				
19	Msalani	-	2,186	2,186	100%																				
20	Hola	WSB, F/S	689	207	30%																				
21	Kitui	WSB, F/S	57,884	9,000	16%																				
22	Matuu	MTP	29,699	8,910	30%																				
23	Garissa	WSB, F/S	8,149	2,000	25%	Transmission to Muwangi																			
Rehabilitation for 16 Urban Centres																									
Total Urban Water Supply Projects			436,690	286,640	66%																				
Rural Water Supply Projects																									

Note: As for "Project Status", "WSB" means a project proposed by WSB, "MTP" means a flagship project proposed in the First Medium Term Plan (2008 – 2019) of Kenya Vision 2030, and "F/S" means a project proposed in the completed F/S.

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.1
上水道開発計画の実施スケジュール(5/6)
(TCA)

WRMA Catchment	No.	Urban Centre	F/S Status	Capacity to be developed (m ³ /day)			Implementation Schedule																												
							Short Term					Medium Term					Long Term																		
				Total	Initial Develop.	Ratio	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030											
							13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31											
LVN	1	Bondo	WSB, D/D	12,838	3,851	30%	■	■	■																										
	2	Siaya	WSB, D/D	5,495	2,000	36%	■	■	■																										
	3	Malaba	WSB, F/S	8,238	2,471	30%				■	■	■														■	■	■							
	4	Moi's Bridge	WSB, F/S, MTP	4,440	5,000	100%				■	■	■																							
	5	Matunda	WSB, F/S, MTP	2,868	3,600	126%				■	■	■																							
	6	Kapenguria	MTP	13,059	3,918	30%								■	■	■											■	■	■						
	7	Eldoret	-	79,439	23,832	30%								■	■	■											■	■	■						
	8	Vihiga	-	45,529	13,659	30%								■	■	■												■	■	■					
	9	Kitale	-	39,931	11,979	30%								■	■	■												■	■	■					
	10	Mumias	-	38,353	11,506	30%																													
	11	Kimilili	-	36,412	10,924	30%																													
	12	Kakamega	-	32,500	9,750	30%																													
	13	Kapsabet	-	30,796	9,239	30%																													
	14	Bungoma	-	16,929	16,929	100%																					■	■	■						
	15	Busia	-	16,939	16,939	100%																						■	■	■					
	16	Luanda	-	18,928	18,928	100%																						■	■	■					
	17	Item/Tambach	-	16,230	16,230	100%																						■	■	■					
	18	Webuye	-	13,159	13,159	100%																						■	■	■					
	19	Malakisi	-	6,553	6,553	100%																													
		Nambale	WSB, F/S								■	■	■																						
	Rehabilitation Works for 7 Urban Centres						■	■	■	■	■	■																							
	Total		438,636	200,466	46%																														

Note: As for "Project Status", "WSB" means a project proposed by WSB, "MTP" means a flagship project proposed in the First Medium Term Plan (2008 – 2019) of Kenya Vision 2030, and "F/S" means a project proposed in the completed F/S.

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.2
下水道開発計画の実施スケジュール(1/6)
(LVNCA)

WFRMA Catchment	No.	Urban Centre	F/S Status	Capacity to be developed (m ³ /day)			Implementation Schedule																													
				Total	Initial Develop.	Ratio	Short Term					Medium Term					Long Term																			
							2013 13/14	2014 14/15	2015 15/16	2016 16/17	2017 17/18	2018 18/19	2019 19/20	2020 20/21	2021 21/22	2022 22/23	2023 23/24	2024 24/25	2025 25/26	2026 26/27	2027 27/28	2028 28/29	2029 29/30	2030 30/31												
LVS	1	Kisumu	WSB, F/S, MTP	118,303	27,972	30%																														
	2	Bomet	WSB, F/S	32,117	1,750	5%																														
	5	Homa Bay	WSB	15,402	4,500	29%																														
	3	Migori	WSB, F/S	20,368	6,000	29%																														
	4	Muhoroni	WSB, F/S	13,217	2,000	15%																														
	6	Kisii	WSB, MTP	30,117	6,000	19%																														
	8	Kericho	WSB	37,551	4,500	12%																														
	7	Rongo	-	39,579	11,874	30%																														
	9	Suneka	-	19,493	5,848	30%																														
	10	Ahero	-	19,459	19,459	100%																														
	11	Kipkelion	-	17,936	17,936	100%																														
	12	Londiani	-	16,552	16,552	100%																														
	13	Nyamira	-	15,983	15,983	100%																														
	14	Keroka	-	15,978	15,978	100%																														
	15	Oyugis	-	13,598	13,598	100%																														
	16	Awasi	-	13,127	13,127	100%																														
	17	Kehanchara	-	11,549	11,549	100%																														
	18	Awendo	-	6,111	6,111	100%																														
	19	Kendu Bay	-	5,657	5,657	100%																														
		Maseno	WSB, F/S (additional)																																	
	Chemelil	WSB, F/S (additional)																																		
	Rehabilitation Works for 4 Urban Centres																																			
	Total			462,096	206,392	45%																														

Note: As for "Project Status", "WSB" means a project proposed by WSB, "MTP" means a flagship project proposed in the First Medium Term Plan (2008 – 2019) of Kenya Vision 2030, and "F/S" means a project proposed in the completed F/S.

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.2
下水道開発計画の実施スケジュール(2/6)
(LVSCA)

WFRMA Catchment	No.	Urban Centre	F/S Status	Capacity to be developed (m ³ /day)			Implementation Schedule																								
							Short Term						Medium Term						Long Term												
				Total	Initial Develop.	Ratio	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030							
							13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31							
RV	1	Kabarnet	WSB, D/D (additional)	2,380	2,380	100%																									
	2	Nakuru	WSB, F/S	71,871	70,000	97%																									
	3	Eldama Ravine	WSB, F/S (additional)	6,855	6,855	100%																									
	4	Naivasha	WSB	63,946	12,000	19%																									
	5	Oi Kalou	WSB, MTP	25,322	7,000	28%																									
	6	Molo	WSB	14,333	4,300	30%																									
	7	Narok	WSB, MTP	14,826	3,220	22%																									
	8	Gilgil	-	13,538	4,061	30%																									
	9	Njoro	-	9,034	9,034	100%																									
		Rehabilitation Works for 3 Urban Centres																													
	Total			222,105	118,850	54%																									

Note: As for "Project Status", "WSB" means a project proposed by WSB, "MTP" means a flagship project proposed in the First Medium Term Plan (2008 – 2019) of Kenya Vision 2030, and "F/S" means a project proposed in the completed F/S.

Source: JICA Study Team

全国水資源マスタープラン 2030 策定プロジェクト	図 15.2.2 下水道開発計画の実施スケジュール(3/6) (RVCA)
国際協力機構	

WFRMA Catchment	No.	Urban Centre	F/S Status	Capacity to be developed (m ³ /day)			Implementation Schedule															
							Short Term					Medium Term					Long Term					
				Total	Initial Develop.	Ratio	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
			13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31		
Athi	1	Ruiru	WSB, MTP, D/D	79,868	40,000	50%																
	2	Juja																				
	3	Kikuyu	WSB, D/D	66,693	20,000	30%																
	4	Nairobi	WSB, MTP, F/S	376,367	60,000	22%																
	5	Limuru	WSB, MTP, F/S	12,742	20,000	157%																
	6	Mombasa	WSB, MTP, F/S	229,905	55,325	30%																
	7	Mavoko	WSB, MTP, F/S	26,276	10,000	38%																
	8	Karuri	WSB, MTP	30,802	30,802	100%																
	9	Kiambu	WSB	14,064	24,064	100%																
	10	Ngong	WSB, F/S	36,131	7,500	24%																
	11	Kiserian																				
	12	Kajiado	WSB, F/S	5,700	500	9%																
	13	Kangundd-Tala	WSB	62,497	62,497	100%																
	14	Machakos	WSB, MTP	55,552	57,552	100%																
	15	Ukunda	WSB	17,880	7,880	100%																
	16	Malindi	-	33,818	33,818	100%																
	17	Kitengela	-	16,633	16,633	100%																
	18	Wundanyi	-	14,107	14,107	100%																
	19	Kilifi	-	13,962	13,962	100%																
	20	Mtwapa	-	13,905	13,905	100%																
	21	Ongata Rongai	-	11,489	11,489	100%																
	22	Taveta	-	7,620	7,620	100%																
	23	Mariakani	-	6,879	6,879	100%																
	24	Voi	-	6,579	6,579	100%																
	25	Kwale	-	5,662	5,662	1																
	Kibwezi	WSB, F/S (additional)	0																			
	Makindu	WSB, F/S (additional)	0																			
	Mtito Andei	WSB, F/S (additional)	0																			
	Emali	WSB, F/S (additional)	0																			
	Sultan Hamud	WSB, F/S (additional)	0																			
	Loitokitok	WSB, F/S (additional)	0																			
	Wote	WSB, F/S (additional)	0																			
	Rehabilitation Works for 5 Urban Centres																					
	Total			1,145,133	526,776	46%																

Note: As for "Project Status", "WSB" means a project proposed by WSB, "MTP" means a flagship project proposed in the First Medium Term Plan (2008 – 2019) of Kenya Vision 2030, and "F/S" means a project proposed in the completed F/S.

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.2
下水道開発計画の実施スケジュール(4/6)
(ACA)

WFRMA Catchment	No.	Urban Centre	F/S Status	Capacity to be developed (m ³ /day)			Implementation Schedule																			
							Short Term					Medium Term					Long Term									
				Total	Initial Develop.	Ratio	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
							13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31		
Tana	1	Embu	WS, D/D	22,587	6,387	27%	■	■	■								■	■	■							
	2	Maua	WSB, MTP, D/D	6,608	1,982	30%		■	■	■							■	■	■							
	3	Kitui	WSB, MTP, F/S	42,028	5,000	23%					■	■	■					■	■	■						
	4	Meru	WSB, F/S	19,570	10,000	50%			■	■	■							■	■	■						
	5	Lamu	MTP	95,250	26,145	30%					■	■	■					■	■	■						
	7	Thika	WSB, F/S	19,152	40,000	153%			■	■	■															
	6	Chuka	WSB, MTP, F/S*	16,674	3,000	18%			■	■	■								■	■	■					
	7	Garissa	WSB, F/S	9,923	1,561	17%					■	■	■						■	■	■					
	8	Chogoria	F/S*	10,899	3,270	30%			■	■	■								■	■	■					
	9	Runyenjes	WSB, F/S*	7,498	2,249	30%				■	■	■									■	■				
	10	Kerugoya/Kutus	WSB, F/S*	7,450	2,235	30%							■	■	■						■	■				
	11	Nyeri	WSB	37,681	5,000	11%							■	■	■						■	■				
	12	Matuu	MTP	19,467	19,467	100%												■	■	■						
	13	Makuyu	WSB	16,880	16,880	100%												■	■	■						
	14	Muranga	-	9,476	11,037	100%															■	■				
	15	Maragua	-	10,116	10,116	100%															■	■				
	16	Wanguru	-	9,199	9,199	100%															■	■				
	17	Mwingi	-	6,126	6,126	100%															■	■				
Rehabilitation Works for 6 Urban Centres							■	■	■																	
Total				366,585	179,655	49%																				

Note: As for "Project Status", "WSB" means a project proposed by WSB, "MTP" means a flagship project proposed in the First Medium Term Plan (2008 – 2019) of Kenya Vision 2030, and "F/S" means a project proposed in the completed F/S.

Source: JICA Study Team





全国水資源マスタープラン 2030 策定プロジェクト	図 15.2.2 下水道開発計画の実施スケジュール(5/6) (TCA)
国際協力機構	

WFRMA Catchment	No.	Urban Centre	F/S Status	Capacity to be developed (m ³ /day)			Implementation Schedule																							
							Short Term						Medium Term						Long Term											
				Total	Initial Develop.	Ratio	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030						
							13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31						
ENN	1	Nyahururu	WSB, F/S	11,364	3,347	29%																								
	2	Mandera	WSB, D/D	8,235	4,000	49%																								
	3	Isiolo	MTP	15,640	4,692	30%																								
	4	Wajir	MTP	7,776	2,333	30%																								
	5	Nanyuki	-	14,652	4,396	30%																								
	Rehabilitation Works for 2 Urban Centres																													
Total				57,667	18,767	33%																								





Note: As for "Project Status", "WSB" means a project proposed by WSB, "MTP" means a flagship project proposed in the First Medium Term Plan (2008 – 2019) of Kenya Vision 2030, and "F/S" means a project proposed in the completed F/S.

Source: JICA Study Team

全国水資源マスタープラン 2030 策定プロジェクト	図 15.2.2 下水道開発計画の実施スケジュール(6/6) (ENNCA)
国際協力機構	





No	Name of Project	County	Irrigation Area (ha)	Multi-purpose Dam	Short Term					Medium Term					Long Term							
					2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
					13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
A. Large Scale Irrigation Project (New)																						
1	Lower Nzoia Irrigation	Busia/Siaya	10,470	Nzoia (42A)	[Construction of Multipurpose Dam]					[Construction of Multipurpose Dam]					[Construction of Multipurpose Dam]							
2	Lower Sio Irrigation	Busia	6,600	-	[Construction of Irrigation System]					[Construction of Irrigation System]					[Construction of Irrigation System]							
3	Yala Swamp Irrigation	Siaya	4,600	-	[Construction of Irrigation System]					[Construction of Irrigation System]					[Construction of Irrigation System]							
4	Upper Nzoia Irrigation	Bungoma	24,000	Nzoia (34B)	[Construction of Multipurpose Dam]					[Construction of Multipurpose Dam]					[Construction of Multipurpose Dam]							
5	Moi's Bridge Irrigation	Bungoma	19,800	Moi's Bridge	[Construction of Irrigation System]					[Construction of Irrigation System]					[Construction of Irrigation System]							
6	Kibolo Irrigation	Kakamega	11,500	Kibolo	[Construction of Irrigation System]					[Construction of Irrigation System]					[Construction of Irrigation System]							
	On-going Weir Irrigation		1,400		[Construction of Irrigation System]					[Construction of Irrigation System]					[Construction of Irrigation System]							
Total			78,370		14,282					8,788					55,300							
B. Small Scale Irrigation Project (New)																						
1	Weir Irrigation		41,638		8,328					12,491					20,819							
2	Dam Irrigation		0		0					0					0							
3	Small Dam/Pond/Water Pan Irrigation		3,700		740					1,110					1,850							
4	Groundwater Irrigation		1,784		357					535					892							
Total for B			47,122		9,425					14,136					23,561							
C. Private Irrigation Project (New)																						
1	Weir Irrigation		41,637		8,327					12,491					20,819							
2	Groundwater Irrigation		1,784		357					535					892							
Total for C			43,421		8,684					13,026					21,711							
Total for LVNCA			168,913		32,391					35,950					100,572							
<p>Note:</p> <p> F/S and/or D/D</p> <p> Procurement</p> <p> Construction of Irrigation System</p> <p> Construction of Multipurpose Dam</p>																						
Source: JICA Study Team																						
全国水資源マスタープラン 2030 策定プロジェクト										図 15.2.3 灌漑開発計画の実施スケジュール(1/6) (LVNCA)												
国際協力機構																						

No	Name of Project	County	Irrigation Area (ha)	Multi-purpose Dam	Short Term					Medium Term					Long Term							
					2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
					13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
A. Large Scale Irrigation Project (New)																						
1	Kano Plain Irrigation	Nyamira/Kericho	15,000	Magwagwa																		
2a	Lower Kuja Irrigation (Stage-1)	Migori	7,800	-																		
2b	Lower Kuja Irrigation (Stage-2)	Migori	32,700	Katieno																		
3	Ahero and West Kano Irrigation	Kisumu	1,800	-																		
4	Nandi Forest Irrigation	Nyando, Kisumu	7,272	Nandi Forest																		
5	Nyando Irrigation	Kericho	3,000	Nyando (Koru)																		
6	Amala Irrigation	Bomet	5,000	Amala																		
7	Ilooiterra Irrigation	Narok	3,000	Ilooiterra																		
Total			75,572																			
					7,800					16,800					50,972							
B. Small Scale Irrigation Project (New)																						
1	Weir Irrigation		14,477																			
2	Dam Irrigation		0																			
3	Small Dam/Pond/Water Pan Irrigation		4,590																			
4	Groundwater Irrigation		3,434																			
Total for B			22,501																			
					4,500					6,750					11,251							
C. Private Irrigation Project (New)																						
1	Weir Irrigation		11,700																			
2	Groundwater Irrigation		3,433																			
Total for C			15,133																			
					3,027					4,540					7,566							
Total for LVSCA			113,206																			
					15,327					28,090					69,789							
<p>Note:</p>																						
Source: JICA Study Team																						
全国水資源マスタープラン 2030 策定プロジェクト										図 15.2.3 灌漑開発計画の実施スケジュール(2/6) (LVSCA)												
国際協力機構																						

No	Name of Project	County	Irrigation Area (ha)	Multi-purpose Dam	Short Term					Medium Term					Long Term							
					2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
					13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
A. Large Scale Irrigation Project (New)																						
1	Perkera Irrigation Extention	Baringo	3,000	-																		
2	Turkwel Irrigation	West Pokot	5,000	Turkwel																		
3	Arror Irrigation	Elgeyo Marakwet	10,850	Arror																		
4	Norera Irrigation	Narok	2,000	Upper Narok																		
5	Lower Ewaso Ng'iro Irrigation	Kajiado	15,000	Oldorko/Oletukat																		
6	Todonyang-Omo Irrigation	Turkana	35,000	Gibe 3 Ethiopia																		
7	Kimwarer Irrigation	Baringo	2,000	Kimwarer																		
8	Oldekesi Irrigation	Narok	2,000	-																		
9	Embobut Irrigation	Elgeyo Marakwet	2,000	Embobut																		
	On-going Weir Irrigation		2,000																			
Total			78,850		2,000					17,850					59,000							
B. Small Scale Irrigation Project (New)																						
1	Weir Irrigation		5,335																			
					1,067					1,601					2,667							
2	Dam Irrigation		0		0					0					0							
3	Small Dam/Pond/Water Pan Irrigation		2,890		578					867					1,445							
4	Groundwater Irrigation		1,046		209					314					523							
Total for B			9,271		1,854					2,782					4,635							
C. Private Irrigation Project (New)																						
1	Weir Irrigation		3,000																			
					600					900					1,500							
2	Groundwater Irrigation		1,045		209					314					522							
Total for C			4,045		809					1,214					2,022							
Total for RVCA			92,166		4,663					21,846					65,657							
<p>Note:</p> <p> F/S and/or D/D</p> <p> Procurement</p> <p> Construction of Irrigation System</p> <p> Construction of Multipurpose Dam</p>																						
Source: JICA Study Team																						
<p>全国水資源マスタープラン 2030 策定プロジェクト</p>										<p>図 15.2.3 灌漑開発計画の実施スケジュール(3/6) (RVCA)</p>												
国際協力機構																						

