ATTACHMENT

Attachment

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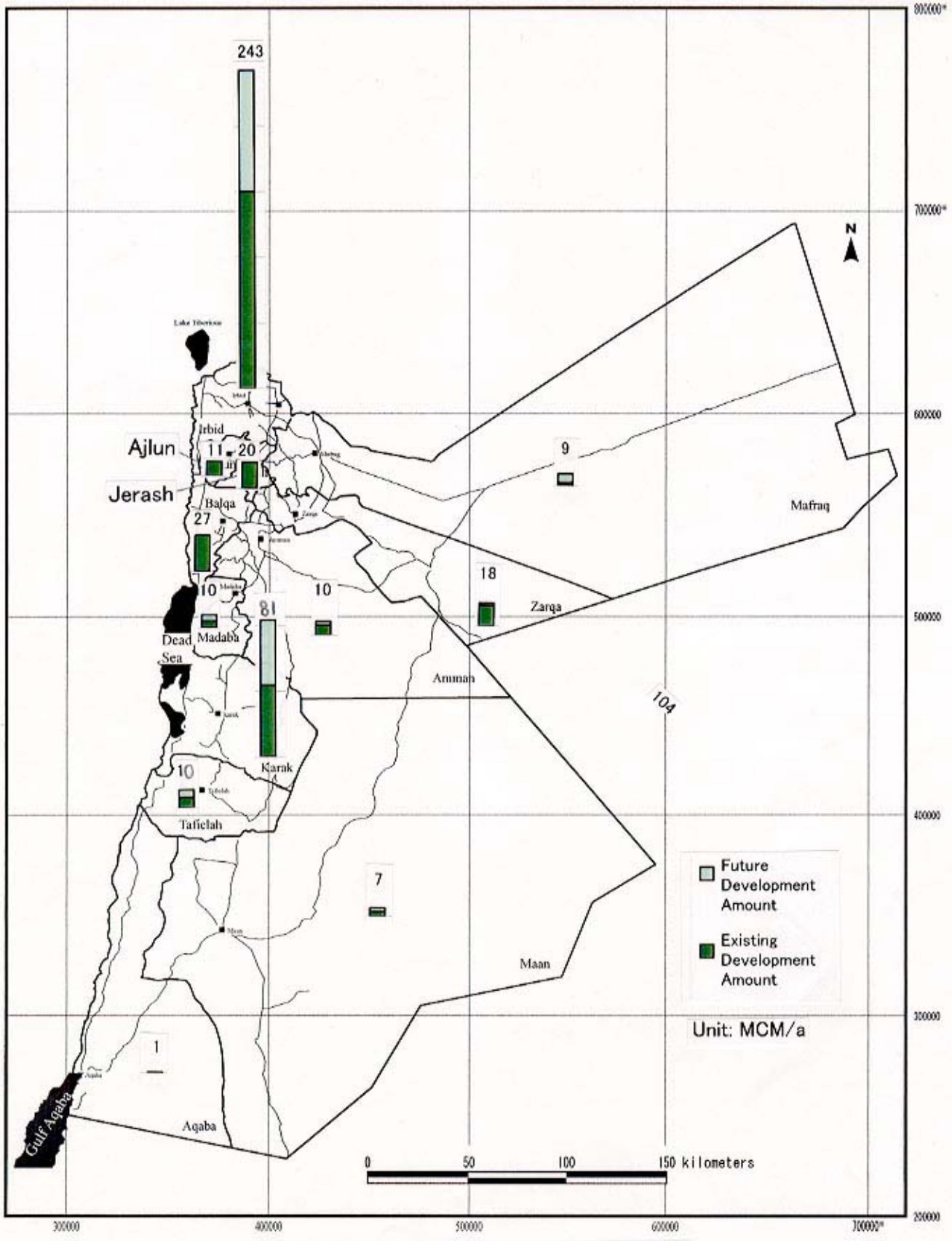
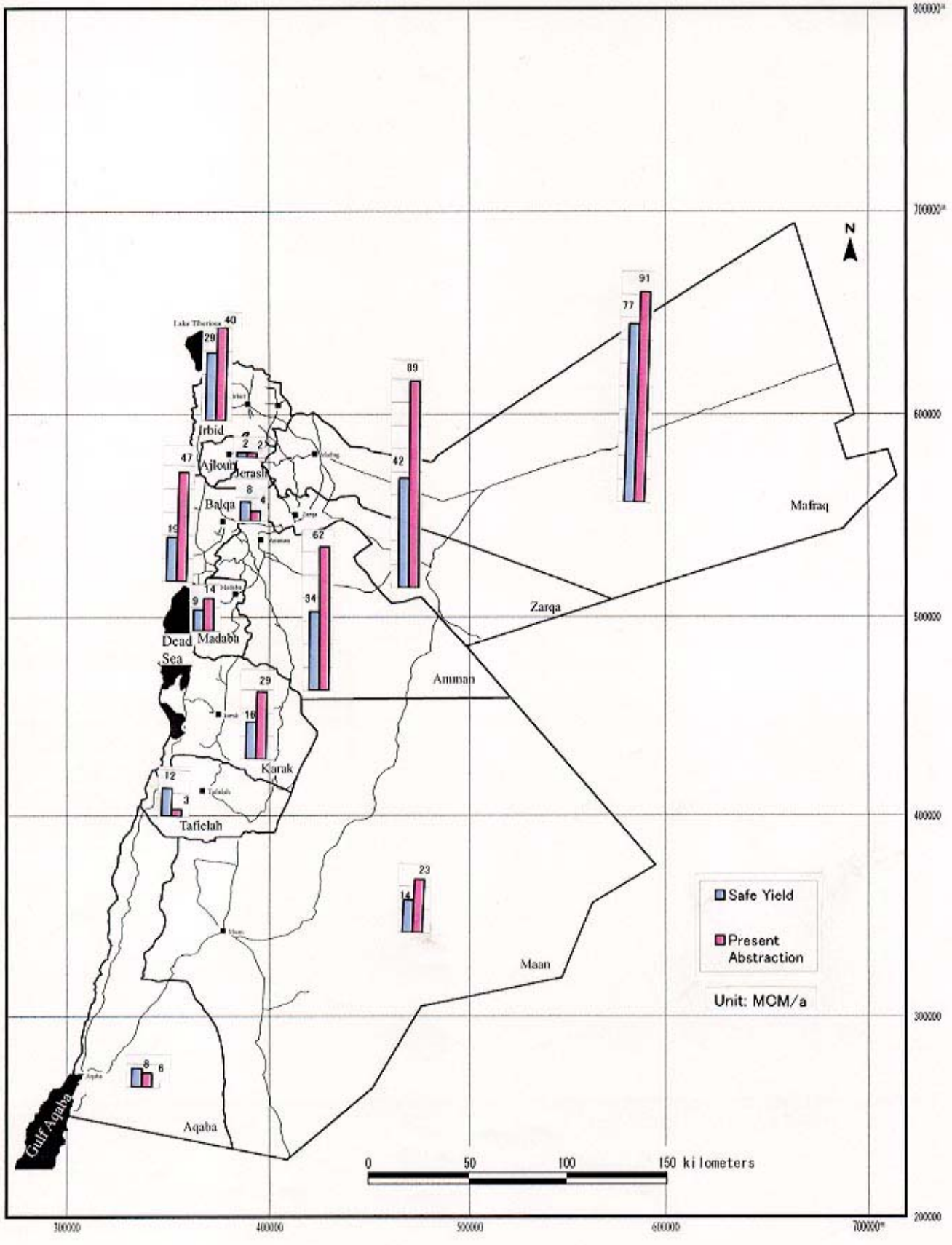
Summary of Economic and Financial Analysis for Pre-Feasibility Study