No	Name of Project	County	Irrigation Area (ha)	Multi-purpose Dam	Short Term					Medium Term					Long Term									
					2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
					13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31		
A. Large Scale Irrigation Project (New)																								
1	Taita Taveta Irrigation Extension	Taita Taveta	3,780	-																				
2	Mt. Kilimanjaro Spring Irrigation	Kajiado	1,500	-																				
3	Kibwezi Irrigation Extension	Makueni	17,000	Thwake																				
4	Kanzal Irrigation Extension	Makueni	15,000	Munyu																				
Total			37,280																					
					0	5,280					32,000													
B. Small Scale Irrigation Project (New)																								
1	Weir Irrigation		35																					
2	Dam Irrigation		0																					
3	Small Dam/Pond/Water Pan Irrigation		4,140																					
4	Groundwater Irrigation		2,309																					
Total for B			6,484																					
					1,325	1,935					3,224													
C. Private Irrigation Project (New)																								
1	Weir Irrigation		35																					
2	Groundwater Irrigation		2,309																					
Total for C			2,344																					
					497	693					1,154													
Total for ACA			46,108																					
					1,822	7,908					36,378													

Note:

-  F/S and/or D/D
-  Procurement
-  Construction of Irrigation System
-  Construction of Multipurpose Dam

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.3
灌漑開発計画の実施スケジュール(4/6)
(ACA)

No	Name of Project	County	Irrigation Area (ha)	Multi-purpose Dam	Short Term					Medium Term					Long Term							
					2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
					13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
A. Large Scale Irrigation Project (New)																						
1	Hola Irrigation	Tana River	800	-																		
2	Hola Irrigation Extension	Tana River	4,161	-																		
3	High Grand Falls Irrigation	Garissa/Tana R.	106,000	High Grand Falls																		
4	Kora Irrigation	Tana River	25,000	Kora																		
Total			135,961							40,294					95,667							
B. Small Scale Irrigation Project (New)																						
1	Weir Irrigation		0		0					0					0							
2	Dam Irrigation		0		0					0					0							
3	Small Dam/Pond/Water Pan Irrigation		5,730		1,146					1,719					2,865							
4	Groundwater Irrigation		10,054		2,011					3,016					5,027							
Total for B			15,784		3,157					4,735					7,892							
C. Private Irrigation Project (New)																						
1	Weir Irrigation		0		0					0					0							
2	Groundwater Irrigation		10,054		2,011					3,016					5,027							
Total for C			10,054		2,011					3,016					5,027							
Total for TCA			161,799		5,168					48,045					108,586							
<p>Note:</p>																						
Source: JICA Study Team																						
全国水資源マスタープラン 2030 策定プロジェクト										図 15.2.3 灌漑開発計画の実施スケジュール(5/6) (TCA)												
国際協力機構																						

No	Name of Project	County	Irrigation Area (ha)	Multi-purpose Dam	Short Term					Medium Term					Long Term							
					2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
					13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
A. Large Scale Irrigation Project (New)																						
1	Kieni Irrigation	Nyeri	4,202	-																		
2	Kom (Wajir) Irrigation	Isiolo, Samburu	4,000	Archer's Post																		
3	Kihoto Irrigation	Laikipia	18,000	Kihoto																		
Total			26,202		0					4,202					22,000							
B. Small Scale Irrigation Project (New)																						
1	Weir Irrigation		0		0					0					0							
2	Dam Irrigation		0		0					0					0							
3	Small Dam/Pond/Water Pan Irrigation		950		190					285					475							
4	Groundwater Irrigation		7,166		1,433					2,150					3,583							
Total for B			8,116		1,623					2,435					4,058							
C. Private Irrigation Project (New)																						
1	Weir Irrigation		0		0					0					0							
2	Groundwater Irrigation		7,165		1,433					2,150					3,582							
Total for C			7,165		1,433					2,150					3,582							
Total for ENNCA			41,483		3,056					8,787					29,640							
<p>Note:</p> <ul style="list-style-type: none"> F/S and/or D/D Procurement Construction of Irrigation System Construction of Multipurpose Dam 																						
Source: JICA Study Team																						
全国水資源マスタープラン 2030 策定プロジェクト										図 15.2.3 灌漑開発計画の実施スケジュール(6/6) (ENNCA)												
国際協力機構																						

WRMA Catchment	No	Name of Project	Purpose	Installed Capacity (MW)	Project Status	Implementation Schedule																			
						Short Term					Medium Term					Long Term									
						2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
						13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31		
LVN	1	Nandi Forest Dam	W, I, P	50	D/D done		P																		
	2	Nzoia (34B) Dam	W, I, P, F	16	Flagship D/D ongoing					P															
	3	Nzoia (42A) Dam	W, P, F	25	Flagship D/D ongoing						P														
LVS	4	Magwagwa Dam	W, I, P, F	115	D/D done																				
RV	5	Arror Dam	W, I, P, F	80	D/D done		P																		
	6	Oletukat Dam	W, P	36	D/D ongoing					P															
	7	Leshota Dam	W, P	54	D/D ongoing					P															
	8	Oldorko Dam	W, I, P	90	D/D ongoing						P														
	9	Kimwarer Dam	W, I, P	20	F/S done																				
	10	Embobut Dam	W, I, P	45	Pre-F/S done																				
Athi	11	Thwake Dam	W, I, P	20	Flagship D/D done		P																		
	12	Munyu Dam	I, P	40	Flagship F/S done																				
Tana	13	High Grand Falls	W, I, P, F	Stage 1: 500 Stage 2: +200	Flagship D/D done																				
	14	Karura	P	90																					

F/S and/or D/D
 P Procurement
 Construction
 W=Domestic and industrial water supply, I=Irrigation, P=Hydropower, F=Flood control
 D/D=Detailed Design, F/S=Feasibility Study, Pre-F/S=Pre-Feasibility Study

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.4
水力開発計画の実施スケジュール

WRMA Catchment	No.	Name of Project	Purpose	Effective Storage Volume (MCM)	Project Status	Implementation Schedule																			
						Short Term					Medium Term					Long Term									
						2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
						13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31		
LVN	1	Nandi Forest Dam	W, I, P	220	D/D done			P																	
	2	Siyoi Dam	W	4	Flagship			P																	
	3	Nzoia (34B) Dam	I, P, F	204	Flagship				P																
	4	Nzoia (42A) Dam	I, P, F	395	Flagship					P															
	5	Moi's Bridge Dam	W, I	214	D/D ongoing																				
	6	Kibolo Dam	W, I	40																					
	7	Teremi Dam	W	3																					
LVS	1	Magwagwa Dam	W, I, P, F	445	D/D done																				
	2	Itare Dam	W	20	Flagship				P																
	3	Nyando (Koru) Dam	W, I, F	87	Flagship					P															
	4	Bunyonyu Dam	W	6	Flagship					P															
	5	Katieno Dam	I	201	P/D ongoing						P														
	6	Londiani Dam	W	25	Flagship							P													
	7	Kibos Dam	W, F	26	Pre-F/S done								P												
	8	Amala Dam	W, I	175	Flagship																				
	9	Sand River (Naikara) Dam	W	1	Pre-F/S done																				
	10	Iloilerre Dam	W, I	14	Flagship																				
RV	1	Upper Narok Dam	W, I, F	29	Flagship																				
	2	Arros Dam	W, I, P, F	62	D/D done																				
	3	Oletukat Dam	W, P	300	D/D ongoing																				
	4	Leshota Dam	W, P	33	D/D ongoing																				
	5	Oldorko Dam	W, I, P	20	D/D ongoing																				
	6	Kimwarer Dam	W, I, P	107	Pre-F/S done																				
	7	Embobut Dam	W, I, P	30	Pre-F/S done																				
	8	Malewa Dam	W	34																					
	9	Waseges Dam	W	4																					
	10	Murung-Sebit Dam	I, F	40																					

F/S and/or D/D
 Procurement
 Construction
 W-Domestic and industrial water supply, I-Irrigation, P-Hydropower, F-Flood control
 D/D-Detailed Design, F/S-Feasibility Study, Pre-F/S-Pre-Feasibility Study

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.5
水資源開発計画の実施スケジュール(1/2)

WRMA Catchment	No.	Name of Project	Purpose	Effective Storage Volume (MCM)	Project Status	Implementation Schedule																									
						Short Term					Medium Term					Long Term															
						2013 13/14	2014 14/15	2015 15/16	2016 16/17	2017 17/18	2018 18/19	2019 19/20	2020 20/21	2021 21/22	2022 22/23	2023 23/24	2024 24/25	2025 25/26	2026 26/27	2027 27/28	2028 28/29	2029 29/30	2030 30/31								
Athi	1	Ruiru-A (Ruiru 2) Dam	W	18	Flagship F/S ongoing			P																							
	2	Kamili 1	W	16	F/S ongoing			P																							
	3	Stony Athi	W	23	F/S ongoing			P																							
	4	Thwake Dam	W, I, P	594	Flagship D/D done		P																								
	5	Kikuyu Dam	W	31				P																							
	6	Ruaka (Kiambaa) Dam	W	4	D/D done					P																					
	7	Rare Dam	W	36	Flagship D/D ongoing					P																					
	8	Mwachi Dam	W	16	Flagship P/D done					P																					
	9	Upper Athi (Mbagathi) Dam	W	24							P																				
	10	Lake Chala Dam	W, F	6	D/D ongoing						P																				
	11	Munyu Dam	I, P	575	Flagship F/S done								P																		
	12	Kileta Dam	W	16	Pre-F/S done									P																	
	13	Pemba Dam	W	19											P																
	14	Mbuuni Dam	W	10												P															
	15	Olkishunki Dam	W	1	Pre-F/S done													P													
	16	Ndarugu (Ndarugu 1) Dam	W	300	Flagship F/S ongoing														P												
Tana	1	High Grand Falls Dam	W, I, P, F	5,000	Flagship D/D done																										
	2	Thiba Dam	I	11	Flagship D/D done		P																								
	3	Karimenu 2	W	14	F/S ongoing			P																							
	4	Maragua 4 Dam	W	33	F/S ongoing			P																							
	5	Chania-B Dam	W	49				P																							
	6	Yatta Dam	W	35	D/D done						P																				
	7	Thika 3A	W	13	F/S ongoing						P																				
	8	Ndiara Dam	W	12								P																			
	9	Kora Dam	I	537	Flagship								P																		
	10	Mutuni Dam	W	17										P																	
	11	Kitimul Dam	W	8													P														
ENN	1	Isiolo Dam	W	21	F/S ongoing Flagship		P																								
	2	Nyahururu Dam	W	11	Flagship				P																						
	3	Archers' Post Dam	W, I	100	Flagship						P																				
	4	Rumuruti Dam	W	1	Flagship									P																	
	5	Kihoto Dam	I	389													P														

W-Domestic and industrial water supply, I-Irrigation, P-Hydropower, F-Flood control
 D/D-Detailed Design, F/S-Feasibility Study, Pre-F/S-Pre-Feasibility Study

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.5
水資源開発計画の実施スケジュール(2/2)

No.	Description	Implementation Schedule																			
		Short Term					Medium Term					Long Term									
		2013 13/14	2014 14/15	2015 15/16	2016 16/17	2017 17/18	2018 18/19	2019 19/20	2020 20/21	2021 21/22	2022 22/23	2023 23/24	2024 24/25	2025 25/26	2026 26/27	2027 27/28	2028 28/29	2029 29/30	2030 30/31		
Development Activities																					
(1)	Monitoring																				
M1	Replacement of iron post for river gauge to concrete post	■	■	■																	
M2	Upgrade manual gauge to automatic (surface water level)			■	■	■	■	■	■												
M3	Upgrade manual gauge to automatic (groundwater level)			■	■	■	■	■	■												
M4	Upgrade manual gauge to automatic (rainfall)			■	■	■	■	■	■												
M5	Installation of Dedicated Boreholes for Groundwater Monitoring	■	■	■																	
M6	Installation/Rehabilitation of River Gauging Stations	■	■				■	■	■				■	■							
M7	Installation/Rehabilitation of Rainfall Gauging Stations	■	■				■	■	■				■	■							
M8	Flood Discharge Measurement Equipment (Each SRO)		■	■	■								■	■	■						
(2)	Evaluation																				
E1	Hydromet DB Upgrade (Software + Hardware)			■	■	■			■	■	■			■	■						
(3)	Permitting																				
P1	PDB Upgrade (Software + Hardware)			■	■	■			■	■	■			■	■						
(4)	Watershed Conservation																				
W1	Forestation (Gazetted Forest Area)	■	■	■	■	■															
W2	Forestation (Non-gazetted Forest Area)						■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Recurrent Activities																					
(1)	Monitoring																				
M1	Surface Water Level Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M2	River Discharge Measurement	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M3	Groundwater Level Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M4	Rainfall Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M5	Flood Discharge Measurement		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M6	Surface Water Quality Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M7	Groundwater Quality Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
(2)	Others																				
O1	Catchment Forum Operation (Venue and Allowance to WURAs)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	

Source: JICA Study Team

全国水資源マスタープラン 2030 策定プロジェクト	図 15.2.6 水資源管理計画の実施スケジュール(1/6) (LVNCA)
国際協力機構	

No.	Description	Implementation Schedule																			
		Short Term					Medium Term					Long Term									
		2013 13/14	2014 14/15	2015 15/16	2016 16/17	2017 17/18	2018 18/19	2019 19/20	2020 20/21	2021 21/22	2022 22/23	2023 23/24	2024 24/25	2025 25/26	2026 26/27	2027 27/28	2028 28/29	2029 29/30	2030 30/31		
Development Activities																					
(1)	Monitoring																				
M1	Replacement of iron post for river gauge to concrete post	■	■	■																	
M2	Upgrade manual gauge to automatic (surface water level)			■	■	■	■	■	■												
M3	Upgrade manual gauge to automatic (groundwater level)			■	■	■	■	■	■												
M4	Upgrade manual gauge to automatic (rainfall)			■	■	■	■	■	■												
M5	Installation of Dedicated Boreholes for Groundwater Monitoring	■	■	■																	
M6	Installation/Rehabilitation of River Gauging Stations	■	■				■	■	■			■	■								
M7	Installation/Rehabilitation of Rainfall Gauging Stations	■	■				■	■	■			■	■								
M8	Flood Discharge Measurement Equipment (Each SRO)		■	■	■							■	■	■							
(2)	Evaluation																				
E1	Hydromet DB Upgrade (Software + Hardware)			■	■				■	■			■	■							
(3)	Permitting																				
P1	PDB Upgrade (Software + Hardware)			■	■				■	■			■	■							
(4)	Watershed Conservation						■	■	■	■											
W1	Forestation (Gazetted Forest Area)	■	■	■	■	■															
W2	Forestation (Non-gazetted Forest Area)						■	■	■	■	■	■	■	■	■	■	■	■	■		
Recurrent Activities																					
(1)	Monitoring																				
M1	Surface Water Level Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M2	River Discharge Measurement	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M3	Groundwater Level Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M4	Rainfall Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M5	Flood Discharge Measurement		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M6	Surface Water Quality Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M7	Groundwater Quality Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
(2)	Others																				
O1	Catchment Forum Operation (Venue and Allowance to WURAs)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		

Source: JICA Study Team

全国水資源マスタープラン 2030 策定プロジェクト	図 15.2.6 水資源管理計画の実施スケジュール(2/6) (LVSCA)
国際協力機構	

No.	Description	Implementation Schedule																			
		Short Term					Medium Term					Long Term									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
		13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31		
Development Activities																					
(1)	Monitoring																				
M1	Replacement of iron post for river gauge to concrete post	■	■	■																	
M2	Upgrade manual gauge to automatic (surface water level)			■	■	■	■	■	■												
M3	Upgrade manual gauge to automatic (groundwater level)			■	■	■	■	■	■												
M4	Upgrade manual gauge to automatic (rainfall)			■	■	■	■	■	■												
M5	Installation of Dedicated Boreholes for Groundwater Monitoring	■	■	■																	
M6	Installation/Rehabilitation of River Gauging Stations	■	■				■	■	■				■	■							
M7	Installation/Rehabilitation of Rainfall Gauging Stations	■	■				■	■	■				■	■							
M8	Flood Discharge Measurement Equipment (Each SRO)		■	■	■								■	■	■						
(2)	Evaluation																				
E1	Hydromet DB Upgrade (Software + Hardware)			■	■				■	■				■	■						
E2	Establishment of additional Water Quality Test Laboratory in Lodwar and Kapenguria	■	■																		
(3)	Permitting																				
P1	PDB Upgrade (Software + Hardware)			■	■				■	■				■	■						
(4)	Watershed Conservation																				
W1	Forestation (Gazetted Forest Area)	■	■	■	■																
W2	Forestation (Non-gazetted Forest Area)						■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Recurrent Activities																					
(1)	Monitoring																				
M1	Surface Water Level Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M2	River Discharge Measurement	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M3	Groundwaer Level Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M4	Rainfall Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M5	Flood Discharge Measurement			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M6	Surface Water Quality Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
M7	Groundwater Quality Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
(2)	Others																				
O1	Catchment Forum Operation (Venue and Allownce to WURAs)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	

Source: JICA Study Team

全国水資源マスタープラン 2030 策定プロジェクト	図 15.2.6 水資源管理計画の実施スケジュール(3/6) (RVCA)
国際協力機構	

No.	Description	Implementation Schedule																			
		Short Term					Medium Term					Long Term									
		2013 13/14	2014 14/15	2015 15/16	2016 16/17	2017 17/18	2018 18/19	2019 19/20	2020 20/21	2021 21/22	2022 22/23	2023 23/24	2024 24/25	2025 25/26	2026 26/27	2027 27/28	2028 28/29	2029 29/30	2030 30/31		
Development Activities																					
(1)	Monitoring																				
M1	Replacement of iron post for river gauge to concrete post	■	■	■																	
M2	Upgrade manual gauge to automatic (surface water level)			■	■	■	■	■	■												
M3	Upgrade manual gauge to automatic (groundwater level)			■	■	■	■	■	■												
M4	Upgrade manual gauge to automatic (rainfall)			■	■	■	■	■	■												
M5	Installation of Dedicated Boreholes for Groundwater Monitoring	■	■	■																	
M6	Installation/Rehabilitation of River Gauging Stations	■	■				■	■	■			■	■								
M7	Installation/Rehabilitation of Rainfall Gauging Stations	■	■				■	■	■			■	■								
M8	Flood Discharge Measurement Equipment (Each SRO)		■	■	■							■	■	■							
(2)	Evaluation																				
E1	Hydromet DB Upgrade (Software + Hardware)			■	■	■			■	■			■	■							
E2	Establishment of additional Water Quality Test Laboratory in Mombasa	■	■																		
(3)	Permitting																				
P1	PDB Upgrade (Software + Hardware)			■	■	■			■	■			■	■							
(4)	Watershed Conservation						■	■	■	■											
W1	Forestation (Gazetted Forest Area)	■	■	■	■	■															
W2	Forestation (Non-gazetted Forest Area)						■	■	■	■	■	■	■	■	■	■	■	■			
Recurrent Activities																					
(1)	Monitoring																				
M1	Surface Water Level Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
M2	River Discharge Measurement	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
M3	Groundwaer Level Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
M4	Rainfall Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
M5	Flood Discharge Measurement			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
M6	Surface Water Quality Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
M7	Groundwater Quality Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
(2)	Others																				
O1	Catchment Forum Operation (Venue and Allownce to WJRAs)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			

Source: JICA Study Team

全国水資源マスタープラン 2030 策定プロジェクト	図 15.2.6 水資源管理計画の実施スケジュール(4/6) (ACA)
国際協力機構	

No.	Description	Implementation Schedule																			
		Short Term					Medium Term					Long Term									
		2013 13/14	2014 14/15	2015 15/16	2016 16/17	2017 17/18	2018 18/19	2019 19/20	2020 20/21	2021 21/22	2022 22/23	2023 23/24	2024 24/25	2025 25/26	2026 26/27	2027 27/28	2028 28/29	2029 29/30	2030 30/31		
Development Activities																					
(1)	Monitoring																				
M1	Replacement of iron post for river gauge to concrete post	■	■	■																	
M2	Upgrade manual gauge to automatic (surface water level)			■	■	■	■	■	■												
M3	Upgrade manual gauge to automatic (groundwater level)			■	■	■	■	■	■												
M4	Upgrade manual gauge to automatic (rainfall)			■	■	■	■	■	■												
M5	Installation of Dedicated Boreholes for Groundwater Monitoring	■	■	■																	
M6	Installation/Rehabilitation of River Gauging Stations	■	■				■	■	■			■	■								
M7	Installation/Rehabilitation of Rainfall Gauging Stations	■	■				■	■	■			■	■								
M8	Flood Discharge Measurement Equipment (Each SRO)		■	■	■							■	■	■							
(2)	Evaluation																				
E1	Hydromet DB Upgrade (Software + Hardware)			■	■				■	■			■	■							
E2	Establishment of additional Water Quality Test Laboratory in Garissa	■	■																		
(3)	Permitting																				
P1	PDB Upgrade (Software + Hardware)			■	■				■	■			■	■							
(4)	Watershed Conservation						■	■	■	■											
W1	Forestation (Gazetted Forest Area)	■	■	■	■	■															
W2	Forestation (Non-gazetted Forest Area)						■	■	■	■	■	■	■	■	■	■	■	■	■		
Recurrent Activities																					
(1)	Monitoring																				
M1	Surface Water Level Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M2	River Discharge Measurement	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M3	Groundwaer Level Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M4	Rainfall Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M5	Flood Discharge Measurement			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M6	Surface Water Quality Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
M7	Groundwater Quality Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
(2)	Others																				
O1	Catchment Forum Operation (Venue and Allownce to WJRAs)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		

Source: JICA Study Team

全国水資源マスタープラン 2030 策定プロジェクト	図 15.2.6 水資源管理計画の実施スケジュール(5/6) (TCA)
国際協力機構	

No.	Description	Implementation Schedule																														
		Short Term					Medium Term					Long Term																				
		2013 13/14	2014 14/15	2015 15/16	2016 16/17	2017 17/18	2018 18/19	2019 19/20	2020 20/21	2021 21/22	2022 22/23	2023 23/24	2024 24/25	2025 25/26	2026 26/27	2027 27/28	2028 28/29	2029 29/30	2030 30/31													
Development Activities																																
(1)	Monitoring																															
M1	Replacement of iron post for river gauge to concrete post																															
M2	Upgrade manual gauge to automatic (surface water level)																															
M3	Upgrade manual gauge to automatic (groundwater level)																															
M4	Upgrade manual gauge to automatic (rainfall)																															
M5	Installation of Dedicated Boreholes for Groundwater Monitoring																															
M6	Installation/Rehabilitation of River Gauging Stations																															
M7	Installation/Rehabilitation of Rainfall Gauging Stations																															
M8	Flood Discharge Measurement Equipment (Each SRO)																															
(2)	Evaluation																															
E1	Hydromet DB Upgrade (Software + Hardware)																															
E2	Establishment of additional Water Quality Test Laboratory in Marsabit and Wajir																															
(3)	Permitting																															
P1	PDB Upgrade (Software + Hardware)																															
(4)	Watershed Conservation																															
W1	Forestation (Gazetted Forest Area)																															
W2	Forestation (Non-gazetted Forest Area)																															
Recurrent Activities																																
(1)	Monitoring																															
M1	Surface Water Level Monitoring																															
M2	River Discharge Measurement																															
M3	Groundwater Level Monitoring																															
M4	Rainfall Monitoring																															
M5	Flood Discharge Measurement																															
M6	Surface Water Quality Monitoring																															
M7	Groundwater Quality Monitoring																															
(2)	Others																															
O1	Catchment Forum Operation (Venue and Allownce to WJRAs)																															

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.6
水資源管理計画の実施スケジュール(6/6)
(ENNCA)

WRMA Catchment		No.	Description	Implementation Schedule																		Remarks
				Short Term					Medium Term					Long Term								
				2013 13/14	2014 14/15	2015 15/16	2016 16/17	2017 17/18	2018 18/19	2019 19/20	2020 20/21	2021 21/22	2022 22/23	2023 23/24	2024 24/25	2025 25/26	2026 26/27	2027 27/28	2028 28/29	2029 29/30	2030 30/31	
LVN	N1	Yala Swamp																			Nzola 34B Dam, Nzola 42A Dam	
		N1.1 Construction of Multipurpose Dam																				
		N1.2 River Training Works																				
		N1.3 Establishment of Flood Forecasting and Warning System																				
LVS	S1	Kano Plain (Nyando River Basin)																			Nyando Dam	
		S1.1 Construction of Multipurpose Dam																				
		S1.2 River Training Works																				
		S1.3 Establishment of Flood Forecasting and Warning System																				
S2	S2	Sondu Rivermouth																			Magwagwa Dam	
		S2.1 Construction of Multipurpose Dam																				
S3	S3	S2.2 Establishment of Community-based Flood Management System																				
		S3.1 Establishment of Community-based Flood Management System																				
S4	S4	Kisumu																			Kibos Dam	
		S4.1 Construction of Multipurpose Dam																				
RV	R1	Nakuru																				
		R1.1 Implementation of Urban Drainage Measures																				
R2	R2	Narok																			Upper Narok Dam	
		R2.1 Construction of Multipurpose Dam																				
		R2.2 River Training Works																				
		R2.3 Preparation of Hazard Map																				
		R2.4 Formulation of Evacuation Plan																				
R3	R3	R2.5 Implementation of Urban Drainage Measures																				
		Mogotio																				
A1	A1	R3.1 River Training Works																				
		R3.2 Preparation of Hazard Map																				
A2	A2	Downmost Athi (Kilifi, Lower Sabaki)																			Lake Chala Dam	
		A1.1 Establishment of Community-based Flood Management System																				
A3	A3	Lumi River (Tavela)																				
		A2.1 Construction of Multipurpose Dam																				
A4	A4	A2.2 Establishment of Community-based Flood Management System																				
		Nairobi City																				
A5	A5	A3.1 Implementation of Urban Drainage Measures																				
		Kwale (Vanga)																				
T1	T1	A4.1 River Training Works																				
		A4.2 Preparation of Hazard Map																				
T2	T2	Mombasa																			High Grand Falls Dam	
		T1.1 Construction of Multipurpose Dam																				
		T1.2 River Training Works																				
		T1.3 Preparation of Hazard Map																				
T2	T2	T1.4 Formulation of Evacuation Plan																				
		Tana River lower than Garissa																				
E1	E1	T2.1 Establishment of Community-based Flood Management System																				
		T2.2 Improvement of Warning System for Hydropower Dam																				
E2	E2	Mandera																				
		E1.1 River Training Works																				
		E1.2 Preparation of Hazard Map																				
E2	E2	E1.3 Formulation of Evacuation Plan																				
		Isiolo																				
		E2.1 River Training Works																				
E2	E2	E2.2 Preparation of Hazard Map																				
		E2.3 Implementation of Urban Drainage Measures																				

Note: Construction Schedule for River Training Works (to be determined in the Feasibility Study)

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.7
洪水・渇水災害管理計画の実実施スケジュール(1/2)

Drought Disaster Management Plan

No.	Description	Implementation Schedule																			
		Short Term					Medium Term					Long Term									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31				
1	Preparation of Water Use Restriction Rule for Reservoirs	■	■	■	■	■															
2	Establishment of Basin Drought Conciliation Councils	■	■	■	■	■															
3	Development of Drought Early Forecast System		■	■	■	■															

Legend: ■ Establishment □ Update / Expansion


Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.7
洪水・渇水災害管理計画の実施スケジュール(2/2)

WRMA Catchment No.	Name of Project	Target	Related Project (Dams and Irrigation)	Implementation Schedule																			
				Short Term					Medium Term					Long Term									
				2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
				13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31		
LVN	Setting of Environmental Flow	Nzoia River	Nandi Forest Dam	Set																			
		Yala River	Siyoi, Nzoia (34B), Nzoia (42B), Moi's Bridge, Kibolo, and Teremi Dams		Set																		
	Environmental Monitoring	Nzoia River	Nandi Forest Dam																				
		Yala River	Siyoi, Nzoia (34B), Nzoia (42B), Moi's Bridge, Kibolo, and Teremi Dams																				
		L. Victoria	-																				
	LVS	Setting of Environmental Flow	Nyando River	Nyando and Londiani Dams		Set																	
Sondu River			Magwagwa and Itare Dams	Set																			
Gucha River			Bunyonyu and Katieno Dams		Set																		
Migori River			Ilooterre Dam			Set																	
Mara River			Amala Dam	Set	(Confirmation of current status only)																		
Environmental Monitoring		Nyando River	Nyando and Londiani Dams																				
		Sondu River	Magwagwa and Itare Dams																				
		Gucha River	Bunyonyu and Katieno Dams																				
		Migori River	Ilooterre Dam																				
		Mara River	Amala Dam																				
		L. Victoria	-																				
		Kisumu Town	-																				
		Homa Bay Town	-																				
RV	Setting of Environmental Flow	Kerio River	Aror and Kimwarer Dams	Set																			
		Turkwel River	Embobut Dam			Set																	
		Ewaso Ng'iro South River	Upper Narok, Oletukat, Leshota, and Oldorko Dams		Set																		
		L. Turkana	-	Set																			
		L. Baringo	Waseges Dam			Set																	
		L. Bogoria	Ratata Dam			Set																	
		L. Nakuru	-	Set																			
		L. Elementaita	-			Set																	
		L. Naivasha	-	Set	(Confirmation of current status only)																		
		L. Magadi	-			Set																	

 Environmental Survey for Setting Environmental Flow
 Setting of Environmental Flow (including Key Stakeholder Meeting)
 Environmental Monitoring (including Planning)

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.8
環境管理計画の実施スケジュール(1/2)

WRMA Catchment No.	Name of Project	Target	Related Project (Dams and Impaktion)	Implementation Schedule																			
				Short Term					Medium Term					Long Term									
				2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
				13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31		
2	Environmental Monitoring	Kerio River	Aror, Mutung-Sebit and Kimwarer Dams																				
		Turkwel River	Embobut Dam																				
		Ewaso Ng'iro South River	Upper Narok, Oletukat, Leshota, and Oldorko Dams																				
		L. Turkana	-																				
		L. Baringo	Waseseg Dam																				
		L. Bogoria	Ratata Dam																				
		L. Nakuru	-																				
		L. Elementaita	-																				
		L. Naivasha	-																				
		L. Magadi	-																				
		Nakuru Town	-																				
		Naivasha Town	-																				
1	Setting of Environmental Flow	Athi River	Ruiru-A, Thwake, Kikuyu, Kiambaa, Upper Athi, Muryu, Kileta, Mbuuni, Olkishunki, and Ndarugu Dams																				
		Lumi River	Lake Chala Dam																				
		L. Jipe	Lake Chala Dam																				
	2	Environmental Monitoring	Athi River	Ruiru-A, Thwake, Kikuyu, Kiambaa, Upper Athi, Muryu, Kileta, Mbuuni, Olkishunki, and Ndarugu Dams																			
			Nairobi River	-																			
			Lumi River	Lake Chala Dam																			
			L. Chala	-																			
			L. Jipe	Lake Chala Dam																			
			Nairobi City	-																			
			Mombasa City	-																			
1	Setting of Environmental Flow	Tana River	High Grand Falls, Thiba, Marauga, Yatta, Ndiara, and Kilimui Dams																				
		Chania River	Chania-B																				
	2	Environmental Monitoring	Tana River	High Grand Falls, Thiba, Marauga, Yatta, Ndiara, and Kilimui Dams																			
			Chania River	Chania-B																			
1	Setting of Environmental Flow	Ewaso Ng'iro North River	Isiolo, Archers' Post and Kihoto Dams																				
		Ewaso Ng'iro North River	-																				

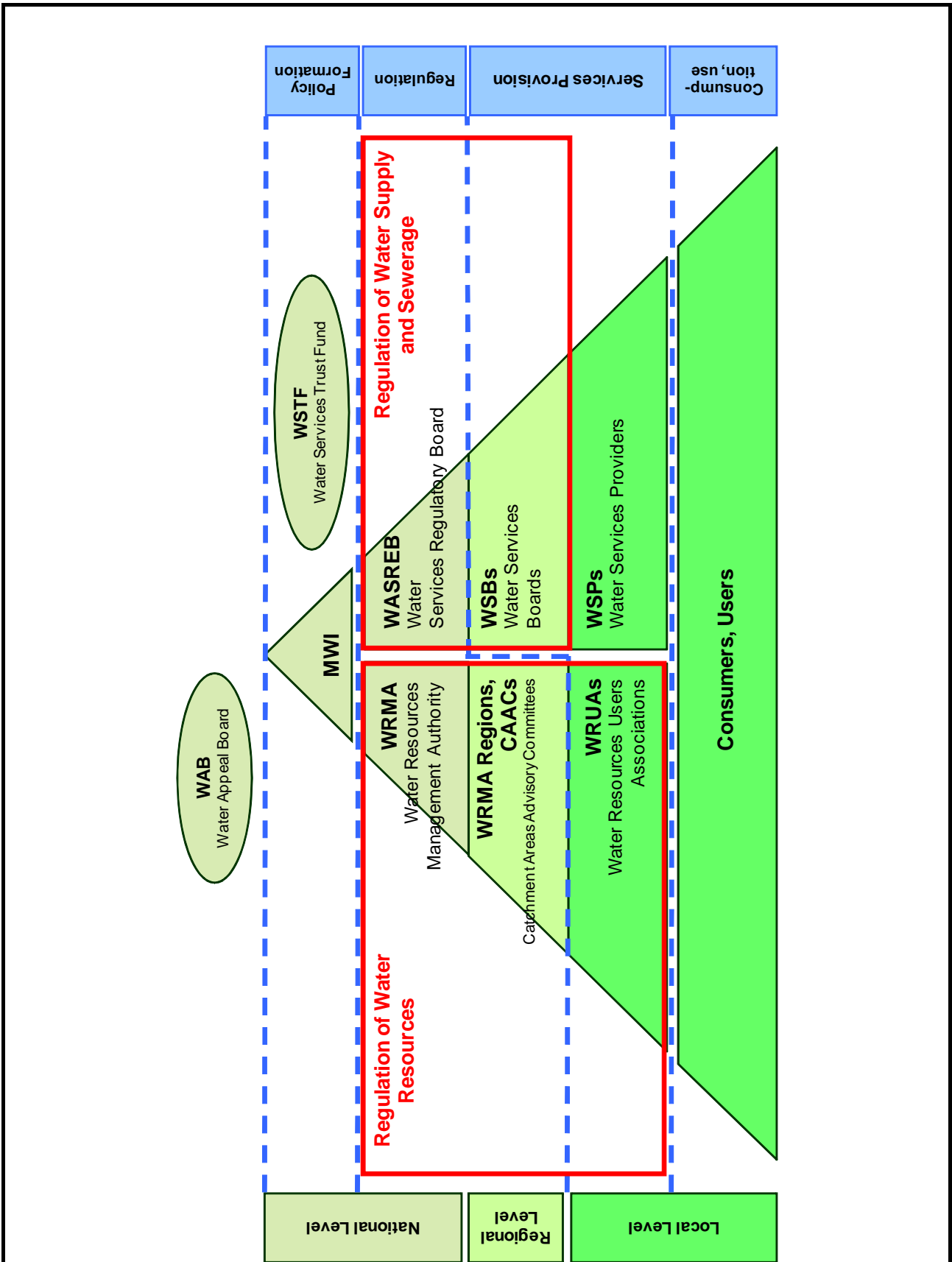
 Environmental Survey for Setting Environmental Flow
 Setting of Environmental Flow (including Key Stakeholder Meeting)
 Environmental Monitoring (including Planning)