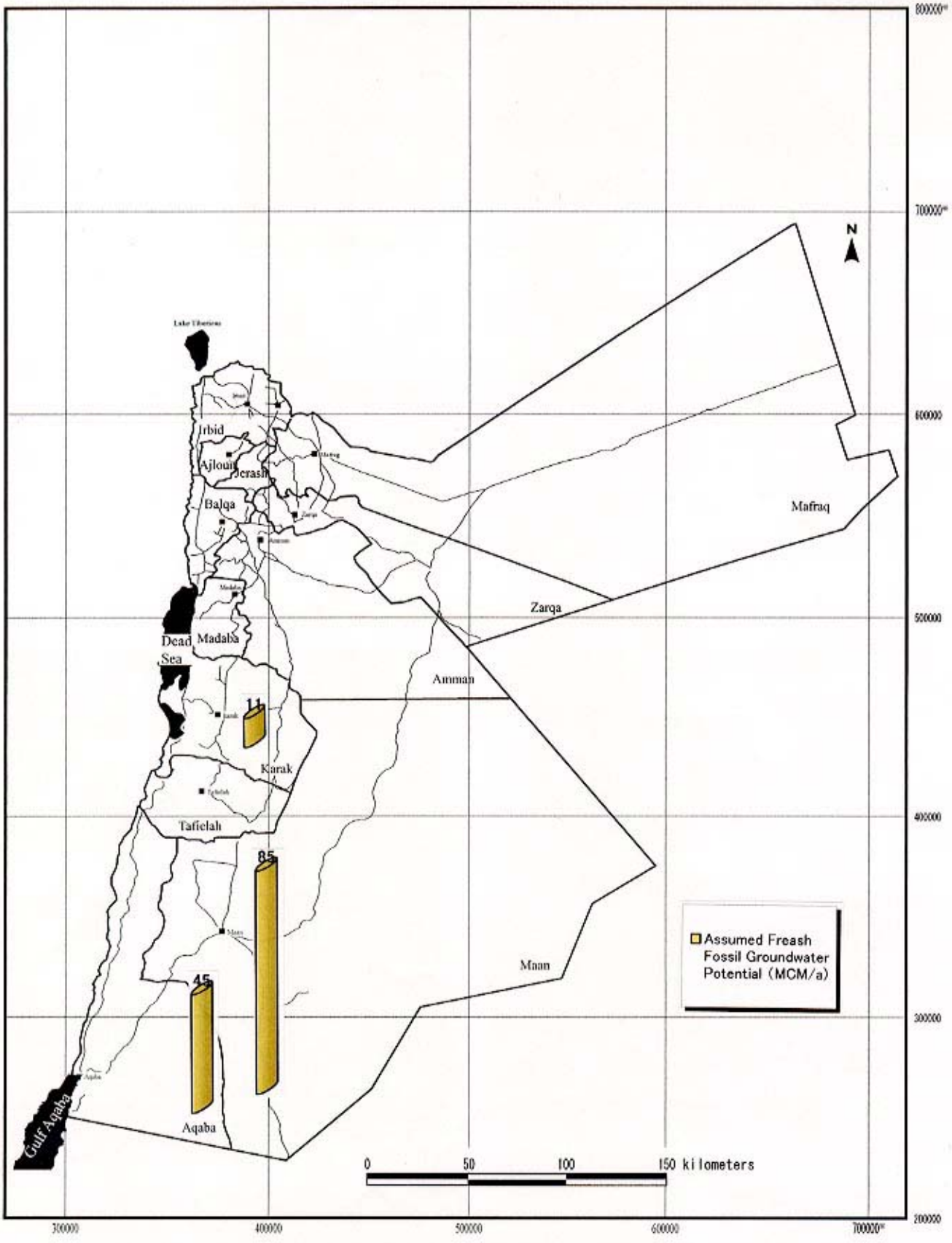
Project	Investment Cost	O & M Cost	Major Pre-Conditions	Financial Analysis		Economic Analysis	Managerial Indices		Economic/Financial Evaluation
	(Unit: JD) The 2nd figures are in US$.	(Unit: JD/a) The 2nd figs. are in US$.	(Common to All Projects) Discount Rate: Financial=5%, Economic=10% Interest Rate of Loans: 4%	FIRR(%)	Unit Water/Waste-water Price (fils/m^3)	EIRR(%)	Profit/ Revenues (%)	Profit/Working Capital (%)	
Wastewater Reuse			Treated wastewater tariff will be raised to 48 fils/m^3.						
Ma'an	373,428 $533,468	9,918 $14,169		4.1	44	7.4			Both FIRR and EIRR are acceptable as a social project. The unit treated wastewater price is cheap compared with other sources. Therefore, the project is judged to be feasible.
Abu Nuseir	227,068 $324,383	4,326 $6,180		12.0	21	19.1			FIRR and EIRR are more or less two times higher than the discount rates. The unit treated wastewater price is less than half the set one. Therefore, the project is highly feasible.
Fuhis	141,680 $202,400	4,000 $5,714		12.6	20	18.7			FIRR and EIRR are more or less two times higher than the discount rates. The unit treated wastewater price is less than half the set one. Therefore, the project is highly feasible.
Tafielah	434,275 $620,393	5,080 $7,257		0.4	69	8.9			FIRR is positive, and EIRR is acceptable as a social project. The unit treated wastewater price is cheap compared with other sources. Therefore, the project is judged to be feasible.
Total	1,176,451 $1,680,644	23,324 $33,320		6.4	35	12.2	21.9	21.4	FIRR & EIRR surpass the discount rates. The unit treated wastewater price is lower than the set one. Managerial indices are more than twice the standard levels. Therefore, the project is sufficiently feasible.
Wastewater Treatment Plant Extention			Sewerage tariff will be raised to 469 fils/m^3.						
Ma'an	3,176,413 $4,537,733	42,000 $60,000		5.3	420	4.5	14.1	11.4	FIRR clears the discount rate, and EIRR is acceptable as a social project. The unit wastewater price is lower than the set one. Managerial indices are above the standards. Hence, the project is feasible.
Wadi Zarqa	124,488,650 $177,840,929	7,369,000 $10,527,143		7.4	363	6.5	24.3	21.6	FIRR is substantially above the discount rate, and EIRR is acceptable as a social project. The unit waste-water price is considerably below the set one. Managerial indices are more than twice the standards. Therefore, the project is sufficiently feasible.
National Water Control System	13,379,940 $19,114,200	1,719,100 $2,455,857	UFW reduction rate: 1% (physical: 0.5%, administrative: 0.5%) Municipal and industrial water tariffs will be raised to 407 fils/m^3 and 1,194 fils/m^3 respectively. Compound water tariff will be raised to 530 fils/m^3.	10.0	479	13.0	24.9	10.7	FIRR is twice the discount rate, and EIRR is by 30% above the OCC. The unit wastewater price is drastically below the set one. Managerial indices are clearly above the standard levels. Therefore, the project is sufficiently feasible.
Municipal Water Network Rehabilitation			Municipal water tariff will be raised to 351 fils/m^3 (in Amman Governorate 491 fils/m^3). Compound water tariff will be raised to 382 fils/m^3.						
South Amman	4,243,399 $6,061,999	49,875 $71,250		-0.7	899	3.8			FIRR is negative, and EIRR is low. The unit water price is very high. Therefore, the project is not judged to be feasible.
Madaba	864,531 $1,235,044	3,417 $4,881		20.4	111	49.5			Both FIRR and EIRR are several times above the discount rates. The unit water price is less than half the set level. Therefore, the project is highly feasible.
Karak	734,682 $1,049,546	2,824 $4,034		13.1	181	28.8			Both FIRR and EIRR are 2 to 3 times above the discount rates. The unit water price is markedly below the set level. Therefore, the project is very much feasible.
Tafielah	1,050,491 $1,500,701	4,152 $5,931		5.4	331	15.7			FIRR is above the discount rate, and EIRR is more than 50% higher than the OCC. The unit water price is within the set one. Therefore, the project is sufficiently feasible.
Ma'an	952,416 $1,360,594	10,764 $15,377		9.8	249	23.2			Both FIRR and EIRR are more or less twice above the discount rates. The unit water price is substantially lower than the set one. Therefore, the project is very much feasible.
Total	7,845,519 $11,207,884	71,032 $101,473		6.3	334	17.2	25.7	19.4	FIRR & EIRR are clearly above the discount rates. The unit water price is considerably below the set one. Managerial indices are more or less twice the standards. Therefore, the project is sufficiently feasible.
Wehda-Irbid Water Supply	58,312,200 $83,303,143	4,182,714 $5,975,306	Includes Wehda Dam project cost. Municipal water tariff will be raised to 351 fils/m^3.	4.5	356	20.3	12.7 (2003-2030 average)	7.6	FIRR is near the discount rate, and EIRR is more than twice the OCC. The unit water price is equivalent to the set one. Managerial indices approach the standards. Therfore, judged to be feasible enough.



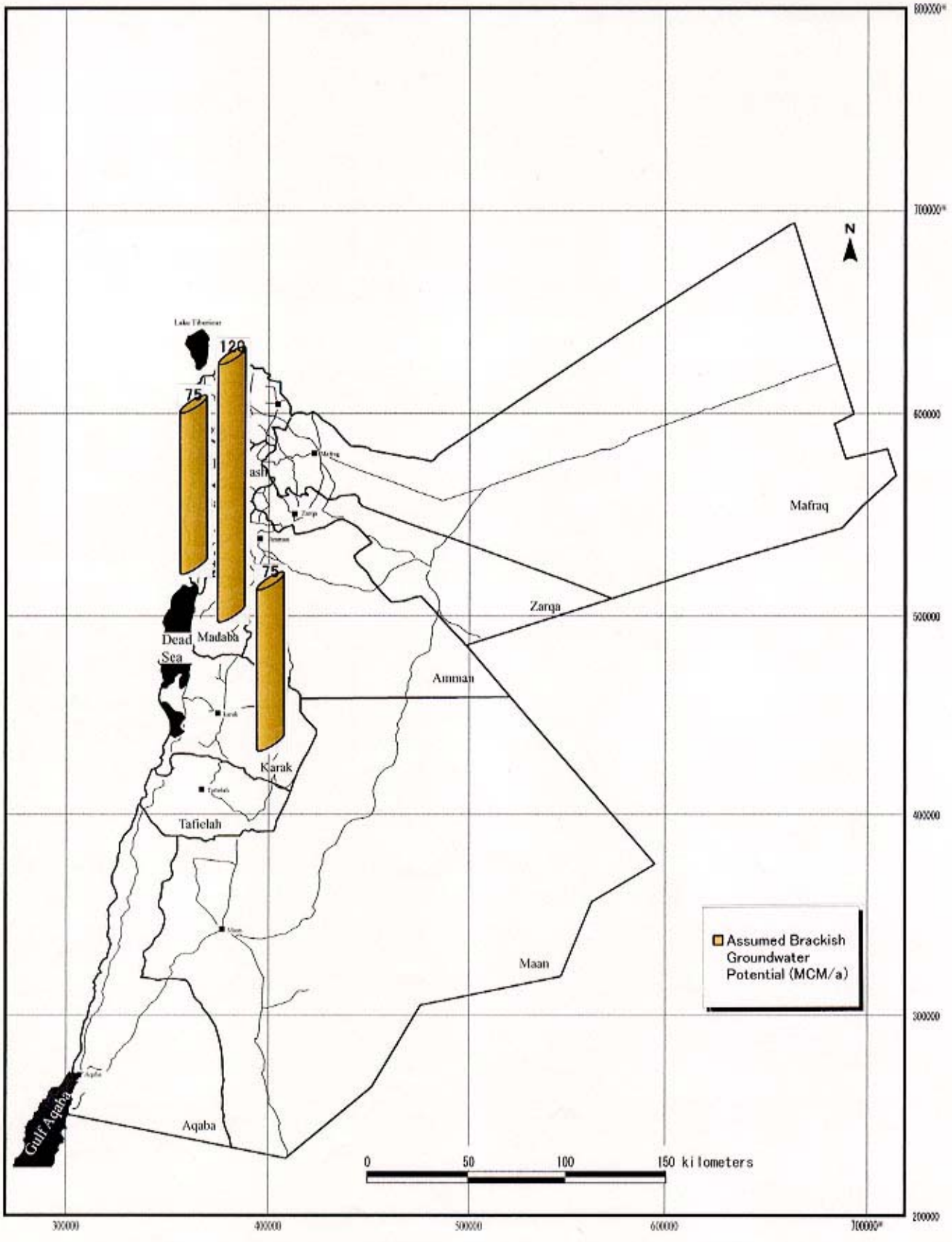
Developable Amount of Surface Water by 2020



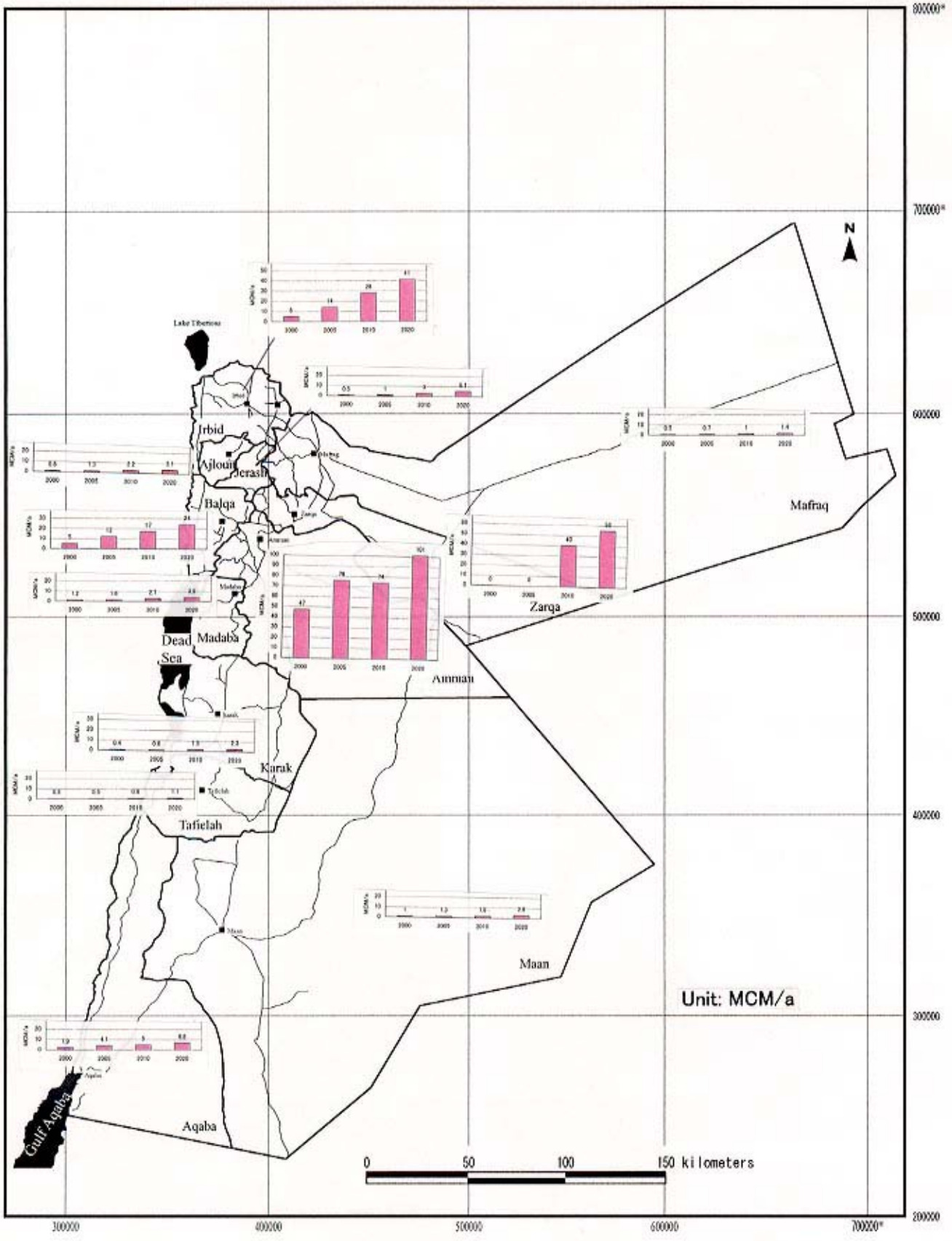
Present Abstraction (1998) and Safe Yield of the Renewable Groundwater



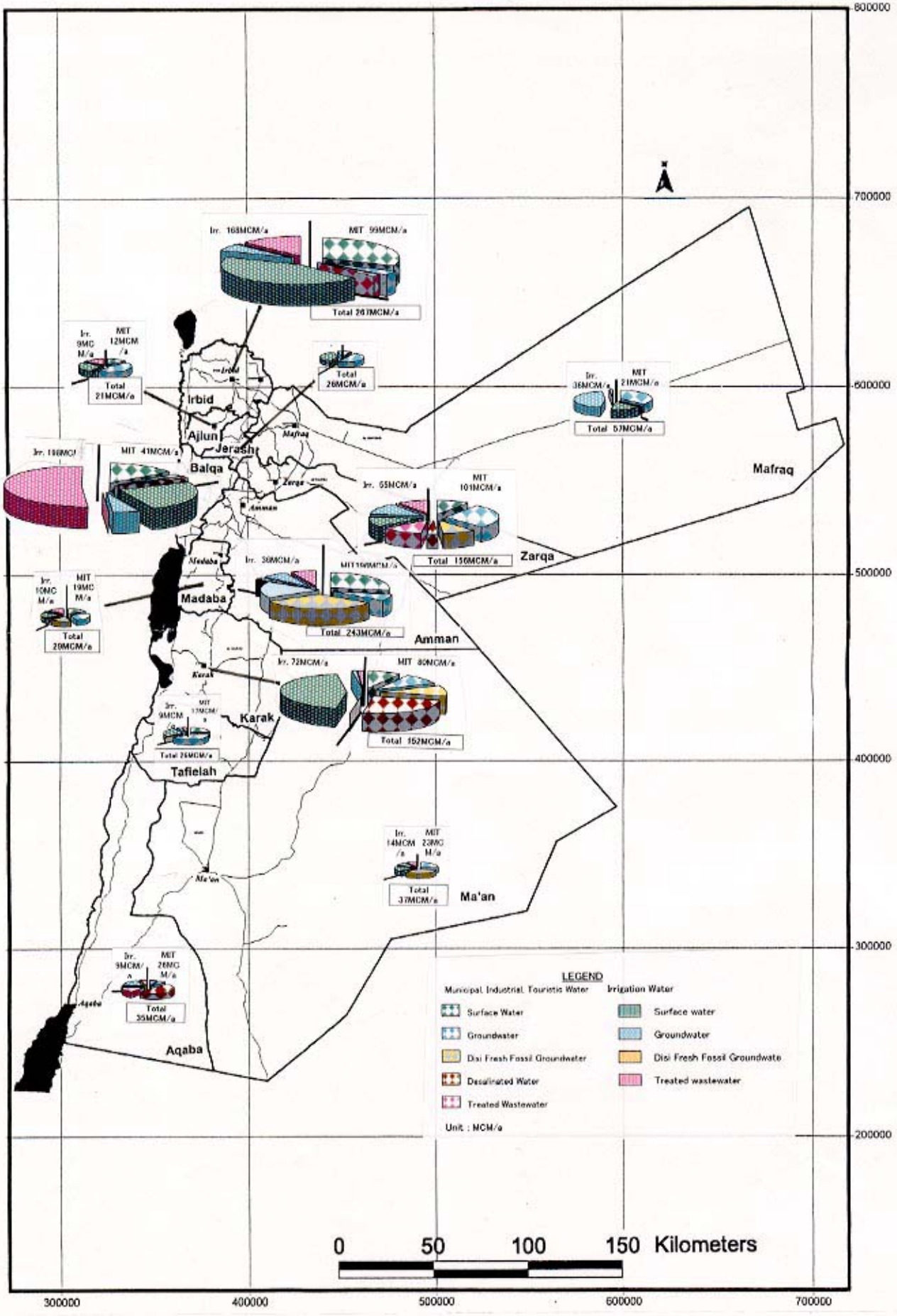
Distribution of the Assumed Potential of the Fossil Fresh Groundwater



Distribution of the Assumed Potential of the Brackish Groundwater



Distribution of the Assumed Treated Wastewater Volume by Target Year (Sn-1)



Planned Water Allocation to the Governorate in 2020

List of Water Projects in Short Term (2000 to 2005) ①

Note : Projects enclosed by thick line are selected for pre-F/S

Cand. Project for p-F/S	File No. of Invest. Program	No. attached by JICA	Project	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
			Groundwater & Sea Water Desali. Projects														
	21		**Wadi Mousa Water Supply**	on going	2000	6.6	9.0	1.4	Renewable groundwater development & clean water development and water conveyance from Jikbeh well field to Wadi Mousa for the tourism at Petra	KFW, France, USAID, HKJ Tendering	D/D						Renewable groundwater development should be urgent and temporary for the Tourism because the abstraction has exceeded the safe yield in this area.
	24		**Lajoun Wells (Nonrenewable Fresh Fossil Groundwater Dev. Al Karak)**	ongoing	2001	11	10.0	0.9	Supplying of fresh fossil Ram GW from Al Lajoun to Amman via Karak, Drilling 5 deep wells of 1000m, Transmission pipe line of 45Km	HKJ, Tender Doc. under preparation	D/D						Three deep wells were drilled, numerical simulation has been done, groundwater quality is relatively good.
	67		**Corridor Water Supply Project**	on going	2001	10	10.0	1.0	Groundwater Dev. of Basalt Aq. from 17 Corridor wells drilled in Zarqa Gov. in order to mitigate severe water shortage in Greater Amman.	HKJ, F/S done	D/D						This project should be urgent and temporary development for Amman area because the abstraction has exceeded the safe yield in this area.
	22		**Community Infrastructure Project**	ongoing	2002	4	0.0	2.0	to supply domestic water to 28 urban settlements (Amman 18, Zarqa 4, Russifa 5, Aqaba 1) and 10 peri-urban settlements using groundwater	HKJ, WB, tendering	D/D						
	25		**Wadi Zarqa Ma'in, Zara spring Project**	under planning	2003	40	70.0	1.8	to utilize the water of springs and side wadis in Zara/Main area for irrigation and tourism in JV, and Conveyance to Greater Amman area	USAID, HKJ	F/S ongoing						F/S is on going by USAID. Cost estimation was reviewed in this Study.
	26		Desalination at Aqaba	under examin.	2004	5	27.3	5.5	Sea water desalination for domestic industrial and touristic purpose in Aqaba	not secured F/S ongoing	F/S ongoing						
		G1	**Brackish Groundwater Development for El Lajoun Oil Shale Project at Karak, Phase 1**	not incl. in Invest. Prg.	2005	3	not clarified		Development of brackish groundwater in Deep Sandstone Aquifers (R/D and K)	Private Sector	under Study						under study by MWI
		G2	**Groundwater Development for Electric Power Stations in Zarqa Gov.**	not incl. in Invest. Prg.	2005	1	not clarified		Renewable groundwater development from A7/B2 aquifer for electric power stations	Private Sector	F/S						
		G3	**Groundwater Development for Industrial & Info-Technical Park near Ramtha**	not incl. in Invest. Prg.	2005	7.5	not clarified		Renewable groundwater development for industries	Private Sector	F/S						It is recommended that the renewable groundwater should be substituted by the other water resources
	27		***Dead Sea Water Infrastructure***	cancelled in Invest. Prg.	*2003*	*2*	*7.0*	*3.5*	to convey GW from flowing wells at Kafrein to Suweimeh for the purpose of touristic	HKJ, D/D done	D/D						
	29		***Jafer and Shidia***	cancelled in Invest. Prg.	*2003*	*18*	*6.0*	*0.3*	Renewable groundwater development from A7/B2 aquifer for Shidia Phosphate Company	Private Sector, D/D done	D/D						It is recommended that the renewable groundwater should be substituted by the other water resources
	(7) cancelled		**Groundwater Reduction Program I**	under planning	2005	−50	*18.0*	*−0.4*	Reduction of renewable groundwater abstraction in the Uplands. To be implemented in Amman-Zarqa Basin (AZB) and other areas taking USAID's action plan for AZB into consideration. The projects involve Irrigation Advisory Services (IAS), Water buy-out, abstraction limitation and others	not secured	Action Plan done by USAID for AZB						Cancelled in Inv. Pro. But USAID (ARD) has done comprehensive study in Amman/Zarqa Basin and formulating measures. JICA examined the applicability to the other areas.
			Groundwater and Sea Water Desali. Projects Total			38.1	Note : Cancelled Projects in the Investment Program are not included in the Total										