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 15.2.8
環境管理計画の実施スケジュール(2/2)



Source: WRMA with notes by JICA Study Team (as of November 2012)

<p>全国水資源マスタープラン 2030 策定プロジェクト</p>	<p>図 17.1.1 水灌漑省下の水セクターに関する 制度的枠組みの現状</p>
<p>国際協力機構</p>	

No.	Description	Implementation Schedule									
		Short Term					Medium Term				
		2013 13/14	2014 14/15	2015 15/16	2016 16/17	2017 17/18	2018 18/19	2019 19/20	2020 20/21	2021 21/22	2022 22/23
(1)	Actions for establishment and operation of catchment forum for strengthening of river basin governance										
a)	Establishment of a "Catchment Forum" in six regional offices of WRMA with legal status	■	■								
b)	Continuous operation of "Catchment Forum"		■	■	■	■	■	■	■	■	■
c)	Promotion of establishment of WRUAs and promotion of participation of WRUAs to "Catchment Forum"	■	■	■	■	■	■	■	■	■	■
(2)	Actions for strengthening of hydro-meteorological information management										
a)	Improvement of operation of monitoring stations										
i)	Replacement of present iron post for river gauging by concrete post against vandalism	■	■	■							
ii)	Upgrade of existing manual gauging into automatic gauging (surface and groundwater level, and rainfall).			■	■	■	■	■	■	■	■
iii)	Periodical patrol of gauging stations	■	■	■	■	■	■	■	■	■	■
iv)	Introduction of flood discharge measurement equipment for preparation of accurate rating curve		■	■	■						
v)	Involvement of members of WRUAs as gauge readers for more responsible gauging	■	■	■	■	■	■	■	■	■	■
vi)	Installation of dedicated boreholes for groundwater monitoring	■	■	■							
b)	Improvement of water quality monitoring and pollution control system										
i)	Publishing a guideline for water quality	■	■								
ii)	Enforce preparation of Effluent Discharge Control Plan (EDCP) by industries for pollution control.	■	■	■	■	■	■	■	■	■	■
iii)	Establishment of water resources quality objectives for major water bodies	■	■	■							
c)	Hydro-meteorological database management										
i)	Enhancement of system resources (computers and related equipment) based on assessment of the current situation			■	■			■	■		
ii)	Renewal/update Hydro-meteorological Database System (every five year)			■	■			■	■		
d)	Establishment of training courses										
i)	Training course on discharge measurement	■	■								
ii)	Training course on water quality analysis in the laboratory for both surface and groundwater	■	■								
iii)	Training course on operation of Hydro-meteorological Database	■	■								
(3)	Actions for improvement of water Permit Database (PDB) management										
a)	Improvement of permit control										
i)	Enhancement of system resources (computers and related equipment)			■	■			■	■		
ii)	Enhancement of data communication environment (internet/intranet environment)			■	■			■	■		
iii)	Establish a map-based permit information management system using GPS			■	■			■	■		
iv)	Renewal/update of PDB (every five year).			■	■			■	■		
(4)	Actions for improvement of flood and drought disaster management										
a)	Improvement of Flood Information Management										
i)	Establish a flood information sharing system among related organizations	■	■								
ii)	Preparation of flood hazard maps based on numerical analysis for major urban centres	■	■								
iii)	Preparation of flood damage database to accumulate past flood damages	■	■	■							
iv)	Installation of color-coded staff gauges for flood risk indications	■	■								
v)	Guidance to WRUAs to include flood aspects to Sub-catchment Management Plan (SCMP)	■	■	■	■	■	■	■	■	■	■
vi)	Flood survey and analysis for flood prone areas	■	■	■	■	■	■	■	■	■	■
b)	Improvement of Drought Information Management										
i)	Establishment of a basin drought conciliation council	■	■								
ii)	Establishment of water use restriction rules of reservoirs	■	■								
iii)	Preparation of drought damage database to accumulate past drought records	■	■	■							
iv)	Guidance to WRUAs to include drought aspects to Sub-catchment Management Plan (SCMP)	■	■	■	■	■	■	■	■	■	■

Source: JICA Study Team

全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 18.2.1
WRMA 地域事務所アクションプランの
実施スケジュール

Proposed Development Plans

Water Supply Development Plan

- ① Urban Water Supply Development (32 Urban Centers)
 - 1) Rehabilitation (20 UC) 135,000 m³/day
 - 2) Expansion (20 UC) 556,000 m³/day
 - 3) New Construction (12 UC) 91,000 m³/day
 - 4) Service Population 6.57 million
- Rural Water Supply (11 Counties)
 - 1) Large Scale 184,000 m³/day
 - 2) Small Scale 220,000 m³/day
 - 3) Target Population 5.79 million

Sanitation Development Plan

- Sewerage Development (19 Urban Centers)
 - 1) Rehabilitation (7 UC) 21,000 m³/day
 - 2) Expansion (7 UC) 230,000 m³/day
 - 3) New Construction (12 UC) 209,000 m³/day
 - 4) Service Population 6.03 million
- On-site Sanitation (11 Counties)
 - 1) Installation of Proper On-site Sanitation Facilities by Individual or Communities
 - 2) Target Population 6.33 million

Irrigation Development Plan

- ▨ Large Scale Irrigation Area
 - 1) Large Scale Irrigation 78,370 ha (6 Projects)
 - 2) Small Scale Irrigation 47,122 ha (11 Counties)
 - 3) Private Sector Irrigation 43,421 ha (11 Counties)

Hydropower Development Plan

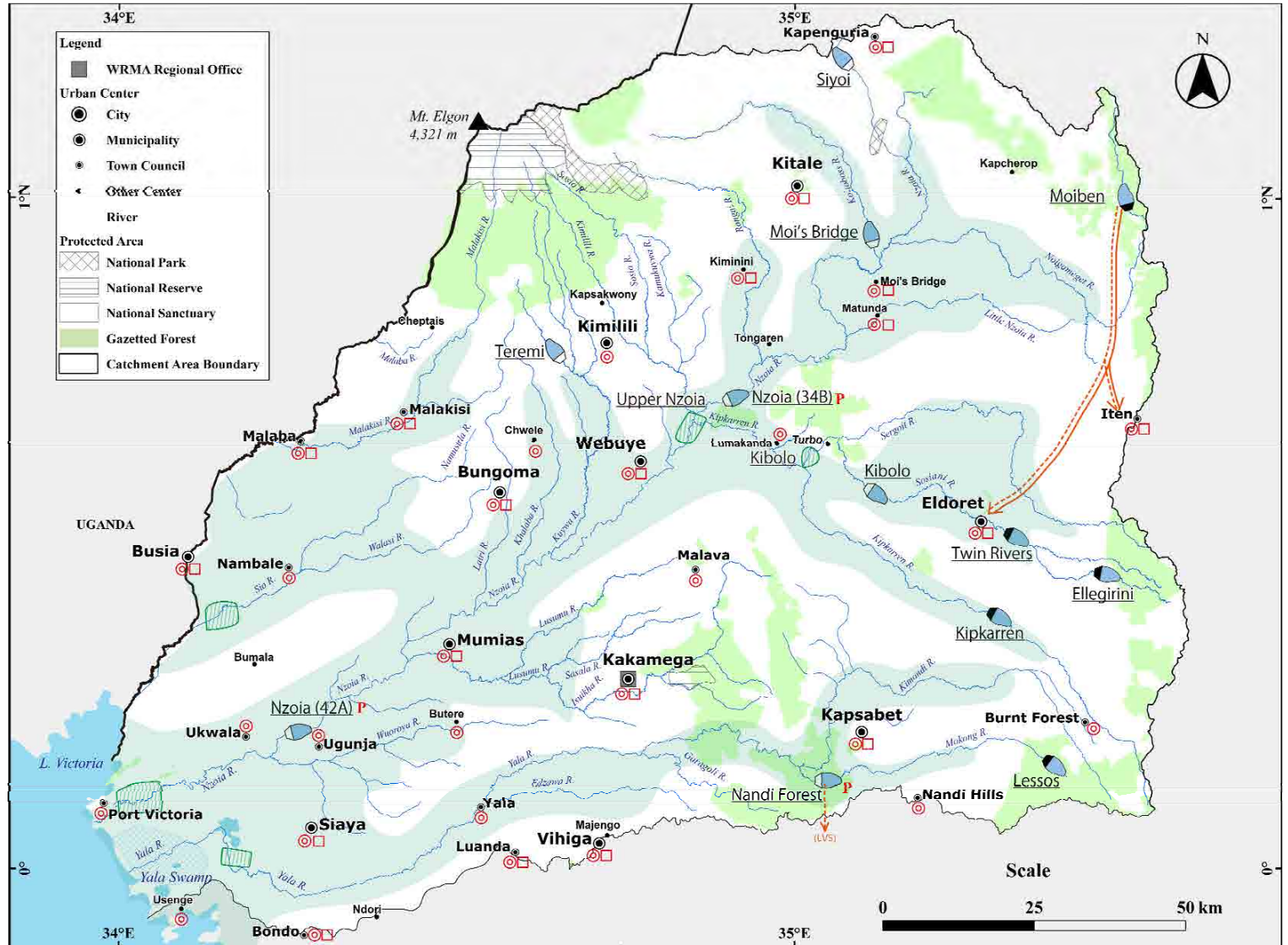
- P Hydropower Development
 - 1) Nzoia(34B) Multipurpose Dam 16 MW Project
 - 2) Nzoia(42A) Multipurpose Dam 25 MW Project
 - 3) Nandi Forest Multipurpose Dam 50 MW Project

Water Resources Development Plan

- ② 1) Storage Dams 7 nos. (1,080 MCM)
- 2) Small Storage Dams and Pans 3,620 nos. (181 MCM)
- 3) Boreholes: 560 nos. (56 MCM/year)
- ④ 4) Inter-basin Transfer (from Nandi Forest Dam to LVS CA) 189 MCM/year
- ⑤ 5) Intra-basin Transfer (from Moiben Dam to Eldoret, Ext.) 5 MCM/year

LEGEND OF PLANS

- ② Dam(Existing)
- Water Transfer (Existing)
- ▨ Irrigation Potential Area



全国水資源マスタープラン 2030
策定プロジェクト

図 19.1.1
ビクトリア湖北流域区の開発計画

国際協力機構

Proposed Management Plans

Water Resources Management Plan

- 1) Monitoring Networks
 - ▲▲ Surface Water Monitoring Station 24 locations
 - Rainfall Monitoring Station 42 locations
 - Groundwater Monitoring Station 19 locations
 - ★ Reference Point 2 locations
- 2) Evaluation of Water Resources
- 3) Improvement of Water Permit Issue and Management System
- 4) Watershed Conservation (Forestation and Soil Erosion Control)

Flood and Drought Disaster Management Plan

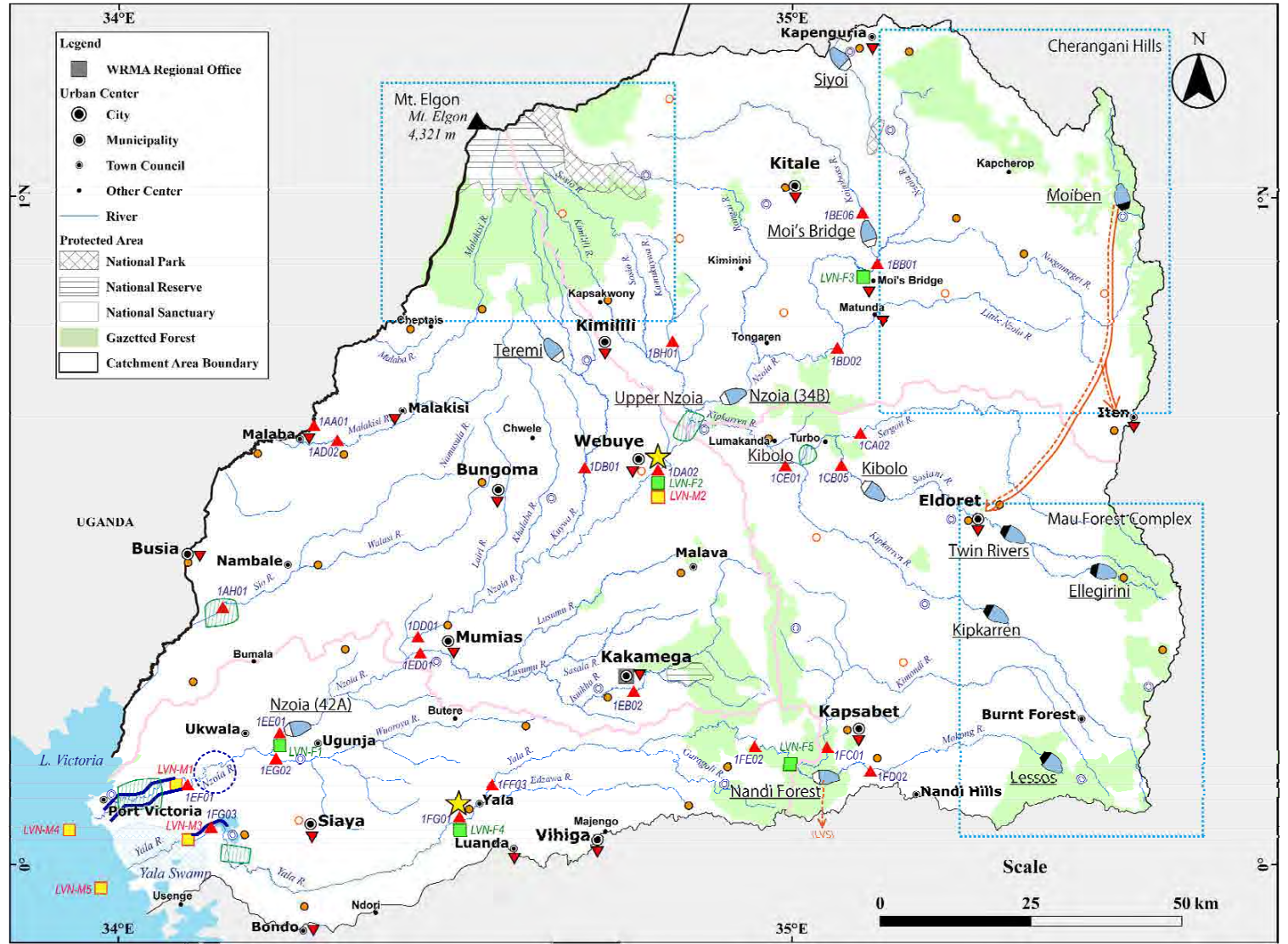
- 1) Flood Management
 - a) Nzoia R. Basin: flood control by dams, dikes and river improvement
 - b) Nzoia R. Basin: operation of early flood forecasting and warning system
 - c) Nzoia and Yala R. Basins: preparation of flood fighting plans for dikes
- 2) Drought Management
 - a) Establishment of Basin Drought Conciliation Councils
 - b) Early Drought Forecasting based on long-term rainfall prediction
 - c) Water Use Restriction Rule for Reservoirs (Existing 5 dams and proposed 7 dams)

Environmental Management Plan

- 1) Setting of Environmental Flow Rate 5 locations
- 2) Environmental Monitoring 5 locations

LEGEND OF PLANS

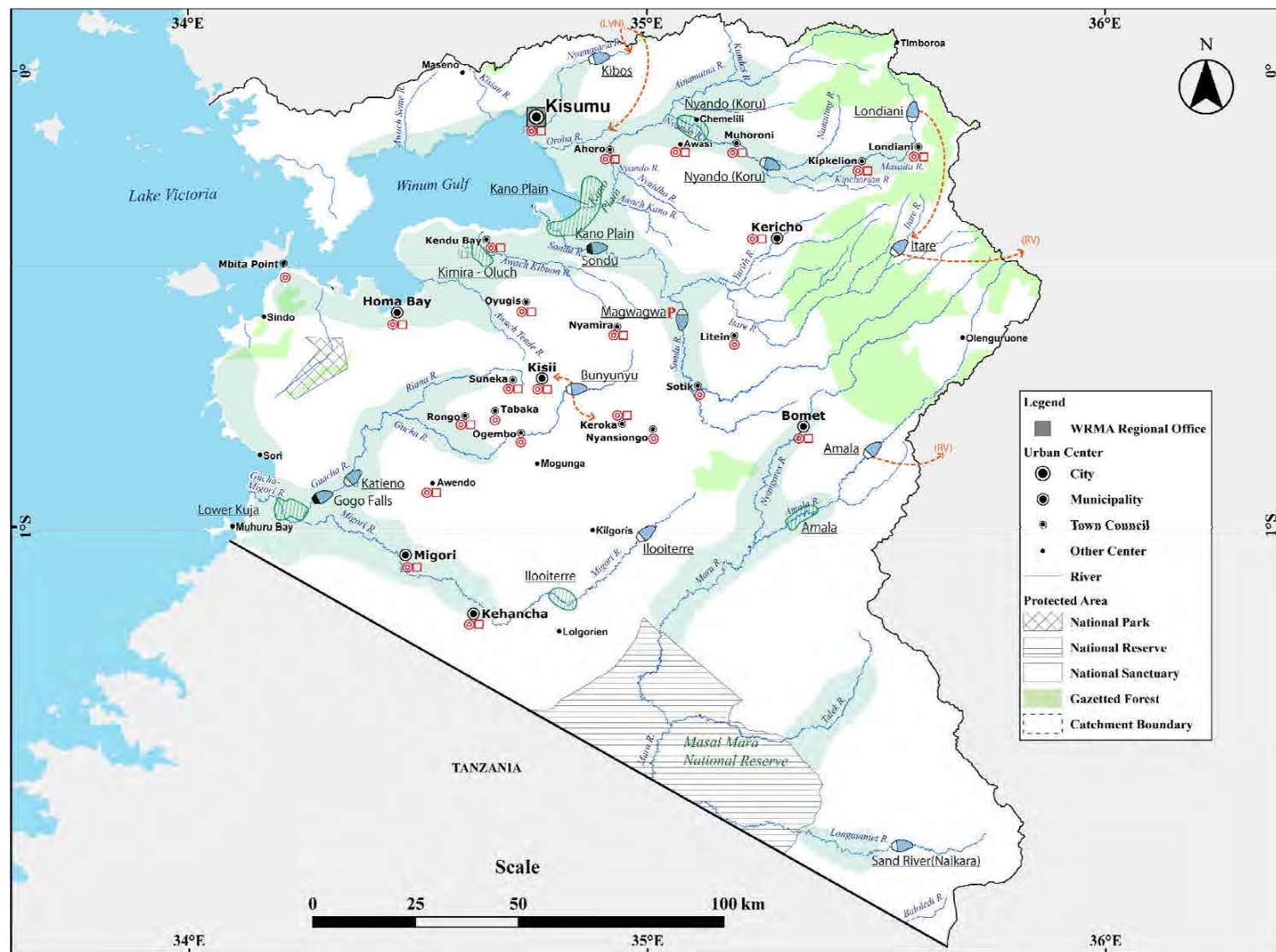
- Dam (Existing)
- Dam (Proposed)
- Water Transfer (Existing)
- Water Transfer (Proposed)
- Sub-regional Boundary