Cand. Project for p-F/S	File No. of Invest. Program	No. attached by JICA	Surface water Projects	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
	14		**Wala Dam**	ongoing	2002	10	22.0	2.2	Construction of dam of 45m in height at Mujib Basin for recharge to A7/B2 aquifer by impounding the floodwater	Arab F., HKJ, D/D done	D/D						
	13		Mujib Dam	ongoing	2002	35	47.0	1.3	Construction of dam of 62m in height at Mujib Basin for supplies for future industrial and agricultural needs in the S. Ghors	Arab F., HKJ	D/D						
	15		Tannur Dam	ongoing	2003	16	21.7	1.4	Construction of dam of 60m in height at Wadi Hasa for supplies for agricultural needs in the South Ghors by impounding the floodwater	Arab F., HKJ, D/D done	D/D						
	20		**Wadi Araba Development Project**	under planning	2004	4	12.0	3.0	Exploitation of surface water and shallow groundwater, Rehabilitation of 18Km extension project and Wadi Araba pumping station for development of 6000 dunums irrigation area	HKJ, TOR done	D/D						
	26		Feedan Dam	under examin.	2004	6	8.4	1.4	to store floodwater, additional studies required	not secured	F/S						
	62		Wehda Dam	under planning	2005	108	151.0	1.4	to construct the rock fill dam of 100m in height at the Yarmouk River, Power generation is 8 Mega Watts	Arab F., HKJ, D/D done	D/D						
	63		Desalination Conveyor to Urban Jordan (50 + 10 MCM/a), Peace Project	under examin.	2005?	27	100.0	3.7	to build the needed conveyance system to transfer desalinated 50MCM/a water from Israel to the urban areas	not secured, Israeli side on going	F/S						50-33(present supply area) = 27
	(23) cancelled		***Sakeb Municipality***	cancelled in Invest. Prg.	*2001*	*1*	*4.0*	*4.0*	Construction of water supply system and infrastructure supplemented by tankers and rain water storage	not secured F/S done	F/S						
			Surface water Projects Total			206	Note : Canceled Projects in the Investment Program are not included in the Total										

For the ranking criteria, refer to Table 10.1-1

List of Water Projects in Short Term (2000 to 2005) ②

Note : Projects enclosed by thick line are selected for pre-F/S

Cand. Project for p F/S	File No. of Invest. Program	No. attached by JICA	Wastewater Projects	Status	Compl Year	Add Eff. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
	44		Irbid Stage I, Phase 1 (Wadi Arab TP and Wadi Hassan TP)	on-going	2000	4.6 by 2005	43.0	5.2	Construction of TP at Wadi Arab, Wadi Hassan	KFW HKJ	D/D						Wadi Arab TP has been constructed in 1999. W. Arab TP Capa. : 7.7MCM/a, W. Hassan TP Capa. : 0.6, Total Capa. In Stage 1 : 8.3MCM/a
	37		On-going Rehabilitation Various Cities (Wastewater Treatment Project)	on-going	2000	(5)	30.0	6.0	Rehabilitation and construction of sewer infrastructure network of various areas. Amman, Zarqa, Mafraq, Irbid, Ajloun, Jerash, Balqa, Karak	EIB, HKJ, D/D done	D/D						
	50		Wadi Mousa Wastewater Project	on-going	2000	0.7 by 2005	19.6	14.0	Approx. 85Km of wastewater collection networks, approx. 22.5Km conveyance system, TP of 3400m3/day, for 4 towns and small communities in Petra	USAID, D/D done	D/D						Design Production Capacity in Stage 1 : 1.4MCM/a
	39		Ain Gazel Pre-Traetment Plant and Conveyer	on-going	2001	0	45.0		Wastewater conveyor of 32.5Km, Tunnel of 4.75Km, Upgrading of pre-treatment works	KFW, HKJ, D/D done	D/D						
	59		Madaba TP Upgrade and Expansion, Phase 1	under planning	2003	0.5 by 2005	6	6	Construction of TP of 7000m3/day	Korea, D/D done	D/D						Capacity of Upgrading in Stage 1 : 1MCM/a, Existing Capacity : 1.2MCM/a, Total increased Capacity by 2003 : 2.2MCM/a
	57		Upgrading Mafraq TP	under planning	2003	0.2 by 2005	5.5	5.5	Construction of TP, reuse program	USAID, HKJ, F/S done	F/S						Design Production Capacity : 1.0MCM/a
	60		Ramtha TP Upgrade & Expansion, Phase 1	under planning	2003	0.7 by 2005	6.0	3.0	Construction of collection networks	France, HKJ, D/D done	D/D						Capacity of Upgrading in Stage 1 : 2MCM/a, Existing Capacity : 0.7MCM/a, Total increased Capacity by 2003 : 2.7MCM/a
	51		Na'ur and Adjacent Areas Wastewater Project	under planning	2003	0.6 by 2005	18.0	9.0	Wastewater collection network of 35Km, TP of 2200m3/day	Italia, D/D done	D/D						Design Production Capacity : 2.0MCM/a
	40		South Amman Wastewater Project PhaseI : Jiza - Talbiya (Al Jeza Phase 1)	under planning	2003	1.8 by 2005	11.0	5.5	Construction of collection networks and TP, Reuse program	Italia, HKJ, Low Income Areas Programs	D/D						Design Production Capacity in Phase 1 : 2.0MCM/a
	55		Dead Sea Wastewater Infrastructure (Dead Sea East Coast)	under planning	2003	0.6 by 2005	7.0	5.8	Construction of TP of 4360m3/day, reuse network for landscape irrigation (gardening)	USAID, D/D done	D/D						Design Production Capacity : 3.2MCM/a
	54		Aqaba Wastewater Project (Central)	under planning	2004	2.0 by 2005	12	2.4	Extension of TP, main trunk lines and collection network, Reuse program	USAID, D/D done	D/D						Design Production Capacity : 5.0MCM/a, Existing Production Capacity : 1.9MCM/a, Total Production Capacity : 6.5MCM/a
	53		Community Infrastructure Wastewater Project	under planning	2004	(1)	10.0	10.0	Construction of sewerage and TP for the refugee camps in Jordan including public educations, Talbieh, Marka, Gaza, Azmi Al-Mufti and El-Saukhneh	WO, D/D done	D/D						
	52		Jordan Valley Community Waste Management Project	under planning	2004	(1)	2.0	2.0	Construction of small-scaled community TP, Reuse program, involvement of private sector	CIDA, HKJ, D/D done	D/D						
	64		Upgrading Kufranja and Ajlun TP, Phase 1	under exam.	2004	1.3 by 2005	12.0	6.0	Construction of new collection networks, TP, Installation of TSE disposal and/or reuse system. The Project Area covers all areas within catchments of the Yarmouk R. and the Jordan R.	not secured, under study	F/S Under Study						F/S is ongoing by KfW. Design Production Capacity in Phase 1: 2.0MCM/a, Existing Production Capacity : 0.8MCM/a, Total Production Capacity by 2004 :
	38		Upgrading and Expansion of As-Samra TP, Phase 1	under planning	2005	5 by 2005	105.0	3.5	To provide more adequate treatment facilities for Amman - Zarqa area up to year 2015. As-Samra TP to be operated by BOT system, 5MCM/a will be reused in the vicinity of TP.	Private Sector, USAID, D/D	D/D						Capacity of upgrading in Stage 1 : 30MCM/a, Existing Capacity : 46MCM/a, Total Increased Capacity by 2005 : around 80MCM/a
*	58		Upgrading Ma'an TP	under exam.	2004	included below	6.0	4.0	Construction of TP, collection system, pumping station, Reuse program is also included.	not secured	not yet	5	4	5	5	19	F/S has not been done. Design Production Capacity : 1.5MCM/a, Existing Production Capacity : 0.5MCM/a, Total Production Capacity by 2004 : 2.0MCM/a
*	(58)		Treated Wastewater Reuse Scheme of Ma'an	proposed by JICA	2004	0.6 by 2005	0.06	0.1	Reuse program of treated wastewater in the vicinity of the TP for irrigation	not secured	not yet	5	4	4	5	18	F/S has not been done. Design Production Capacity : 1.5MCM/a, Existing Production Capacity : 0.5MCM/a, Total Production Capacity by 2004 : 2.0MCM/a
	50		Upgrading Tafila TP	under exam.	2005	included in W6	6.0	4.0	Construction of TP, collection system, pumping station, Reuse program is not included.	not secured	F/S						Quantity of sewage is small. Design Production Capacity : 1.2MCM/a, Existing Production Capacity : 0.3MCM/a, Total Production Capacity by 2004 : 1.5MCM/a
	49		Sakeb Wastewater System (Jerash West)	under exam.	2005	0.9 by 2005	16.0	8.7	Construction of wastewater collection system, conveyance, TP, listed in the Invest. Prg. in 1997	almost secured (Italy)	D/D						New Construction. Design Production Capacity : 2.4MCM/a
		W1 (23)	Construction of Dair Alla Treatment Plant	not incl. in Invest. Prog.	2005	1.8 by 2005	25.4	6.4	Construction of new collection networks, TP, reuse system for irrigation, implemented in 2 phases, the cost written in left column shows phase 1 work	not secured, F/S done	F/S						to be implemented in two Phases, Final Effluent Amount in 2020 : 4MCM/a, Total investment Cost : 23.8Mil JD, Effluent amount in Phase 1 : 3MCM/a, Investment Cost of
		W2 (26)	Aqaba South Coast TP, Phase 1	not incl. in Invest. Prog.	2003	0.2 by 2005	1.40	3.40	Construction of TP, force main and PS, the figures show phase 1	USAID	F/S						to be implemented in two Phases. TP capacity in Phase 1 (2003) : 0.4 MCM/a, Final Effluent Amount in 2020 : 0.8MCM/a, Total Investment Cost : 2.7Mil JD
		W3 (3)	Treated Wastewater Reuse Scheme of As-Samura TP in Jordan Valley	Proposed by USAID	2005	10 by 2005	2.0	0.2	Reuse for irrigation in Southern Jordan Valley through KTR, Zarqa River and KAC, 3MCM/a will be reused in the vicinity of TP.	not secured	ongoing by USAID						Existing Reuse by 1998 in JV : 46MCM/a, Future Reuse including Zarqa TP in JV by 2020 : 120MCM/a. Study is ongoing by USAID (AED)
*		W4 (1)	Treated Wastewater Reuse Scheme of Abu-Nusier TP	Proposed by JICA	2004	0.6 by 2005	0.06	0.1	Reuse program of treated wastewater in the vicinity of the TP for irrigation	not secured	not yet	5	4	4	5	18	Reuse amount : 1.5MCM/a by 2020
*		W5 (5)	Treated Wastewater Reuse Scheme of Fuhis TP	Proposed by JICA	2004	0.6 by 2005	0.01	0.02	Reuse program of treated wastewater in the vicinity of the TP for irrigation	not secured	not yet	5	5	4	5	19	Reuse amount : 1.0MCM/a by 2020, TP will be expanded by 2010
*		W6 (15)	Treated Wastewater Reuse Scheme of Tafila TP	Proposed by JICA	2005	0.5 by 2005	0.1	0.2	Reuse program of treated wastewater in the vicinity of the TP for irrigation.	not secured	not yet	5	3	4	5	17	Reuse amount : 1.5MCM/a by 2020
*		W7 (17)	Treated Wastewater Reuse Scheme of Wadi Essir TP	Proposed by JICA	2003	0.3 by 2005	0.01	0.04	Reuse program of treated wastewater in the vicinity of the TP for irrigation	not secured	not yet	5	5	4	5	19	Reuse amount : 0.9MCM/a by 2020, TP will not be expanded by 2020.
			Total Additional Effluent including increase of Effluent from the Existing TPs during 1998 to 2005			112 by 2005											

For the ranking criteria, refer to Table 10.1-1

List of Water Projects in Short Term (2000 to 2005) ③

Note : Projects enclosed by thick line are selected for pre-F/S

Cand. Project for pre-F/S	File No. of Invest Program	No. attached by JICA	Rehabilitation & Conveyance Projects	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
	5		**On-going Rehabilitation - Zarqa Governorate**	on going	2001	not clarified	(35.0)		Rehabilitation and expansion of water supply system in Distr. of Zarqa, Russeifa, Hashemiya, Rihabna, and Sonalar Refugee Camp	not secured (Japan)	D/D						
	71		**Tabaqat Fahil - Irbid**	ongoing	2001	not clarified	18		Water conveyance	HKJ	D/D						
	32		**Dier Alla - Zai Amman II (Conveying of Peace Water)**	ongoing	2002	(45)	85.0	(1.4)	to increase the scheme supply capacity from 45MCM/a to 90MCM/a. Water source is from Peace Water	JBDA, SKW, D/D done	D/D						
	70		**KAC Siphon Upgrading**	under examin.	2002	(20)	3.5	(0.18)	Upgrading of siphon system of the King Abdulla Canal	not secured	F/S						
	35		**Rehabilitation of Southern Ghors Irrigation Stage I**	under examin.	2003	(45)	(9.0)	(0.2)	Rehabilitation of water supply system for irrigation of 4880D dunums	not secured, F/S done	F/S						
	36		**Rehabilitation of Hisban-Kafrein Irrigation Project**	under planning	2003	(11)	(5.0)	(0.45)	Rehabilitation of existing pipe network and study on surface water development of W. Hisban by constructing storage facility	WG, HKJ	F/S soon						
	68		**Dead Sea Water Treatment Plant**	under planning	2003	not clarified	100		Construction of water treatment plant of 15MCM/a for touristic purpose in the East Coast of Dead Sea, raw water will be supplied From Mujib and Wala Reservoirs	Private Sector	M/P, F/S in progress Private Sec						
	10		**Amman Municipal Water Network Restructuring Phase 1**	on going	2004	(18)	(*26.0)	(7.0)	Optimal rehabilitation of water supply system in Amman for water loss reduction	AFD, USAID, EIB, KFW and EIB)	D/D						
	11		**Mujib Weir Conveyor and Southern Ghors Infrastructure**	under planning	2004	(55)	67.2	(1.2)	Utilization of loss and flood flow of Wadi Mujib Wadi Wala & Hasa for the purpose of touristic, industrial and agricultural	Amb., USID & other Arab Lender Fund	D/D						
	34		**Jordan Rift Valley Improvement Project**	under examin.	2005	not clarified	35.0		to specify measures/actions for maximization of returns from sustainable development of JRV	not secured, F/S not yet	F/S soon						Study project
	(33) canceled		***Amman Municipal Water Network Rehabilitation II***	canceled in Invest. Prg.	*2004*	*(1)*	*32.9*	*(32)*	To reduce physical water loss to less than 10% by the rehabilitation of the distribution network system	not secured, F/S done	D/D						
			Rehabilitation & Conveyance Projects Total			(194)	Note : Canceled Projects in the Investment Program are not included in the Total										

Cand. Project for pre-F/S	File No. of Invest Program	No. attached by JICA	Technical & Private Sector Management Projects	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
	0		**The Governorate Support Section (GS)**	on going	2002	0	9.2		Improvement of planning water Supply through promoting experience gained in Amman Water and Wastewater Management Contract and OMS (Operations Management Support) Project to other Governorates	GTZ, KFW	D/D						
	4		**Planning and Management Unit (PMU)**	under planning	2003	0	4.0		Establishing of dedicated Planning & Management Unit for appropriate utilization of funds necessary coordination with donors and implementation of rehabilitation program	EU	F/S						
	9		**Amman Water and Wastewater Management Contract**	on going	2003	0	23.0		A performance-based management contract with private sector for the provision of water and wastewater services in Amman	USAID	D/D						
			Technical & Private Sector Management Projects Total			0											

Cand. Project for pre-F/S	File No. of Invest Program	No. attached by JICA	Monitoring Project	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
*		M1	**National Control System Integrating Surface and Groundwater Phase 1**	Proposed by JICA	2005	0	8.4		Construction of nation wide monitoring and control system of the Water Truck Line, Phase 1 before completion of Disi Amman Water conveyor to	not secured, F/S studied	not yet	2	3	5	5	17	Centralized control is essential for the water resources management
		M2	**Surface Water Quality Monitoring System**	Proposed by USAID	2005	0	not clarified		Comprehensive Surface water monitoring system proposed in WQIC Project (financed by USAID) which was completed in 1995	not secured	done						refer to "Water Monitoring System Adequacy,1995, WAJ/GI"
		M3	**Groundwater Quality Monitoring System**	Proposed by USAID	2005	0	not clarified		Comprehensive Groundwater monitoring system proposed in WQIC Project (financed by USAID) which was completed in 1995	not secured	done						refer to "Water Monitoring System Adequacy,1995, WAJ/GI"
		M4	**Improvement of Monitoring Equipment for Water Pollution Protection**	on going by JICA	2003	0	4.1		Construction of water quality monitoring stations, Provision of laboratory analysis equipment and Construction of Monitoring Center	not secured (Japan)	B/D done by JICA						Basic design has been completed in 2000 by JICA

For the ranking criteria, refer to Table 10.1-1

List of Water Projects in Mid Term (2006 to 2010) (1)

Note : Projects enclosed by thick line are selected for pre F/S

Cand. Project for pre-F/S	File No. of Invest. Program	No. attached by JICA	Project	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
			Groundwater and Brackish Groundwater Desalination Projects														
	6		**Disi Amman Water Conveyer**	under planning	2006	100	137.5	4.4	Supplying an average of 100MCM/a of fresh fossil GW from Disi to Amman, a distance of more than 300Km. BOT doc. Prepared	BOT or Libya are tryn. D/D done	D/D						
*	17		**Deep Groundwater Investigation**	under examin.	2006	5	10.0	8.0	Development of non-renewable Rum aquifer system in the Northern area of Jordan	not secured	not yet	3	3	3	4	13	not applicable because it is almost Study Project
		G1	**Brackish Groundwater Development for El Lajoun Oil Shale Project at Karak, Phase II**	not incl. in Invst. Prg	2010	11	not clarified		Development of brackish groundwater in Deep Sandstone Aquifers (R/D and D)	Private Sector	under Study						under study by MW,
	(7) cancelled		**Groundwater Reduction Program II**	under planning	2010	-32	12.0	-0.4	Reduction of renewable groundwater abstraction in the Upper a. To be implemented in Amman-Zarqa Basin (AZB) and other areas taking USAID's action plan for AZB into consideration. The project is include Irrigation Advisory Services (IAS), Wells buy out,	not secured	Action Plan done by USAID for AZB in 20						Cancelled in Inv. Pro. But, USAID (ARD) has done comprehensive study in Amman/Zarqa Basin and formulating measures. JICA examined the applicability to the other areas.
*	(31) cancelled		***Miscellaneous Small Projects - Supply Expansion***	cancelled in Invst. Prg.	*2010*	*10*	*1100*	*11.0*	Construction of new water resources (wells) and upgrade of the existing ones in order to meet the increasing water demand throughout Jordan	not all secured (some F/S)	not yet	5	2	2	3	10	As the project is nation wide scale, it is not applicable for F/S.
			Groundwater Projects Total			81	Note : Cancelled Projects in the Investment Program are not included in the Total										
Cand. Project for pre-F/S	File No. of Invest. Program	No. attached by JICA	**Surface Water Projects**	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
*	18		**Small Dams (Ibn Hamad, Karak, Meddien)**	under examin.	2006	9	13.0	1.4	To maximize the use of the floodwater in the catchments by the construction of storage reservoirs small dam in the Eastern Highlands	not secured F/S not yet	not yet	2	4	4	4	14	It is not easy economically and technically
	(65) cancelled		**Storage on Jordan river and Side Wadis (Peace Project)**	cancelled not to be examined	2010?	30	70.0	2.3	Construction of storage system on the Jordan River, side wadis, conveyor system, increasing the efficiency of KAC, to be done by 2010 , to categorized in "Peace Water"	not secured, under study	F/S Under Study						This project is cancelled in the Investment Program up to 2010. But, its implementation should be examined as the Mid Term Project.
			Surface Water Projects Total			39	Note : Cancelled Projects in the Investment Program are not included in the Total										
Cand. Project for pre-F/S	File No. of Invest. Program	No. attached by JICA	**Rehabilitation & Conveyance Projects**	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
	12		**Wadi Al Arab - Irbid Municipal Water Supply**	under examin.	2006	(20)	27.0	(1.4)	Reallocation of water of 20MCM/a from Mukheiba Well Field to Irbid	per secured	F/S						substituted by above project
*	69		**Al Wahda Dam Water Supply Project/Irbid**	under examin.	2009	(20)	27.0	(1.4)	Conveyance of water from Wahda Dam to Irbid for 3000m3/h, treatment plant, transmission pumps of 580m in head and 2950 m3/h in capacity, 27Km transmission line, reservoirs of 110,000 m3	not secured	not yet	5	4	4	5	18	Hydraulic analysis is done. Irbid Water Supply has not done yet.
*	30		**Miscellaneous Small Projects, Network Expansion**	under examin.	2010	not clarified	(25)		Construction of new water networks throughout Jordan in order to meet the increasing water demand	not secured, to be IHO and others	not yet	3	2	3	3	11	As this project is nation wide scale, it is not applicable for F/S.
*		C1	**Disi Amman Water Conveyer Branch to Ma'an and Madaba**	Proposed by JICA	2010	(29)	8.8	(0.3)	Construction of transmission main pump station and reservoir	not secured	not yet	4	5	4	2	15	
			Rehabilitation & Conveyance Projects Total			(69)											
Cand. Project for pre-F/S	File No. of Invest. Program	No. attached by JICA	**Technical & Private Sector Management Projects**	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
	T		**Water Feasibility, Design and Assessment Studies**	on-going	2008	0	34.0		to prepare technical, economic and environmental F/S, D/D and Tender Doc. for the water system and networks	USAID, KFW, EIP	D/D						
*	(3) cancelled		***Municipal Water Networks Rehabilitation (Several Cities)***	cancelled in Invst. Prg.	2009	(36)	238.0	(6.8)	Reduction of physical losses in the network in the towns and cities (Karak, Tafilah, Ma'an, Madaba & South Amman). Replacement and rehabilitation of water systems components such as transmission mains, distribution networks, pump stations and reservoirs	not secured	not yet	5	3	4	5	17	Rehabilitation has been completed in some of major cities, Irbid Zarqa, Ramtha, Salt, Mafraq and some parts of Amman
*	(2) cancellec		***Wastewater Feasibility, Design and Assessment Studies***	cancelled in Invst. Prg.	*2010*	*0*	*14.0*		Country wide study project for wastewater	not secured	not yet	3	2	4	3	12	As the project is nation wide scale, it is not applicable for F/S.
			Technical & Private Sector Management Projects Total			0	Note : Cancelled Projects in the Investment Program are not included in the total										
Cand. Project for pre-F/S	File No. of Invest. Program	No. attached by JICA	**Monitoring Project**	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
*		M1	**National Control System Integrating Surface and Groundwater Phase 2**	Proposed by JICA	2008	0	18.2		Construction of nation wide monitoring and control system of the Water Trunk Line. Phase 2 after completion of Disi Amman Conveyer (C)	not secured, not studied	not yet	4	3	5	5	17	Centralized control is essential for the water resources management