全国水資源マスタープラン 2030 策定プロジェクト 国際協力機構	図 19.1.2 ビクトリア湖北流域区の管理計画
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Proposed Development Plans

- **Water Supply Development Plan**
- Urban Water Supply Development (25 Urban Centers)
- 1) Rehabilitation (21 UC) 120,000 m³/day
- 2) Expansion (21 UC) 570,000 m³/day
- 3) New Construction (4 UC) 94,000 m³/day
- 4) Service Population 6.26 million
- Rural Water Supply (14 Counties)
- 1) Large Scale (14 Counties) 277,000 m³/day
- 2) Small Scale (14 Counties) 208,000 m³/day
- 3) Target Population 6.46 million
- Sanitation Development Plan**
- Sewerage Development (19 Urban Centers)
- 1) Rehabilitation (3 UC) 22,000 m³/day
- 2) Expansion (3 UC) 171,000 m³/day
- 3) New Construction (16 UC) 291,000 m³/day
- 4) Service Population 6.02 million
- On-site Sanitation (14 Counties)
- 1) Installation of Proper On-site Sanitation Facilities by Individual or Communities
- 2) Target Population 6.70 million
- Irrigation Development Plan**
- Large Scale Irrigation Area
- 1) Large Scale Irrigation 75,572 ha (7 Projects)
- 2) Small Scale Irrigation 22,501 ha (12 Counties)
- 3) Private Sector Irrigation 15,133 ha (12 Counties)
- Hydropower Development Plan**
- Hydropower Development
- 1) Magwagwa Multipurpose Dam Project 115 MW
- Water Resources Development Plan**
- 1) Storage Dams 10 nos. (1,000 MCM)
- 2) Small Storage Dams and Pans 3,880 nos. (194 MCM)
- 3) Boreholes: 1,250 nos. (125 MCM/year)
- 4) Inter-basin Transfer (from Itare and Londiani Dams to Nakuru) 41 MCM/year
- 5) Inter-basin Transfer (from Amala Dam to Ewaso Ng'iro South River) 82 MCM/year
- 6) Inter-basin Transfer (from Nandi Forest Dam (LVNCA)) 189 MCM/year
- LEGEND OF PLANS**
- Dam(Existing)
- Water Transfer (Existing)
- Irrigation Potential Area



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Source: JICA Study Team

全国水資源マスタープラン 2030 策定プロジェクト 国際協力機構	図 19.1.3 ビクトリア湖南流域区の開発計画
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Proposed Management Plans

Water Resources Management Plan

- 1) Monitoring Networks
 - ▲▲ Surface Water Monitoring Station 23 locations
 - Rainfall Monitoring Station 50 locations
 - Groundwater Monitoring Station 19 locations
 - ★ Reference Point 5 locations
- 2) Evaluation of Water Resources
- 3) Improvement of Water Permit Issue and Management System
- 4) Watershed Conservation (Forestation, Small Water Sources Conservation and Soil Erosion Control)

Flood and Drought Disaster Management Plan

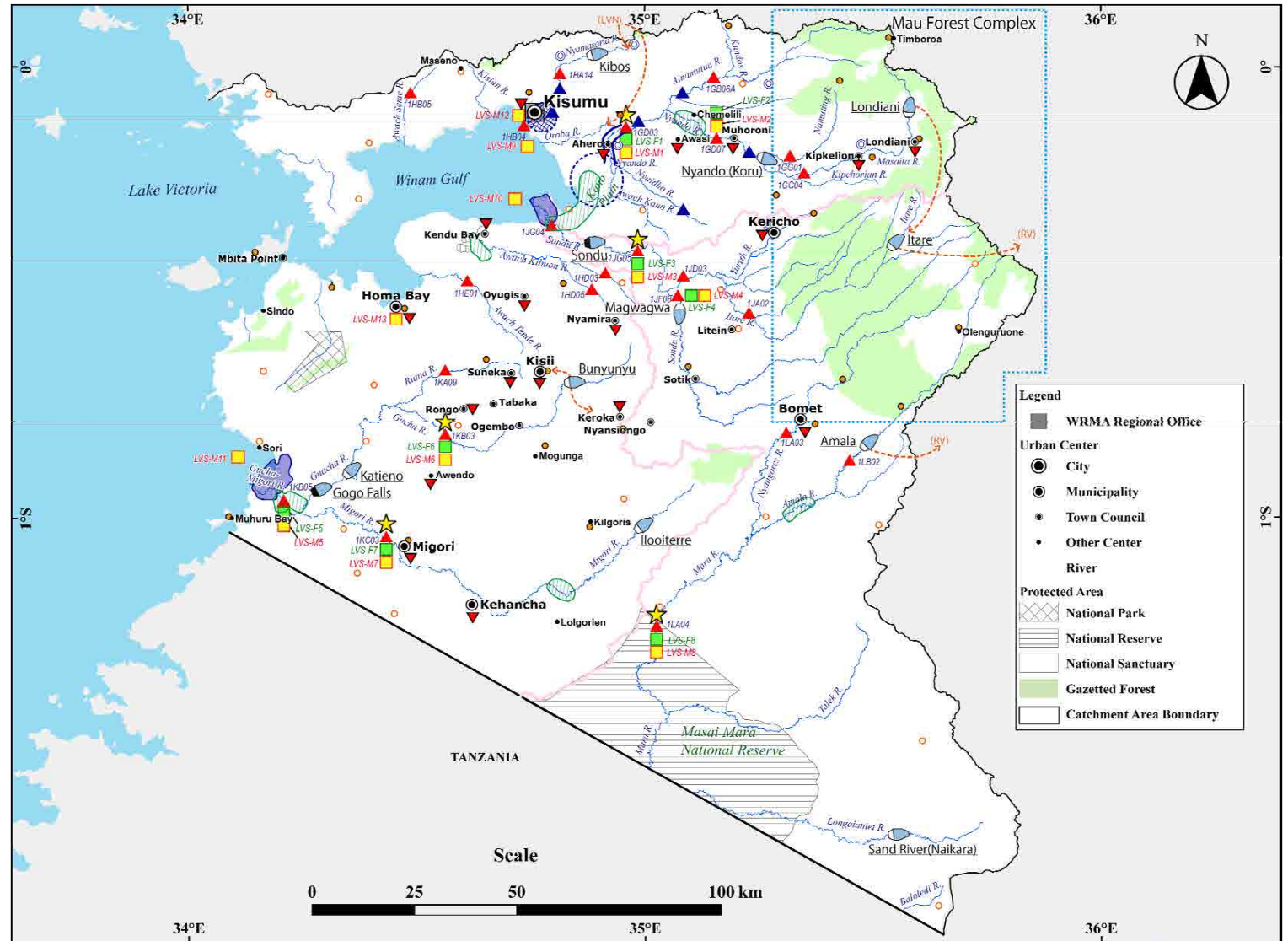
- 1) Flood Management
 - a) Kano Plain: flood control by dams, dikes and river improvement
 - b) Kano Plain: establishment of early flood forecasting and warning system
 - c) Nyando R.: preparation of flood fighting plan for dikes
 - d) Mouth areas of Sondu and Kuja Rivers : community-based disaster management
 - e) Kisumu City: provision of urban drainage measures
- 2) Drought Management
 - a) Establishment of Basin Drought Conciliation Councils
 - b) Early Drought Forecasting based on long-term rainfall prediction
 - c) Water Use Restriction Rule for Reservoirs (Existing 2 dams and proposed 10 dams)

Environmental Management Plan

- 1) Setting of Environmental Flow Rate 8 locations
- 2) Environmental Monitoring 13 locations

LEGEND OF PLANS

- Dam(Existing)
- Dam (Proposed)
- Water Transfer (Existing)
- Water Transfer (Proposed)
- Sub-regional Boundary



Legend

- WRMA Regional Office
- Urban Center
- City
- Municipality
- Town Council
- Other Center
- River
- Protected Area
 - ▨ National Park
 - ▨ National Reserve
 - ▨ National Sanctuary
 - ▨ Gazetted Forest
 - ▨ Catchment Area Boundary

全国水資源マスタープラン 2030 策定プロジェクト 国際協力機構	図 19.1.4 ビクトリア湖南流域区の管理計画
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Source: JICA Study Team

Proposed Development Plans

Water Supply Development Plan

- Urban Water Supply Development (13 Urban Centers)
 - 1) Rehabilitation (10 UC) 129,000 m³/day
 - 2) Expansion (10 UC) 254,000 m³/day
 - 3) New Construction (3 UC) 15,000 m³/day
 - 4) Service Population 3.34 million
- Rural Water Supply (18 Counties)
 - 1) Large Scale 178,000 m³/day
 - 2) Small Scale 120,000 m³/day
 - 3) Target Population 4.11 million

Sanitation Development Plan

- Sewerage Development (9 Urban Centers)
 - 1) Rehabilitation (3 UC) 18,000 m³/day
 - 2) Expansion (3 UC) 150,000 m³/day
 - 3) New Construction (6 UC) 72,000 m³/day
 - 4) Service Population 3.16 million
- On-site Sanitation (18 Counties)
 - 1) Installation of Proper On-site Sanitation Facilities by Individual or Communities
 - 2) Target Population 4.29 million

Irrigation Development Plan

- Large Scale Irrigation Area
 - 1) Large Scale Irrigation 78,850 ha (9 Projects)
 - 2) Small Scale Irrigation 9,271 ha (14 Counties)
 - 3) Private Sector Irrigation 4,045 ha (14 Counties)

Hydropower Development Plan

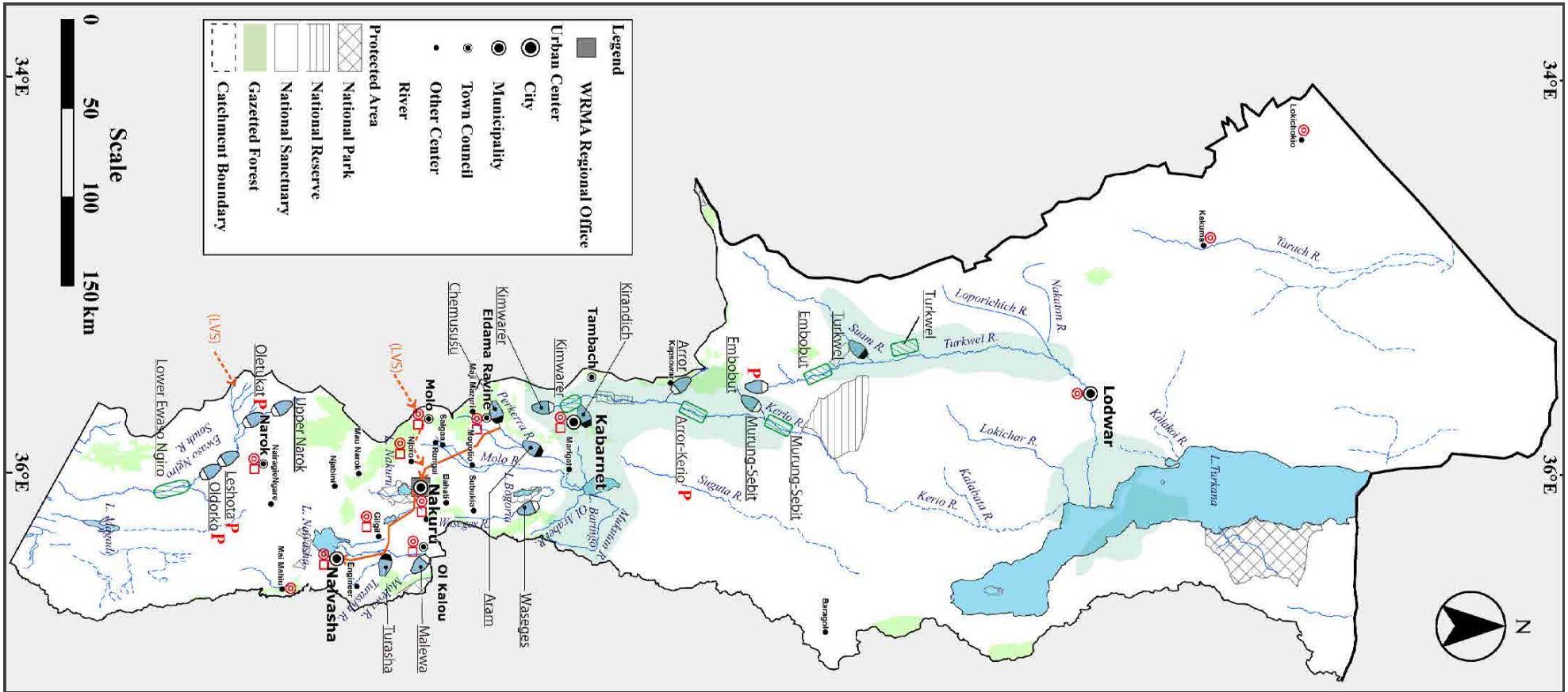
- Hydropower Development
 - 1) Aror Multipurpose Dam Project 80 MW
 - 2) Embobut Multipurpose Dam Project 45 MW
 - 3) Kimwarer Multipurpose Dam Project 20 MW
 - 4) Oletukat Multipurpose Dam Project 36 MW
 - 5) Leshota Multipurpose Dam Project 54 MW
 - 6) Oldorko Multipurpose Dam Project 90 MW

Water Resources Development Plan

- 1) Storage Dams 10 nos. (659 MCM)
- 2) Small Storage Dams and Pans 3,640 nos. (182 MCM)
- 3) Boreholes: 160 nos. (16 MCM/year)
- 4) Inter-basin Transfer (from Itare and Londiani Dams to Nakuru) 41 MCM/year
- 5) Inter-basin Transfer (from Amala Dam to Ewaso Ng'iro South River) 82 MCM/year

LEGEND OF PLANS

- Irrigation Potential Area
- Water Transfer (Existing)
- Dam (Existing)



全国水資源マスタープラン 2030
策定プロジェクト

図 19.1.5
リフトバレー流域区の開発計画

国際協力機構

Note: See a close-up view shown in Figure 19.1.13
Source: JICA Study Team

Proposed Management Plans

Water Resources Management Plan

- 1) Monitoring Networks
 - ▲ Surface Water Monitoring Station 23 locations
 - Rainfall Monitoring Station 47 locations
 - Groundwater Monitoring Station 10 locations
 - ★ Reference Point 4 locations
- 2) Evaluation of Water Resources
- 3) Improvement of Water Permit Issue and Management System
- 4) Watershed Conservation (Forestation and Small Water Sources Conservation)