For the ranking criteria, refer to Table 10.1-1

List of Water Projects in Mid Term (2006 to 2010) ②

Note : Projects enclosed by thick line are selected for pre-F/S

Cand. Project for pre-F/S	File No. of Invest. Program	No. attached by JICA	Wastewater Projects	Status	Compl. Year	Add'l Effl. Capa. (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
	45		**Irbid Stage II (Wadi Shallala TP) Phase 1**	under planning	2006	4.8 by 2010	48.0	8.7	Building the interceptors and networks for 3 villages, Construction of Wadi Shallala TP. Treated sewage will be reused in JV	KFW, HKJ, F/S done	F/S						Capacity of Upgrading in Stage 1 : 5.5MCM/a
	56		**Upgrading and Expansion of Karak Treatment Plant**	under planning	2007	0.5 by 2010	6.0	6.0	Construction of TP, collection system, pumping station and reuse program	KFW, HKJ, F/S & D/D will come soon	D/D soon						Capacity of Upgrading : 1.0MCM/a, Existing Capacity : 0.4MCM/a, Total Capacity by 2007 : 1.4MCM/a
	41		**South Amman Wastewater Project Phase1 : Stage 2 (North Queen Alia Airport Treatment Plant)**	under examin.	2008	0.8 by 2010	44.2	6.4	To construct sewerage system, wastewater network of 50Km and TP including re-use sestrey for irrigation	not secured, D/D done	D/D						Capacity of Treatment Plant : 1MCM/a
	48		**Mazar, Mu'ta and Aldaniya Wastewater Projects (Al Mazar Al Shamali)**	under examin.	2008	1.1 by 2010	29.7	14.4	Construction of wastewater collect networks, conveyance and TP	not secured, F/S will be done soon	F/S soon						Capacity of Treatment Plant : 1.5 to 2.0MCM/a
	43		**Jordan Valley Sanitation - South Shunah and Ghor Nimerine (Shuna South)**	under examin.	2008	1.6 by 2010	24.7	10.7	Construction of sewers, TP at South Shunah, Ghor Nimerine and reuse system	not secured, D/D done	D/D						Capacity of Treatment Plant : 2.5MCM/a
	51		**Abu-Nusier WWTP Upgrade & Expansion**	under examin.	2008	1.0 by 2010	2.8	1.9	Upgrading or expansion of TP. Re-use program is not included	not secured, D/D done	D/D						Capacity of Treatment Plant : 1.5MCM/a, F/S for reuse is not yet, Invest & Operation cost are low
	42		**Jordan Valley Sanitation - North Shunah (North Jordan Valley) Phase 1**	under examin.	2009	3.6 by 2010	40.0	10.0	Construction of sewers of 300Km, TP at North Shunah and reuse system	not secured, D/D done	D/D						Capacity of Treatment Plant in Phase 1 : 4.0MCM/a
	40		**South Amman Wastewater Project Phase1 : Jiza - Talbiya (Al Jeza, Phase 2)**	under planning	2010	0.7 by 2010	8.3	5.5	Expansion of collection networks and TP, Re-use program	Italy, HKJ, Low Income Areas	D/D						Design Production Capacity in Phase 2 : 1.5MCM/a, Investment Cost of Phase 2 : 8.3Mill JD based on unit cost in Phase 1
	48		**Miscellaneus Small Projects (Wastewater Project)**	under examin.	2010	not clarified	44.0		Construction of new wastewater networks, conveyor lines, house connections within the whole Jordan	not secured, D/D done	D/D						
		W8 (4)	**Extension of Baqa Treatment Plant**	not incl. Inv. Prog.	2006	2.9 by 2010	22.1	3.2	Construction of TP, Networks, Pipeline Rem/Sewage	not secured	F/S						New TP Capacity : 7MCM/a, Existing Capacity : 3MCM/a, Total Capacity by 2006 : 12MCM/a, Total Investment Cost : 22.1Mill JD
*		W9 (5)	**Extension of Fuhis Treatment Plant**	not incl. Inv. Prog.	2010	0.3 by 2010	not clarified		Construction of TP, Networks	not secured	Not yet	4	3	4	3	14	New TP Capacity : 0.5MCM/a, Existing Capacity : 0.8MCM/a Total Capacity by 2010 : 1.3MCM/a Total Investment Cost : 2.2 Mill JD
		W10 (7)	**Expansion of Jerash (East) Treatment Plant**	not incl. Inv. Prog.	2010	0.7 by 2010	10.3	4.9	Construction of TP and Networks to be reused in JV	not secured	Design Report						New TP Capacity : 2MCM/a, Existing Capacity 0.7MCM/a, Total Capacity by 2010 : 2.7MCM/a Total Investment Cost : 10.3Mill JD
		W11 (14)	**Expansion of Salt Treatment Plant**	not incl. Inv. Prog.	2010	0.9 by 2010	12.1	8.1	Construction of TP, Networks	not secured	Design Report						New TP Capacity : 1.5MCM/a Existing Capacity : 2.5MCM/a, Total Capacity by 2010 : 4MCM/a Total Investment Cost : 12.1Mill JD
		W12 (25)	**Construction of Kofur Asad Treatment Plant**	not incl. in Invest. Prg.	2010	3.0 by 2010	38.2	8.0	Construction of new collection networks, TP, reuse system for irrigation, to be commissioned until 2020	not secured, F/S done	F/S						New TP Capacity : 4.3MCM/a by 2017, Total Investment Cost : 38.2Mill JD
*		W13 (34)	**Construction of Wadi Zarqa Treatment Plant (without re-use scheme)**	not incl. in Invest. Prg.	2008	40 by 2010	60	1.1	Construction of new TP, conveyance system. Discharging TSL to KTR and to be reused in JV. 5MCM/a will be reused in the vicinity of TP. Implemented in two phases. Phase 2 will be implemented	not secured	Not yet	5	4	5	4	18	New TP Capacity : 35MCM/a by 2030, Investment Cost : about 62Mill JD, Reuse scheme of treated wastewater is under planning by USAID
		W14 (35)	**Construction of Mazar, Muta, Adaniya Treatment Plants**	not incl. in Invest. Prg.	2009	0.8 by 2010	10.3	8.6	Construction of new TP, collection System	not secured	Site Invest Done						New TP Capacity : 1.3MCM/a by 2009, Investment Cost : 10.3Mill JD
		W3 (3)	**Treated Wastewater Reuse Scheme of As-Samura and Zarqa TPs in Jordan**	Proposed by USAID	2010	35 by 2010	7.0	0.2	Reuse for irrigation in Southern Jordan Valley through KTR. Zarqa River and KAC. 10MCM/a will be reused in the vicinity of both TPs in the Highland area	not secured	ongoing by USAID						Existing Reuse by 1998 in JV : 48MCM/a, Future Reuse from As-Samura and Zarqa TPs in JV by 2020 : 120MCM/a, Study is currently by USAID (ASR)
*		W4 (1)	**Treated Wastewater Reuse Scheme of Abu-Nusier Treatment Plant**	Proposed by JICA	2010	0.1 by 2010	0.01	0.1	Reuse program of treated wastewater in the vicinity of the TP for irrigation	not secured	not yet	5	4	4	5	18	Reuse amount : 1.5MCM/a by 2020
*		W5 (5)	**Treated Wastewater Reuse Scheme of Fuhis Treatment Plant**	Proposed by JICA	2010	0.3 by 2010	0.01	0.02	Reuse program of treated wastewater in the vicinity of the TP for irrigation	not secured	not yet	5	5	4	5	19	Reuse amount : 1.2MCM/a by 2020. TP will be expended by 2010
*	58		**Treated Wastewater Reuse Scheme of Ma'an Treatment Plant**	Proposed by JICA	2010	0.3 by 2010	0.03	0.1	Reuse program of treated wastewater in the vicinity of the TP for irrigation	not secured	not yet	5	3	4	5	17	Reuse amount : 1.9MCM/a by 2020
*		W6 (15)	**Treated Wastewater Reuse Scheme of Tafila Treatment Plant**	Proposed by JICA	2010	0.4 by 2010	0.1	0.2	Reuse program of treated wastewater in the vicinity of the TP for irrigation.	not secured	not yet	5	3	4	5	17	Reuse amount : 1.3MCM/a by 2020
*		W7 (17)	**Treated Wastewater Reuse Scheme of Wadi Essir Treatment Plant**	Proposed by JICA	2010	0.2 by 2010	0.01	0.04	Reuse program of treated wastewater in the vicinity of the TP for irrigation	not secured	not yet	5	5	4	5	19	Reuse amount : 0.6MCM/a by 2020. TP will not be expended by 2020
			Total Additional Effluent including increase of Effluent from the Existing Treatment Plants			65 by 2010											

For the ranking criteria, refer to Table 10.1-1

List of Water Projects in Long Term (2011 to 2020)

Note : Projects enclosed by thick line are selected for pre-F/S

Cand. Project for p-F/S	File No. of Invest. Program	No. attached by JICA	Project	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
			Groundwater & Sea Water Desali. Projects														
*	28		**Desalination at Aqaba (Long Term)**	Proposed by JICA	2014	12	66	5.5	Sea water desalination for domestic, industrial and touristic purposes in Aqaba	not secured	not yet	4	2	3	4	13	Cost is evaluated in this Study
	6		**Production Increase of Disi Amman Water Conveyer**	under planning	2020	25	not clarified		Supplying an additional 25MCM/a of fresh fossil GW from Disi to Amman, a distance of more than 300Km. BOT doc. prepared	BOT or Loan and Jon, D/D done	D/D						Additional Conveyance of 25MCM/a
	16		**Hisban and Kafrein Desalination Plant**	under examin.	2015	9	18.9	2.1	For domestic purpose in Greater Amman Area and tourism in Dead Sea, to be conveyed to Amman through existing pipeline of Zara/Ma'in Project	not secured	F/S done by JICA						Development amount and cost estimation has been reviewed and updated in the Master Plan
		G1"	**Brackish Groundwater Development for El Lajoun Oil Shale Project at Karak, Phase III, IV**	not incl. in Invest. Pro.	2020	25	not clarified		Development of brackish groundwater in Deep Sandstone Aquifers. (R/D and K)	Private Sector	under Study						under study by MWI
	(1) canceled		**Groundwater Reduction Program III**	under planning	2020	*-63*	*25.0*	*-0.4*	Reduction of renewable groundwater abstraction in the Upland. To be implemented in Amman-Zarqa Basin (AZB) and other areas taking USAID's action plan for AZB into consideration. The projects include Irrigation Advisory Services (IAS), Wells buy-out, [illegible]	not secured	Action Plan done by USAID for AZB in [illegible]						Cancelled in Inv. Pro. But USAID (ARD) has done comprehensive study in Amman/Zarqa Basin and formulating measures. JICA examined the applicability to the other areas.
			Groundwater and Sea Water Desali. Projects Total			-4											
Cand. Project for p-F/S	**File No. of Invest. Program**	**No. attached by JICA**	**Surface Water Projects**	**Status**	**Compl. Year**	**Dev. Amount (MCM/a)**	**Project Cost (Million JD)**	**Invest. (JD/cum)**	**Project Description**	**Finance**	**Study**	**Technical Viability**	**Economic Viability**	**Environ. Viability**	**Political Viability**	**Total Ranking**	**Remarks**
	(19) canceled		**Water Harvesting, Badia Region**	canceled but to be re-examined	2015?	15	20.3	1.2	to identify practical techniques for Artificial Recharge: impounding the floodwater at by dykes in Badia region	USAID, F/S done, partly D/D done	D/D						This project is cancelled in the Investment Program up to 2013. But its implementation should be examined as the Long Term Project.
Cand. Project for p-F/S	**File No. of Invest. Program**	**No. attached by JICA**	**Wastewater Projects**	**Status**	**Compl. Year**	**Add. Eflu. Capa. (MCM/a)**	**Project Cost (Million JD)**	**Invest. (JD/cum)**	**Project Description**	**Finance**	**Study**	**Technical Viability**	**Economic Viability**	**Environ. Viability**	**Political Viability**	**Total Ranking**	**Remarks**
	64'		**Upgrading Kufranja and Ajlun WWTP, Phase 2**	under examin.	2016	0.9 by 2020	3.0	6.0	Expansion of existing TP meeting the sewage amount up to year 2020	not secured	F/S Under Study						F/S is ongoing by KFW. Design Production Capacity in Phase 2: 0.5MCM/a. Existing Production Capacity : 2.3MCM/a. Total Production Capacity by 2004 : [illegible]
	59'		**Madaba WWTP Upgrade and Expansion, Phase 2**	under examin.	2013	1.7 by 2020	12.0	6.0	Expansion of existing TP meeting the sewage amount up to year 2020	not secured	F/S						Capacity of Upgrading in Stage 1 : 2MCM/a. Existing Capacity : 2.2MCM/a. Total Increased Capacity by 2013 : 4.2MCM/a
	60'		**Ramtha WWTP Upgrade & Expansion, Phase 2**	under examin.	2013	1.1 by 2005	3.0	3.0	Expansion of existing TP meeting the sewage amount up to year 2020	not secured	F/S						Capacity of Upgrading in Phase 2 : 1MCM/a. Existing Capacity : 2.7MCM/a. Total increased Capacity by 2013 : 3.7MCM/a
	44'		**Irbid Stage I, Phase 2 (Wadi Arab TP and Wadi Hassan TP)**	under examin.	2011	4.6 by 2020	25.5	5.2	Expansion of existing TP meeting the sewage amount up to year 2020	not secured	F/S						Wadi Arab TP Expansion : 4.5MCM/a, Wadi Hassan Expansion : 0.4MCM/a. Existing Capacity : 6.3MCM/a Total Capacity by 2011 : 10.2MCM/a
	42'		**Jordan Valley Sanitation - North Shunah (North Jordan Valley) Phase 2**	under examin.	2016	1.1 by 2020	10.0	10.0	Expansion of existing TP meeting the sewage amount up to year 2020	not secured	F/S						Capacity of Upgrading in Phase 2 : 1MCM/a. Existing Capacity : 4MCM/a. Total increased Capacity by 2016 : 5MCM/a
	45'		**Irbid Stage II (Wadi Shallala TP) Phase 2**	under examin.	2017	1.7 by 2020	8.7	8.7	Expansion of existing TP meeting the sewage amount up to year 2020	not secured	F/S						Capacity of Upgrading in Phase 2 : 1MCM/a. Existing Capacity : 5.5MCM/a. Total Increased Capacity by 2018 : 6.5MCM/a
		W15 (22)	**Construction of Dair Abi Said Treatment Plant**	not incl. in Invest. Prog.	2012	1.8 by 2020	15.5	8.7	Expansion of existing TP meeting the sewage amount up to year 2020	not secured	F/S						Capacity of TP : 1.8MCM/a
		W1" (23)	**Expansion od Dair Alla Treatment Plant**	not incl. in Invest. Prog.	2017	0.9 by 2020	8.4	8.4	Expansion of existing TP meeting the sewage amount up to year 2020	not secured, F/S done	F/S						Additional expansion of capacity in Phase 2 : 1MCM/a. Existing Capacity : 3MCM/a. Total Capacity by 2017 : 4MCM/a
		W16 (31)	**Construction of Torra Treatment Plant**	not incl. in Invest. Prog.	2012	1.8 by 2020	19.1	9.6	Construction of TP, collection networks, Dam/storage and reuse program	not secured	F/S						Design Production Capacity : 2MCM/a. Total Investment Cost : 19.1Mil JD
		W3" (3)	**Treated Wastewater Reuse Scheme of As-Samura and Zarqa TPs in Jordan**	Proposed by USAID	2020	31 by 2020	6.2	0.2	Reuse for irrigation in Southern Jordan Valley through KTR, Zarqa River and KAC. 15MCM/a will be reused in the vicinity of both TPs in the Upland area	not secured	on going by USAID						Existing Reuse by 1998 in JV : 46MCM/a, Future Reuse from As-Samura and Zarqa TPs in JV by 2020 : 183MCM/a. Study is on going by USAID (ARD)
*		W4" (1)	**Treated Wastewater Reuse Scheme of Abu-Nusier TP**	Proposed by JICA	2020	0.3 by 2020	0.03	0.1	Reuse program of treated wastewater in the vicinity of the TP for irrigation	not secured	not yet	5	4	4	5	18	Reuse amount : 1.5MCM/a by 2020
*		W5" (5)	**Treated Wastewater Reuse Scheme of Fuhis TP**	Proposed by JICA	2020	0.3 by 2020	0.01	0.02	Reuse program of treated wastewater in the vicinity of the TP for irrigation.	not secured	not yet	5	5	4	5	19	Reuse amount : 1.xMCM/a by 2020. TP will be extended by 2010
*	58"		**Treated Wastewater Reuse Scheme of Ma'an TP**	Proposed by JICA	2020	0.6 by 2020	0.06	0.1	Reuse program of treated wastewater in the vicinity of the TP for irrigation.	not secured	not yet	5	3	4	5	17	Reuse amount : 1.9MCM/a by 2020
*		W6" (15)	**Treated Wastewater Reuse Scheme of Tafila TP**	Proposed by JICA	2020	0.3 by 2020	0.0"	0.2	Reuse program of treated wastewater in the vicinity of the TP for irrigation.	not secured	not yet	5	3	4	5	17	Reuse amount : 1.3MCM/a by 2020
*		W7" (17)	**Treated Wastewater Reuse Scheme of Wadi Essir TP**	Proposed by JICA	2020	0.2 by 2020	0.01	0.04	Reuse program of treated wastewater in the vicinity of the TP for irrigation.	not secured	not yet	5	5	4	5	19	Reuse amount : 0.9MCM/a by 2020. TP will not be extended by 2020.
			Total Additional Effluent Including increase of Effluent from the Existing TPs			65 by 2020											
Cand. Project for p-F/S	**File No. of Invest. Program**	**No. attached by JICA**	**Rehabilitation & Conveyance Projects**	**Status**	**Compl. Year**	**Dev. Amount (MCM/a)**	**Project Cost (Million JD)**	**Invest. (JD/cum)**	**Project Description**	**Finance**	**Study**	**Technical Viability**	**Economic Viability**	**Environ. Viability**	**Political Viability**	**Total Ranking**	**Remarks**
*		C2	**Upgrading of Inter-Governorates Transfer Line Phase 1**	Proposed by JICA	2014	(18)	11.5	(0.7)	Construction of transmission main, pump station and reservoir	not secured	not yet	4	4	4	2	14	
*		C3	**Upgrading of Inter-Governorates Transfer Line Phase 2**	Proposed by JICA	2019	(82)	80.5	(1.0)	same as above	not secured	not yet	4	4	4	2	14	
			Rehabilitation & Conveyance Projects Total			(100)											

For the ranking criteria, refer to Table 10.1-1

List of Other Water Projects which are still in Conceptual Stage

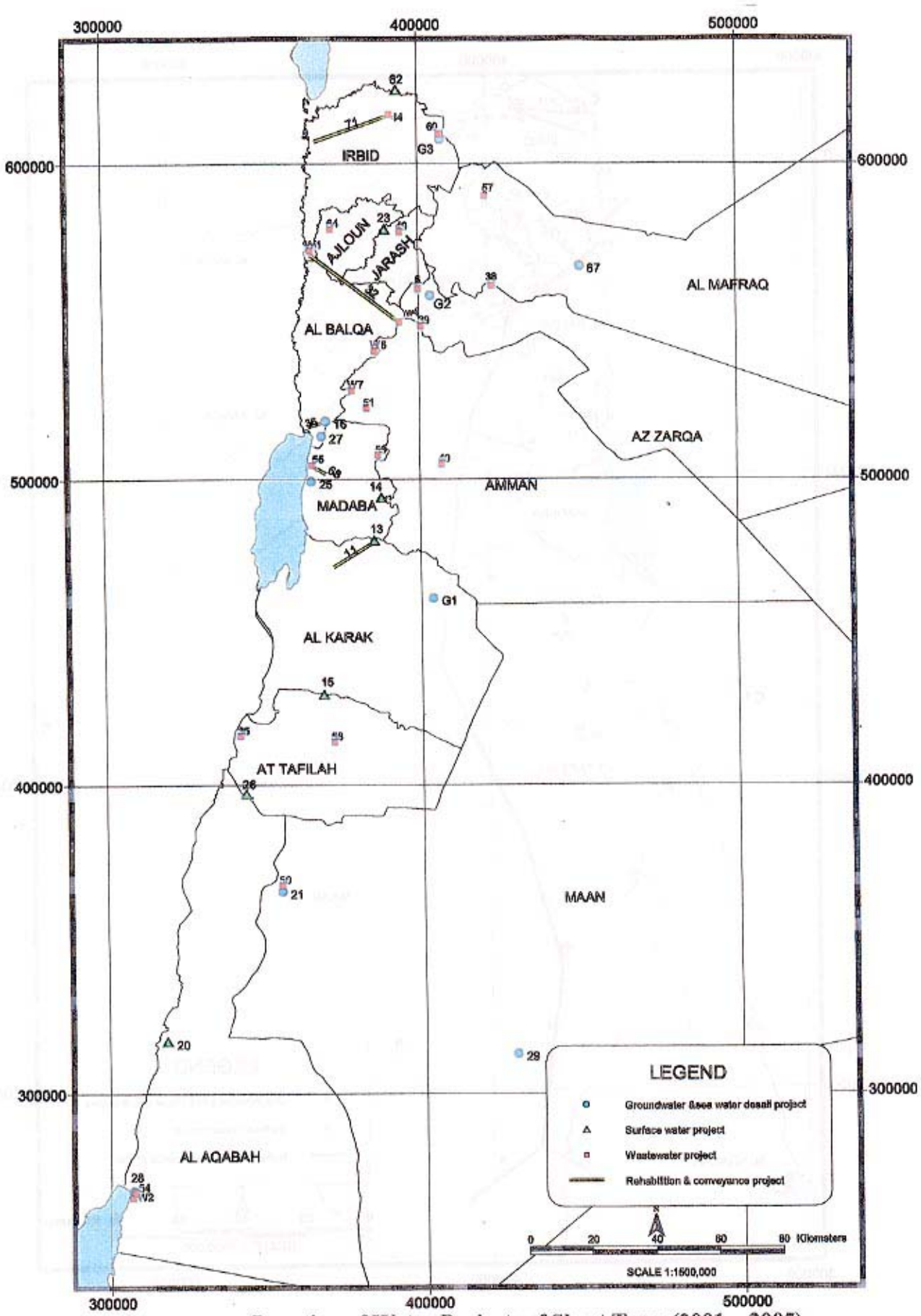
Note : Projects enclosed by thick line are selected for pre-F/S