Flood and Drought Disaster Management Plan

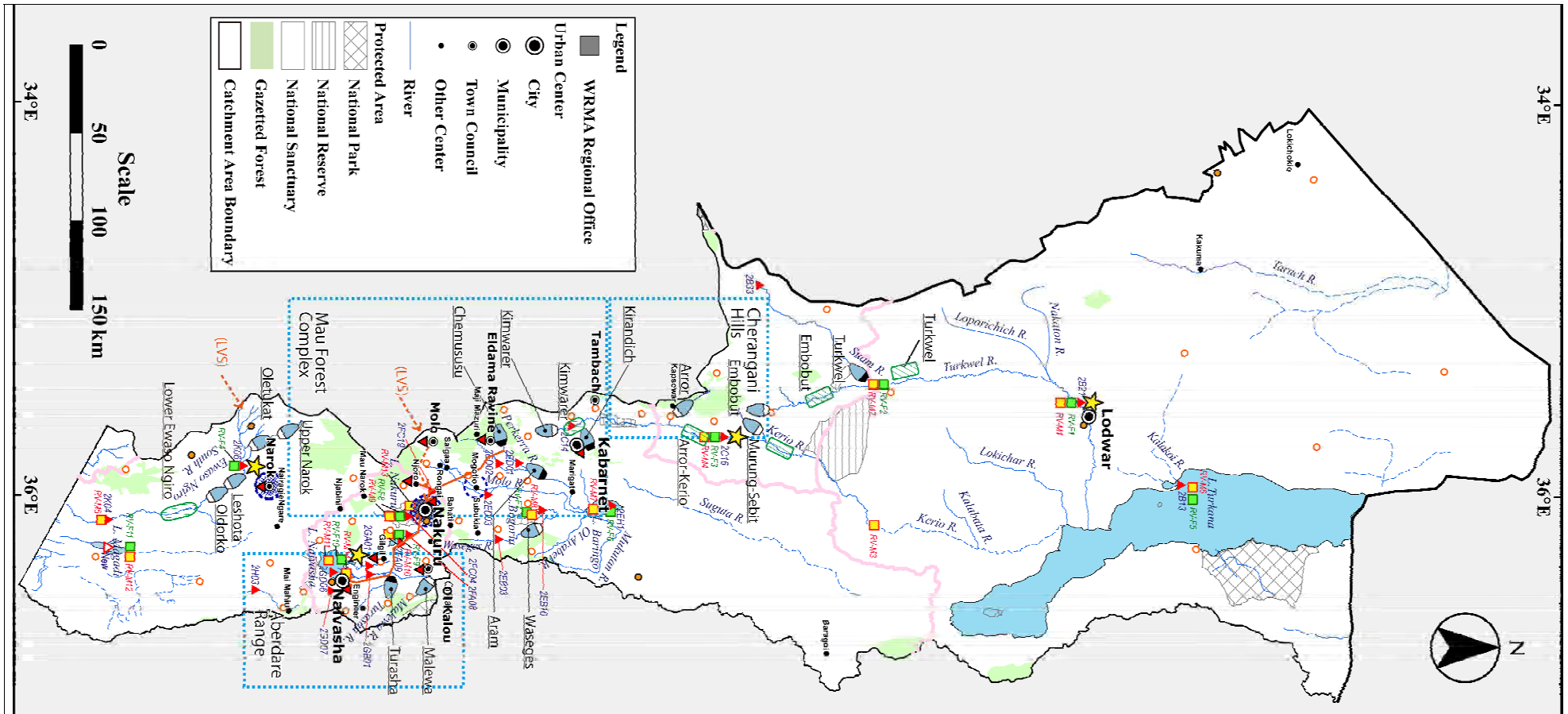
- 1) Flood Management
 - a) Narok: flood control by river improvement and dam, and preparation of flood hazard map and evacuation plan
 - b) Mogotio: flood control by river improvement and preparation of hazard map
 - c) Narok: provision of urban drainage measures
 - d) Nakuru: provision of urban drainage measures
- 2) Drought Management
 - a) Establishment of Basin Drought Conciliation Councils
 - b) Early Drought Forecasting based on long-term rainfall prediction
 - c) Water Use Restriction Rule for Reservoirs (Existing 5 dams and proposed 10 dams)

Environmental Management Plan

- 1) Setting of Environmental Flow Rate 12 locations
- 2) Environmental Monitoring 14 locations

LEGEND OF PLANS

- Dam (Existing)
- Dam (Proposed)
- Water Transfer (Existing)
- Water Transfer (Proposed)
- Sub-regional Boundary



Legend

- WRMA Regional Office
- Urban Center
- City
- Municipality
- Town Council
- Other Center
- River
- Protected Area
 - National Park
 - National Reserve
 - National Sanctuary
 - Gazetted Forest
 - Catchment Area Boundary

全国水資源マスタープラン 2030
策定プロジェクト

図 19.1.6
リフトバレー流域区の管理計画

国際協力機構

Note: See a close-up view shown in Figure 19.1.13
Source: JICA Study Team

Proposed Development Plans

Water Supply Development Plan

- ⊙ Urban Water Supply Development (32 Urban Centers)
 - 1) Rehabilitation (30 UC) 699,000 m³/day
 - 2) Expansion (29 UC) 1,542,000 m³/day
 - 3) New Construction (2 UC) 19,000 m³/day
 - 4) Service Population 17.01 million
- Rural Water Supply (10 Counties)
 - 1) Large Scale 209,000 m³/day
 - 2) Small Scale 110,000 m³/day
 - 3) Target Population 4.04 million

Sanitation Development Plan

- Sewerage Development (25 Urban Centers)
 - 1) Rehabilitation (6 UC) 244,000 m³/day
 - 2) Expansion (6 UC) 715,000 m³/day
 - 3) New Construction (19 UC) 430,000 m³/day
 - 4) Service Population 16.26 million
- On-site Sanitation (10 Counties)
 - 1) Installation of Proper On-site Sanitation Facilities by Individual or Communities
 - 2) Target Population 4.79 million

Irrigation Development Plan

- ▨ Large Scale Irrigation Area
 - 1) Large Scale Irrigation 37,280 ha (4 Projects)
 - 2) Small Scale Irrigation 6,484 ha (10 Counties)
 - 3) Private Sector Irrigation 2,344 ha (10 Counties)

Hydropower Development Plan

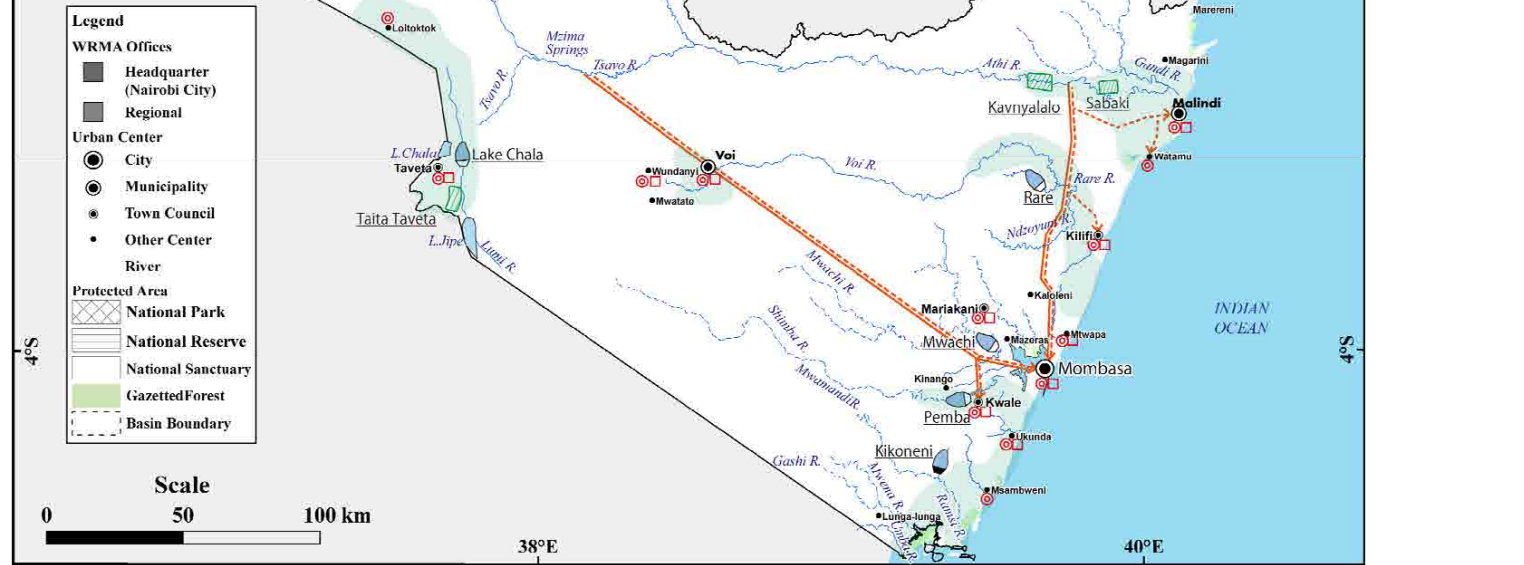
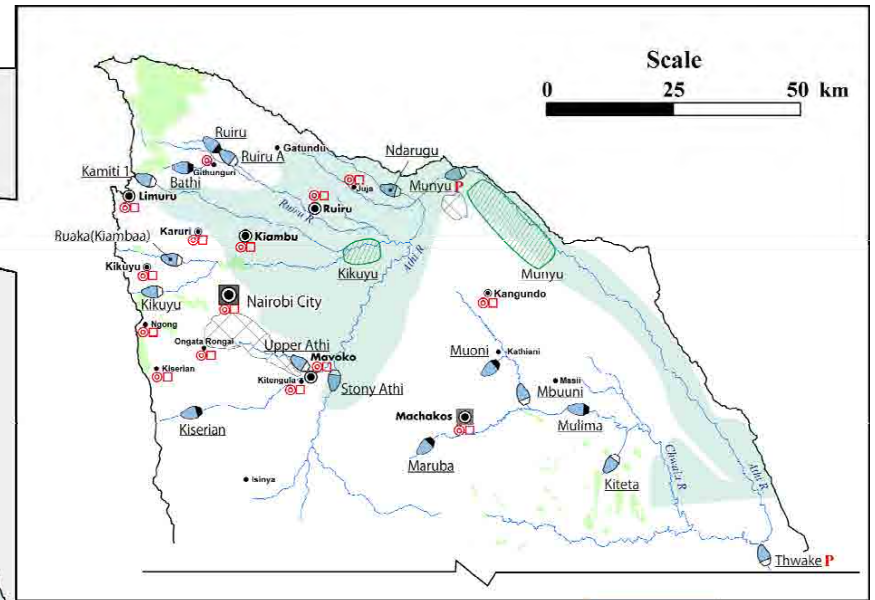
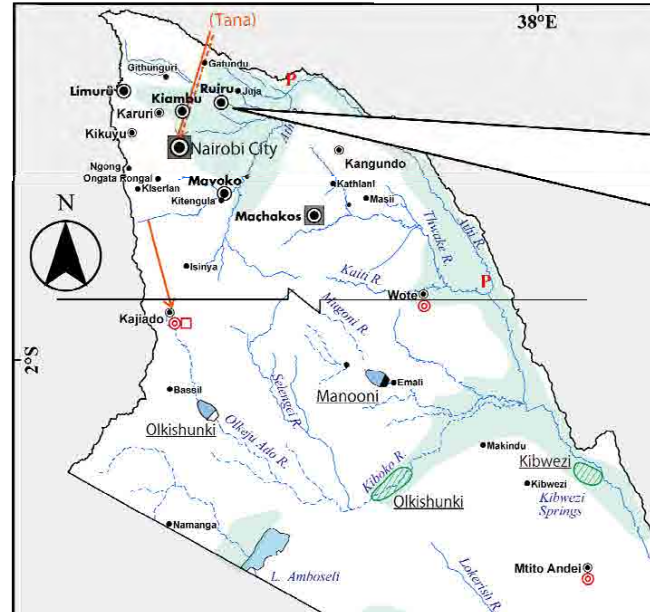
- P 1) Muryu Multipurpose Dam Project 40MW
- 2) Thwake Multipurpose Dam Project 20MW

Water Resources Development Plan

- ☒ 1) Storage Dams 16 nos. (1,689 MCM)
- 2) Small Storage Dams and Pans (94 MCM)
- 3) Boreholes 350 nos. (35 MCM/year)
- 4) Inter-basin Transfer (from Tana CA to Nairobi, Ext.) 168 MCM/year
- 5) Intra-basin Transfer (from Mzima Spring to Mombasa/Kwale/Ukunda, Ext.) 37 MCM/year
- 6) Intra-basin Transfer (from Athi R. to Mombasa/Malindi/Kilifi/Mtwapa, Ext.) 31 MCM/year
- 7) Desalination for Mombasa 93 MCM/year

LEGEND OF PLANS

- ☒ Dam (Existing)
- Water Transfer (Existing)
- ▨ Irrigation Potential Area



Legend

WRMA Offices

- Headquarter (Nairobi City)
- Regional

Urban Center

- City
- Municipality
- Town Council
- Other Center

Protected Area

- ▨ National Park
- ▨ National Reserve
- ▨ National Sanctuary
- ▨ Gazetted Forest
- - - Basin Boundary

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Proposed Management Plans

Water Resources Management Plan

- 1) Monitoring Networks
 - Surface Water Monitoring Station 26 locations
 - Rainfall Monitoring Station 38 locations
 - Groundwater Monitoring Station 24 locations
 - Reference Point 2 locations
- 2) Evaluation of Water Resources
- 3) Improvement of Water Permit Issue and Management System
- 4) Watershed Conservation (Forestation and Small Water Sources Conservation)

Flood and Drought Disaster Management Plan

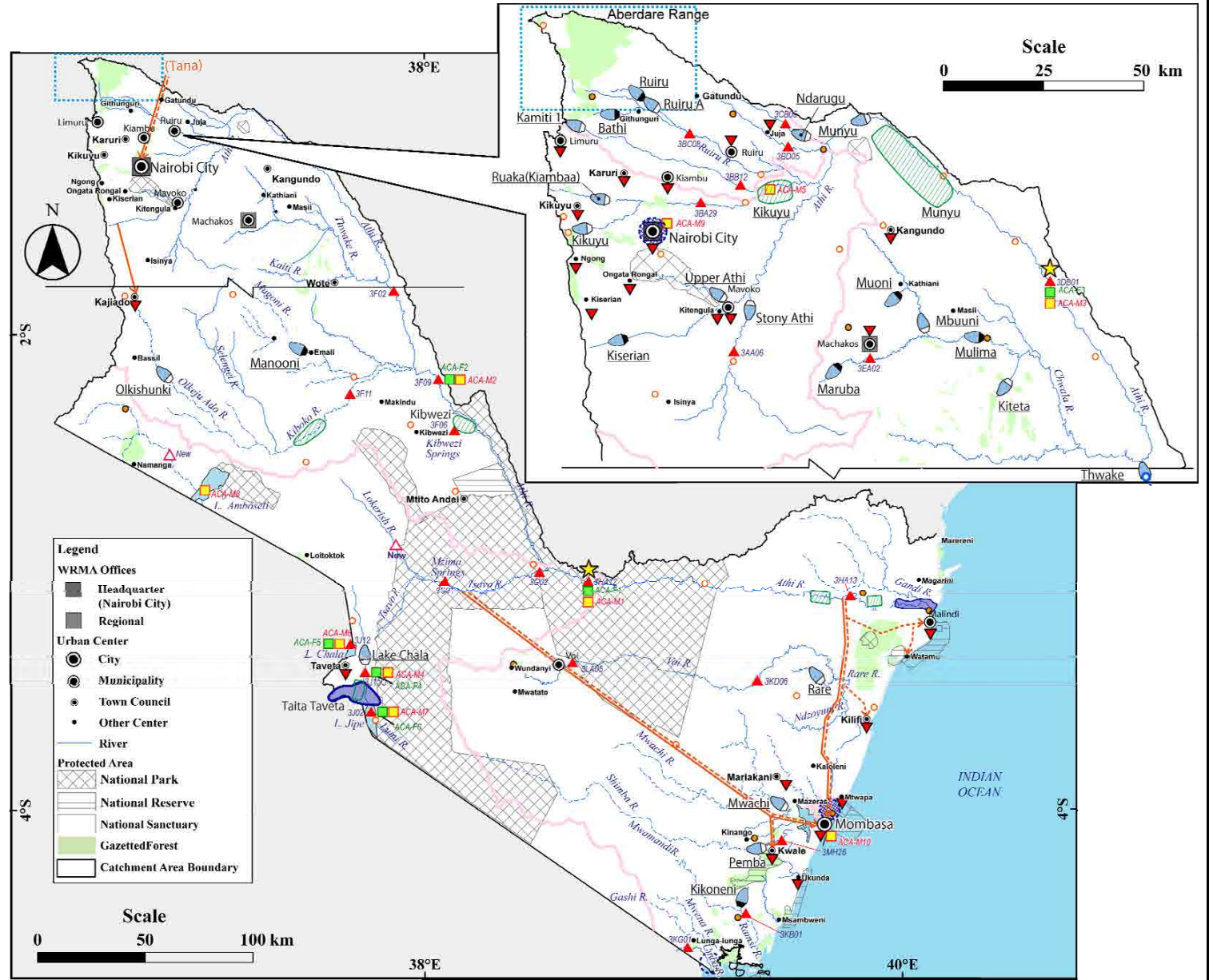
- 1) Flood Management
 - a) Kilifi (Downmost Athi): community-based disaster management
 - b) Taveta (Lumi Rivermouth): community-based disaster management
 - c) Kwale (Vanga): flood control by river training and preparation of hazard map
 - d) Nairobi: provision of urban drainage measures
 - e) Mombasa: provision of urban drainage measures
- 2) Drought Management
 - a) Establishment of Basin Drought Conciliation Councils
 - b) Early Drought Forecasting based on long-term rainfall prediction
 - c) Water Use Restriction Rule for Reservoirs (Existing 8 dams and proposed 16 dams)

Environmental Management Plan

- 1) Setting of Environmental Flow Rate 5 locations
- 2) Environmental Monitoring 10 locations

LEGEND OF PLANS

- Dam(Existing)
- Dam (Proposed)
- Water Transfer (Existing)
- Water Transfer (Proposed)
- Sub-regional Boundary



全国水資源マスタープラン 2030
策定プロジェクト

図 19.1.8
アティ流域区の管理計画

国際協力機構

Proposed Development Plans

Water Supply Development Plan

- ⊙ Urban Water Supply Development (23 Urban Centers)
 - 1) Rehabilitation (15 UC) 106,000 m³/day
 - 2) Expansion (14 UC) 349,000 m³/day
 - 3) New Construction (8 UC) 88,000 m³/day
 - 4) Service Population 4.90 million
- Rural Water Supply (16 Counties)
 - 1) Large Scale 211,000 m³/day
 - 2) Small Scale 145,000 m³/day
 - 3) Target Population 4.96 million

Sanitation Development Plan

- Sewerage Development (18 Urban Centers)
 - 1) Rehabilitation (6 UC) 32,000 m³/day
 - 2) Expansion (6 UC) 118,000 m³/day
 - 3) New Construction (12 UC) 248,000 m³/day
 - 4) Service Population 5.24 million
- On-site Sanitation (16 Counties)
 - 1) Installation of Proper On-site Sanitation Facilities by Individual or Communities
 - 2) Target Population 5.13 million

Irrigation Development Plan

- ▨ Large Scale Irrigation Area
 - 1) Large Scale Irrigation 135,961 ha (4 Projects)
 - 2) Small Scale Irrigation 15,784 ha (15 Counties)
 - 3) Private Sector Irrigation 10,054 ha (15 Counties)

Hydropower Development Plan

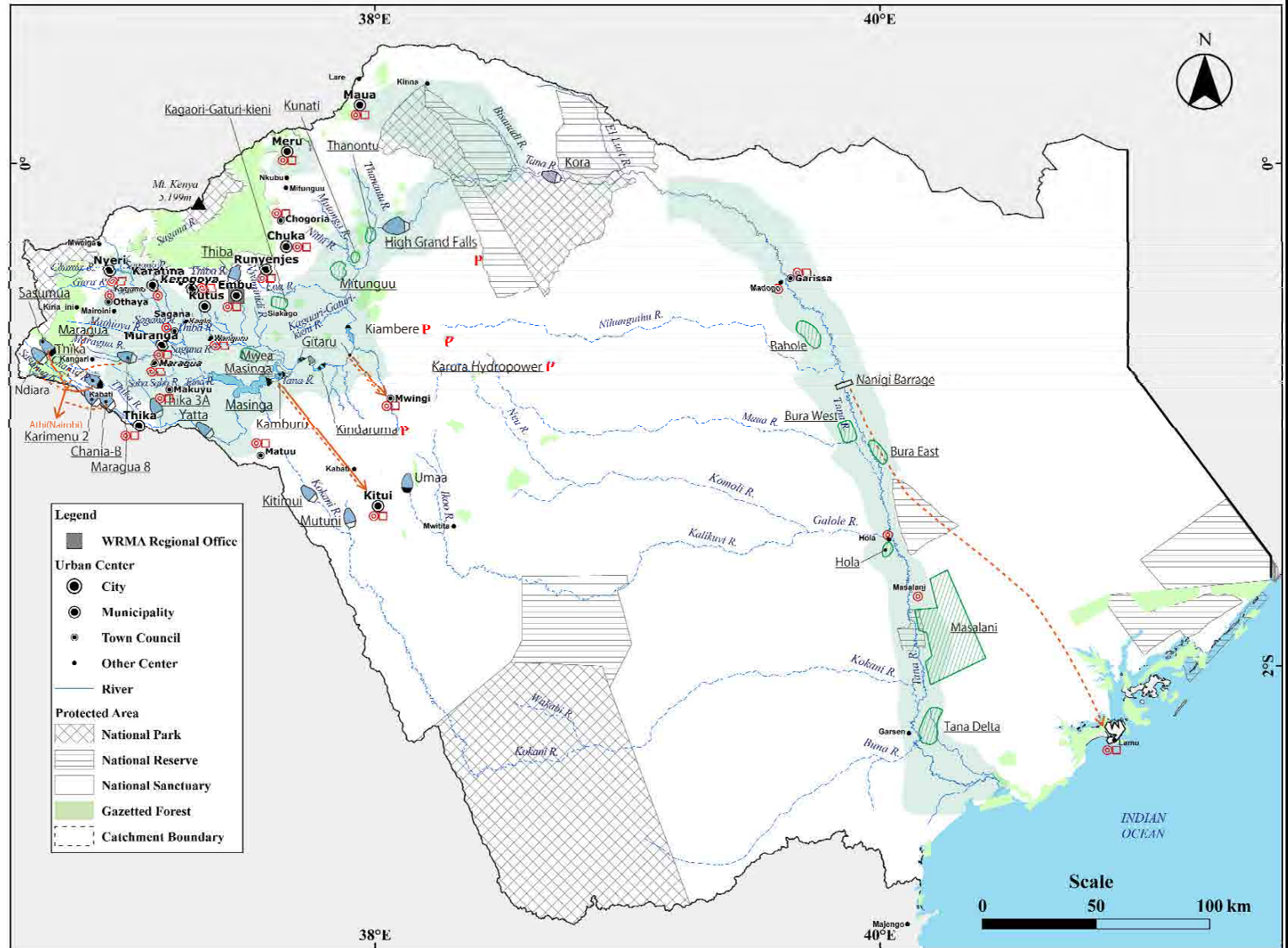
- P Hydropower Development
 - 1) Kindaruma Hydropower Upgrade 0+32 MW
 - 2) High Grand Falls Stage 1: 500 MW Multipurpose Dam Stage 2: +200 MW Project
 - 3) Karura Hydropower Project 090 MW

Water Resources Development Plan

- ☒ 1) Storage Dams 11 nos. (5,729 MCM)
- 2) Small Storage Dams and Pans 3,020 nos. (151 MCM)
- 3) Boreholes: 1,440 nos. (144 MCM/year)
- 4) Inter-basin Transfer 168 MCM/year (from Tana CA to Nairobi, Ext.)
- 5) Intra-basin Transfer 23 MCM/year (from Masinga Dam to Kitui, Ext.)
- 6) Intra-basin Transfer 2 MCM/year (from Kiambere Dam to Mwingi, Ext.)
- 7) Intra-basin Transfer 69 MCM/year (from Tana R. to Lamu)

LEGEND OF PLANS

- ☒ Dam(Existing)
- Water Transfer (Existing)
- ▨ Irrigation Potential Area



全国水資源マスタープラン 2030 策定プロジェクト 国際協力機構	図 19.1.9 タナ流域区の開発計画
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Note: See a close-up view shown in Figure 19.1.14
 Source: JICA Study Team

Proposed Management Plans

Water Resources Management Plan

- 1) Monitoring Networks
 - ▲ Surface Water Monitoring Station 26 locations
 - Rainfall Monitoring Station 47 locations
 - ▼ Groundwater Monitoring Station 18 locations
 - ★ Reference Point 3 locations
- 2) Evaluation of Water Resources
- 3) Improvement of Water Permit Issue and Management System
- 4) Watershed Conservation (Forestation and Soil Erosion Control)

Flood and Drought Disaster Management Plan

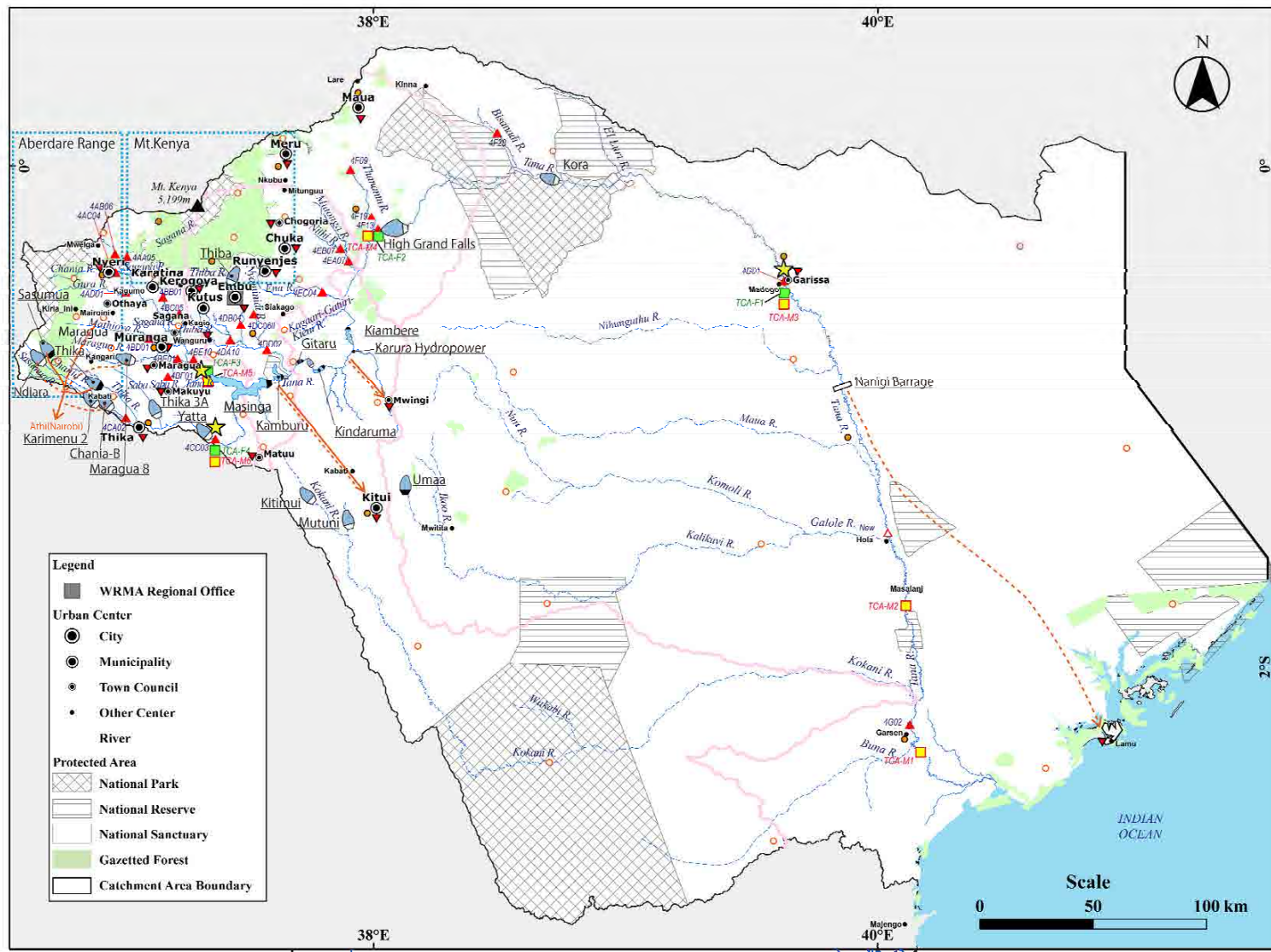
- 1) Flood Management
 - a) Garissa: flood control by river structure and dam, and preparation of flood hazard map and evacuation plan
 - b) Lower Tana: community-based disaster management
 - c) Kiambere Dam: Improvement of discharge warning system
- 2) Drought Management
 - a) Establishment of Basin Drought Conciliation Councils
 - b) Early Drought Forecasting based on long-term rainfall prediction
 - c) Water Use Restriction Rule for Reservoirs (Existing 8 dams and proposed 11 dams)

Environmental Management Plan

- 1) Setting of Environmental Flow Rate 4 locations
- 2) Environmental Monitoring 6 locations

LEGEND OF PLANS

- Dam(Existing)
- Dam (Proposed)
- Water Transfer (Existing)
- - - Water Transfer (Proposed)
- Sub-regional Boundary



Note: See a close-up view shown in Figure 19.1.14
Source: JICA Study Team

全国水資源マスタープラン 2030 策定プロジェクト	図 19.1.10 タナ流域区の管理計画
国際協力機構	

Proposed Development Plans

Water Supply Development Plan

- Urban Water Supply Development (12 Urban Centers)
 - 1) Rehabilitation (6 UC) 32,000 m³/day
 - 2) Expansion (6 UC) 61,000 m³/day
 - 3) New Construction (6 UC) 31,000 m³/day
 - 4) Service Population 1.04 million
- Rural Water Supply (14 Counties)
 - 1) Large Scale 119,000 m³/day
 - 2) Small Scale 101,000 m³/day
 - 3) Target Population 3.36 million

Sanitation Development Plan

- Sewerage Development (5 Urban Centers)
 - 1) Rehabilitation (2 UC) 5,000 m³/day
 - 2) Expansion (2 UC) 27,000 m³/day
 - 3) New Construction (3 UC) 30,000 m³/day
 - 4) Service Population 0.82 million
- On-site Sanitation (14 Counties)
 - 1) Installation of Proper On-site Sanitation Facilities by Individual or Communities
 - 2) Target Population 3.58 million

Irrigation Development Plan

- Large Scale Irrigation Area
 - 1) Large Scale Irrigation 26,202 ha (3 Projects)
 - 2) Small Scale Irrigation 8,116 ha (10 Counties)
 - 3) Private Sector Irrigation 7,165 ha (10 Counties)

Hydropower Development Plan

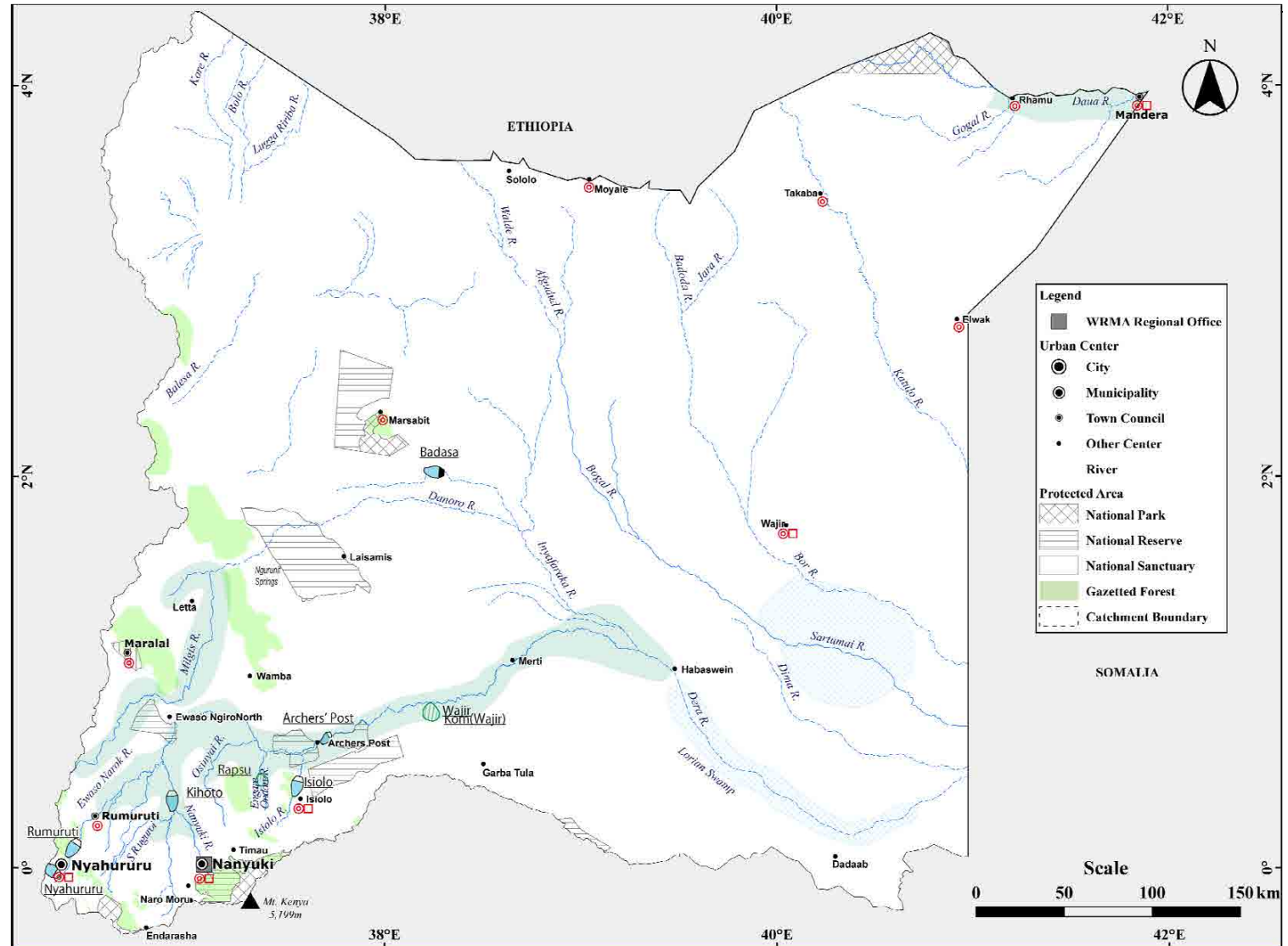
(No Plan)

Water Resources Development Plan

- 1) Storage Dams 5 nos. (522 MCM)
- 2) Small Storage Dams and Pans 1,820 nos. (91 MCM)
- 3) Boreholes: 1,560 nos. (156 MCM/year)

LEGEND OF PLANS

- Dam(Existing)
- Water Transfer (Existing)
- Irrigation Potential Area



全国水資源マスタープラン 2030
策定プロジェクト

図 19.1.11
エワソングロ北流域区の開発計画

国際協力機構

Proposed Management Plans

Water Resources Management Plan

- 1) Monitoring Networks
 - △ Surface Water Monitoring Station 13 locations
 - Rainfall Monitoring Station 34 locations
 - ▽ Groundwater Monitoring Station 5 locations
 - ★ Reference Point 1 location
- 2) Evaluation of Water Resources
- 3) Improvement of Water Permit Issue and Management System
- 4) Watershed Conservation (Forestation, Small Water Sources Conservation and Soil Erosion Control)

Flood and Drought Disaster Management Plan

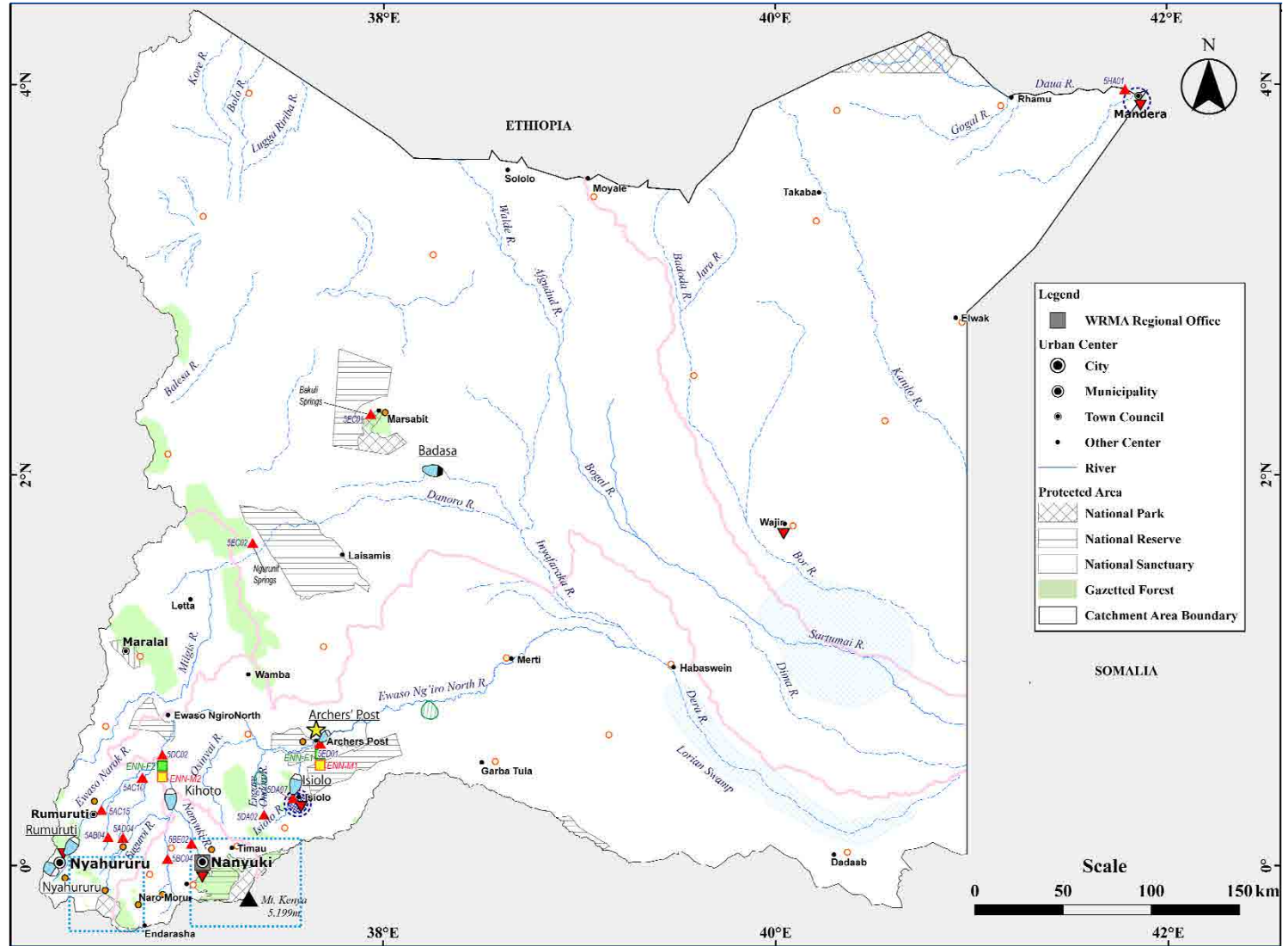
- 1) Flood Management
 - a) Mandera: flood control by river structures, and preparation of flood hazard map and evacuation plan
 - b) Isiolo: flood control by river structures and preparation of flood hazard map
 - c) Isiolo: provision of urban drainage measures
- 2) Drought Management
 - a) Establishment of Basin Drought Conciliation Councils
 - b) Early Drought Forecasting based on long-term rainfall prediction
 - c) Water Use Restriction Rule for Reservoirs (Existing 1 dam and proposed 5 dams)

Environmental Management Plan

- 1) Setting of Environmental Flow Rate 2 locations
- 2) Environmental Monitoring 2 locations

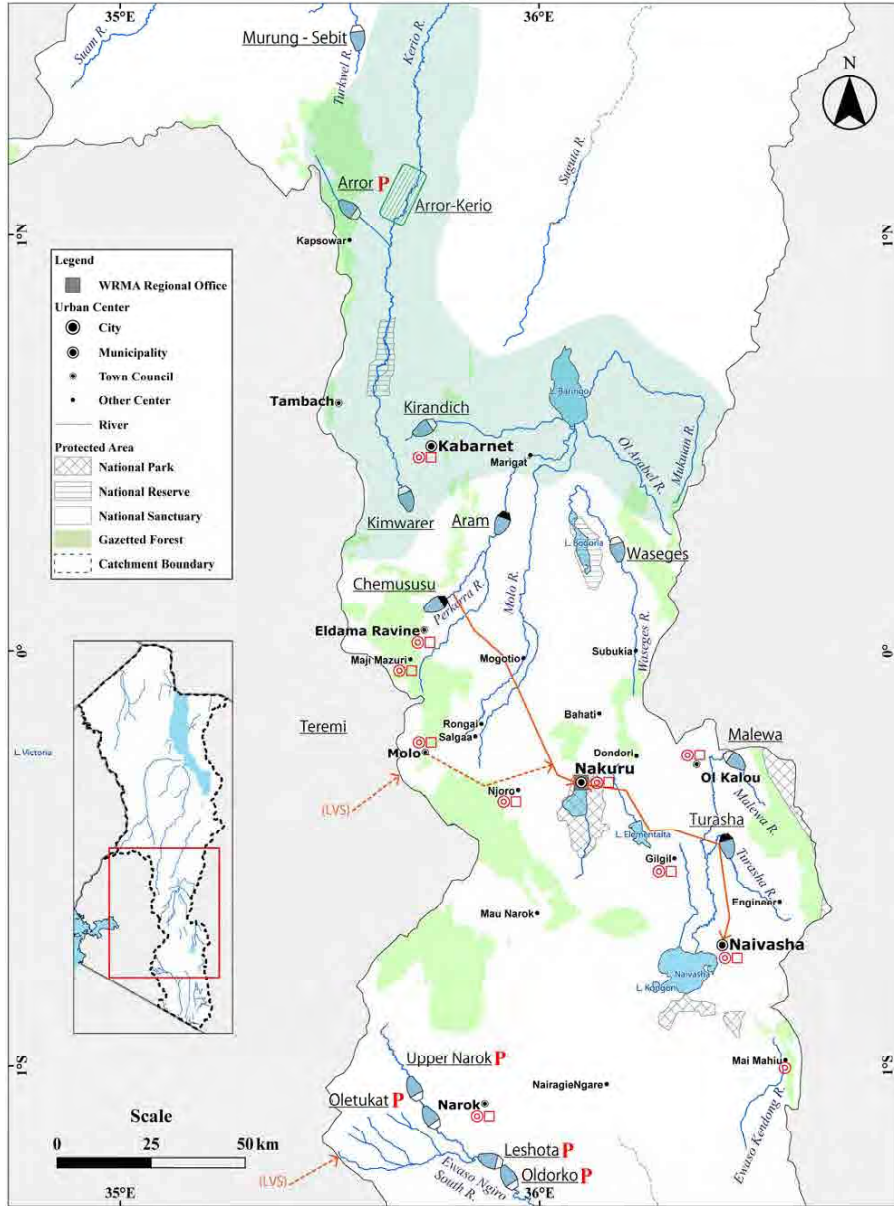
LEGEND OF PLANS

- Dam (Existing)
- Dam (Proposed)
- Water Transfer (Existing)
- Water Transfer (Proposed)
- Sub-regional Boundary

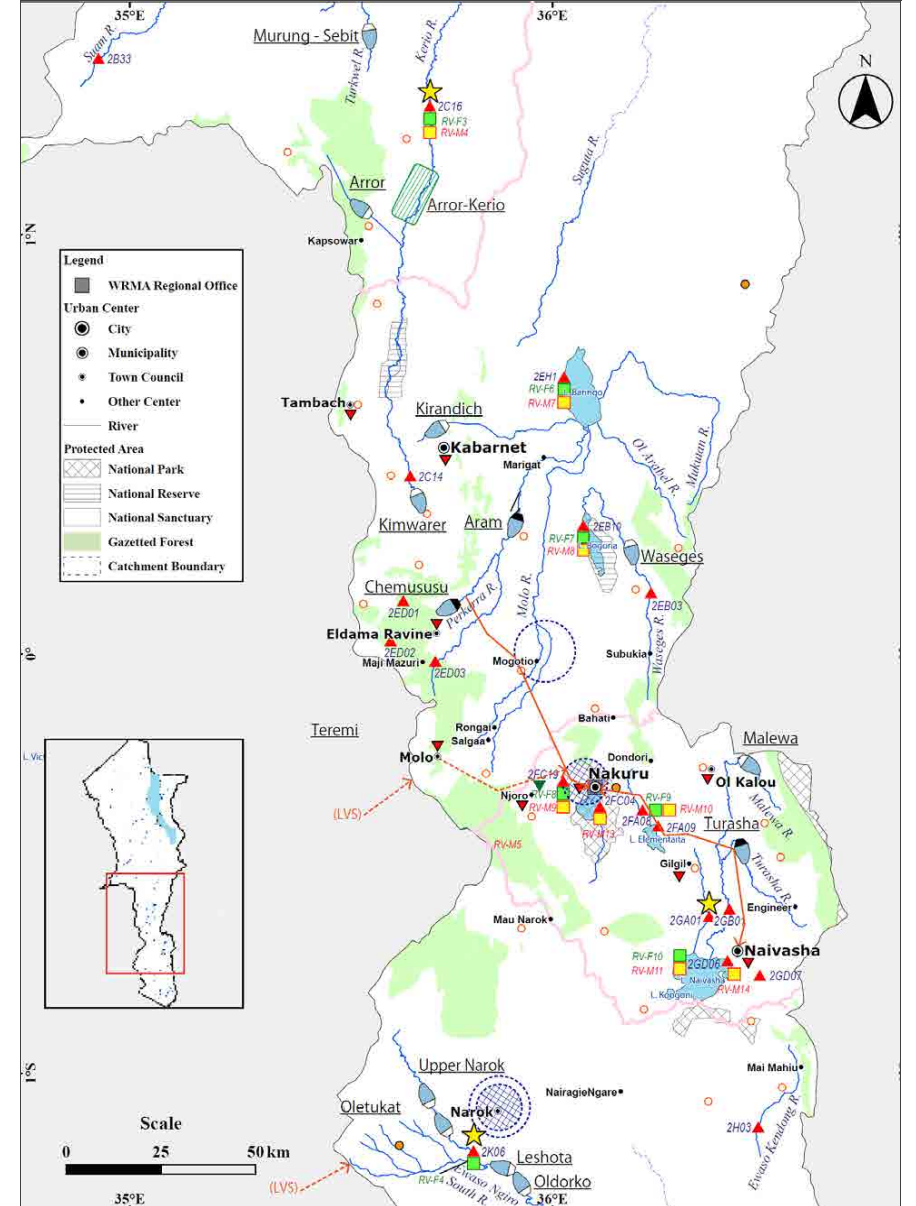


Source: JICA Study Team

Development Plans



Management Plans



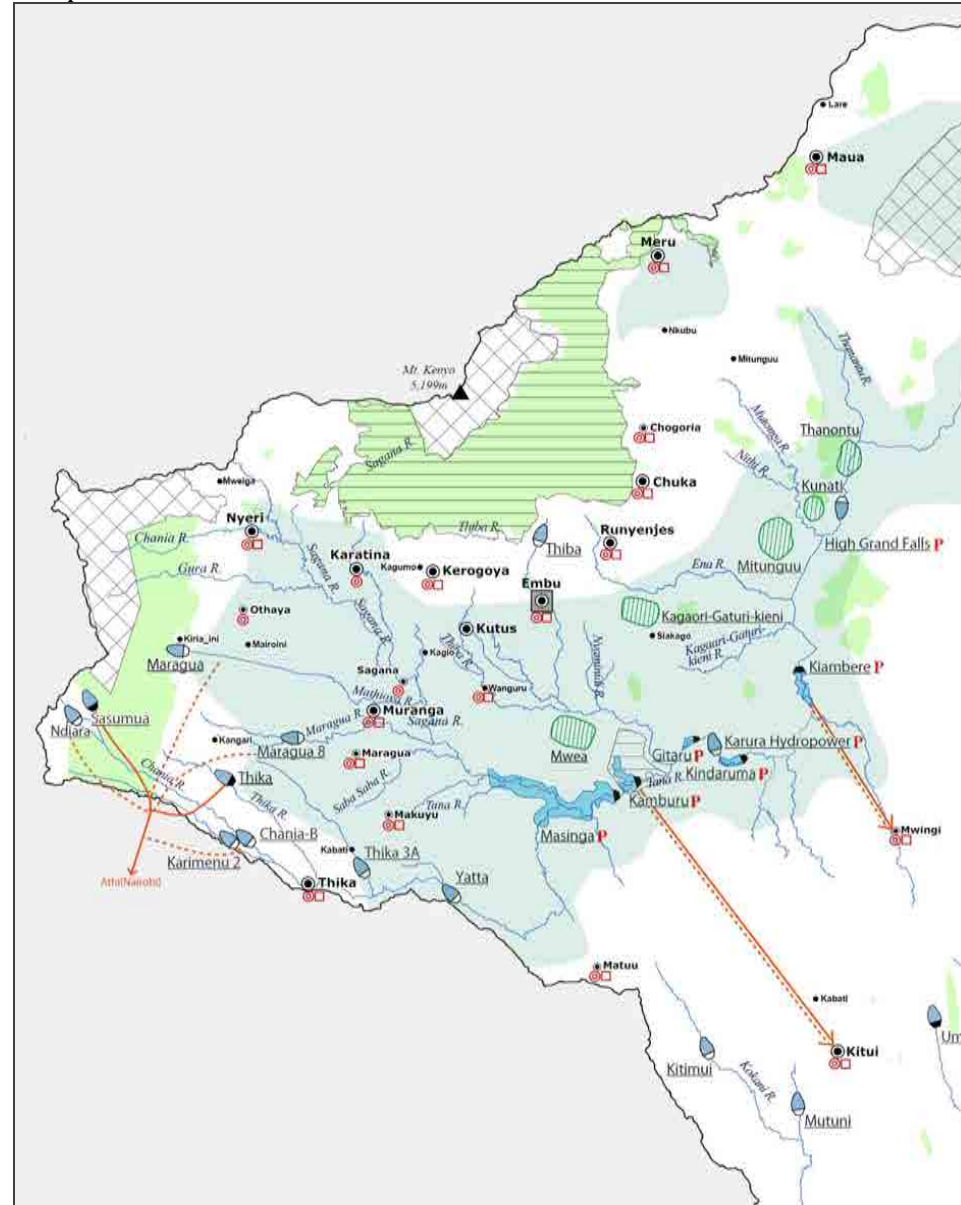
全国水資源マスタープラン 2030
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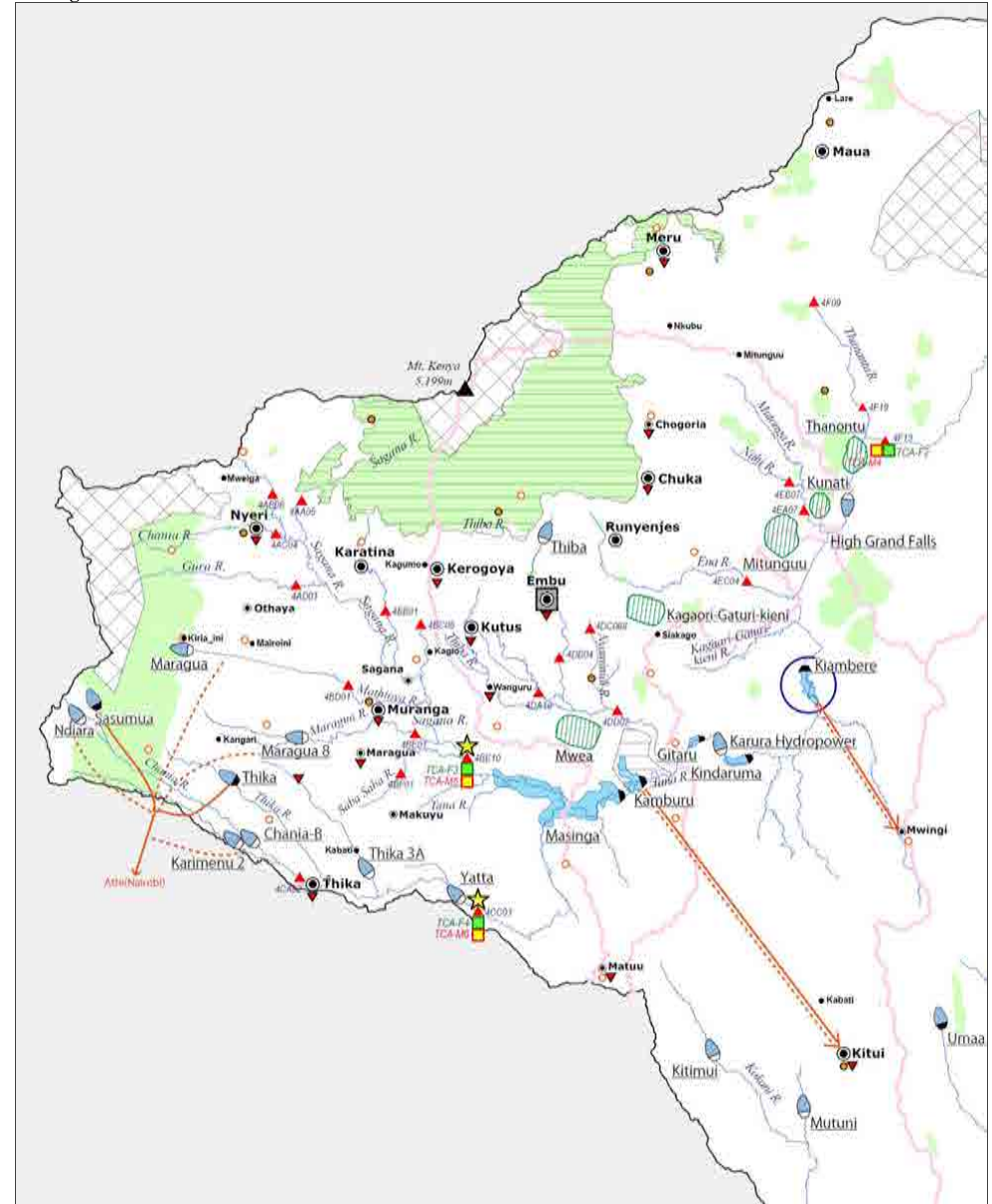
図 19.1.13

リフトバレー流域区の開発計画 (左)
および管理計画 (右) 拡大図

Development Plans



Management Plans



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全国水資源マスタープラン 2030
策定プロジェクト

国際協力機構

図 19.1.14

タナ流域区の開発計画 (左) および
管理計画 (右) 拡大図