Cand. Project for pre-F/S	File No. of Invest. Program	No attached by JICA	Groundwater Projects	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
		O1	**Brackish Groundwater Development in Jordan Valley Floor**	to be examined					Partly implemented by private farms. This scheme includes discharging from canal of the main to the Dead Sea.	Private sector, F/S not yet	not yet	3	3	2	4	12	Private sectors are implementing the desalination projects by their own expenses. Environmental impacts should be examined and assessed.
		O2	**Brackish Groundwater Development in the North Wadi Araba**	to be examined					Brackish groundwater development from the Alluvial Aquifer in the divided land to Israel in the North Wadi Araba for Irrigation	not secured	not yet	3	3	2	1	9	Brackish groundwater is directly used for irrigation of fruits, but almost unknown
		O3	**Brackish Groundwater Development in the South Wadi Araba**	to be examined					Brackish groundwater development from the Alluvial Aquifer in the divided land to Israel in the South Wadi Araba for Irrigation	not secured	not yet	4	3	2	1	10	Brackish groundwater is directly used for irrigation of fruits, but almost unknown
		O4	**Deep Groundwater Development in Wadi Araba Area**	Preliminary study	2005?	0?			Exploitation of deep non-renewable groundwater and/or shallow groundwater for irrigation project by Intergence Dead	not secured under study	Hydro-geological Survey	2	3	3	4	12	Survey is on-going by MWI
		O5	**Groundwater Development in Musaitbeh Well Field**	Preliminary study		8			Groundwater development from A7/B2 aquifer in the Dead Sea Basin, numerical simulation has been done	not secured, GW analysis done	Numerical analysis done	1	4	1	4	10	It is recommended that this scheme should be re-considered because the abstraction has exceeded the safe yield in this basin.
		O6	**Disi-Aqaba Hydro-powered RO Desalination Scheme**	concept		16	58.0	3.6	Conveyance of brackish groundwater abstracted from Khreim and Kurnub Aq. from Disi to Aqaba. Desalination of brackish groundwater by the electricity to be partly fed to pumping energy between Disi and Aqaba	not secured, idea	concept	2	3	3	4	12	Potential and quality of brackish GW in the Khreim should be identified prior to pre-F/S or comprehensive study should be done in full scale F/S.

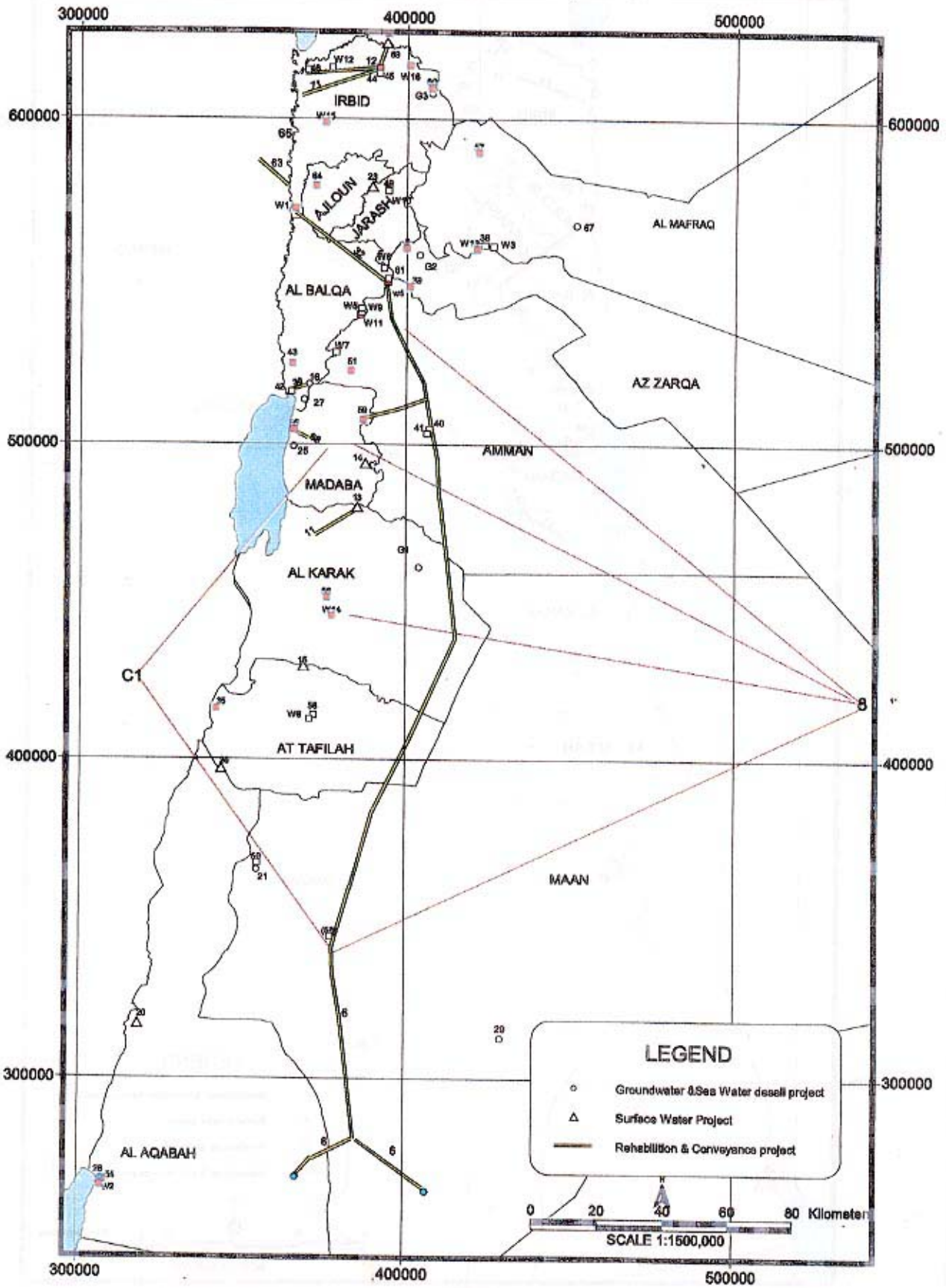
Cand. Project for pre-F/S	File No. of Invest. Program	No attached by JICA	Sea Water Development Projects	Status	Compl. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
		O7	**The Red Sea-Dead Sea Canal Project (RSDSC)**	Preliminary study		551	3600.0	4.1	Conveyance of sea water from Red Sea to Dead Sea : 180Km, pumping station : 6lm3/sec, Seawater Desalination using hydroelectricity assisted RO, Desalinated water transmission line : 180Km	not secured, F/S not yet	concept	2	3	2	2	9	Trilateral Economic Committee of Jordan, Israel and UN provided concepts, major contribution to supply water to Jordan, Israel and PA., to restore the Dead Sea level
		O8	**Aqaba Hybrid Sea Water Pumped-Storage Scheme with Hydro-powered RO Desalination**	concept		100	410.0	4.1	Pumping up seawater in the reservoir located in Jordan using the electricity in Off-peak, Seawater desalination using hydroelectricity assisted RO, Desalinated water transmission line	not secured, idea	concept	2	3	3	3	11	It becomes attractive when regional electricity supply network will be realized and ample surplus power supply at night will be occurring
		O9	**Development of Deep Sea Water**	concept					Development of deep sea water including much mineral which will be obtained in the process of the thermal heat exchange of the desalinated water	not secured, idea	concept	1	2	3	3	9	Investigation and study not yet

Cand. Project for pre-F/S	File No. of Invest. Program	No attached by JICA	Regional Water Projects	Status	Comp. Year	Dev. Amount (MCM/a)	Project Cost (Million JD)	Invest. (JD/cum)	Project Description	Finance	Study	Technical Viability	Economic Viability	Environ. Viability	Political Viability	Total Ranking	Remarks
		O10	**Water Conveyance from Turky by Tanker or Huge Water Bag or Tanker**	concept					Purchasing of water from Turky and conveyance by tankers or bags to Haifa in Israel, trans-mission line from Hafir el Dier Alla PS	not secured, idea	concept	2	2	4	2	10	Multi-lateral project with Jordan, Turkey and Israel
		O11	**Water Conveyance from Turky by Pipe Line**	concept					Purchasing of water from Turky and conveyance by pipeline through Syrian territorian	not secured, idea	concept	2	2	1	2	10	Multi-lateral project with Jordan, Turkey and Syria
		O12	**Water Conveyance from Euphrates River in Iraq by Pipe Line (from Al-Qaim Post)**	concept		180			Conveyance of water from Euphrates River in Iraq through pipe line, to be implemented into five Steps	not secured, idea	concept	2	2	3	2	9	Bi-lateral project with Jordan and Iraq
		O13	**Mediterranean-Dead Sea Canal Hydropower and Sea Water Desalination Project**	Preliminary study		100	4?0.0	4.1	Conveyance of sea water from Mediterranean Sea to Dead Sea through Open Canal and Tunnel Conduit : 180Km pumping station, Seawater Desalination using hydroelectrically assisted RO, Desalinated water transmission line	not secured, study done by Israel	concept	2	2	2	1	7	Multi-lateral project with Jordan, Israel and PA
		O14	**Arab Diversion**	cancelled					Conveyance from Hasbabani River in Lebanon and Banias River in Golan Heights to Yarmouk River through Tunnel Conduit, planned before 1982	not secured	abandoned	1	1	1	1	4	Abandoned project in 1980

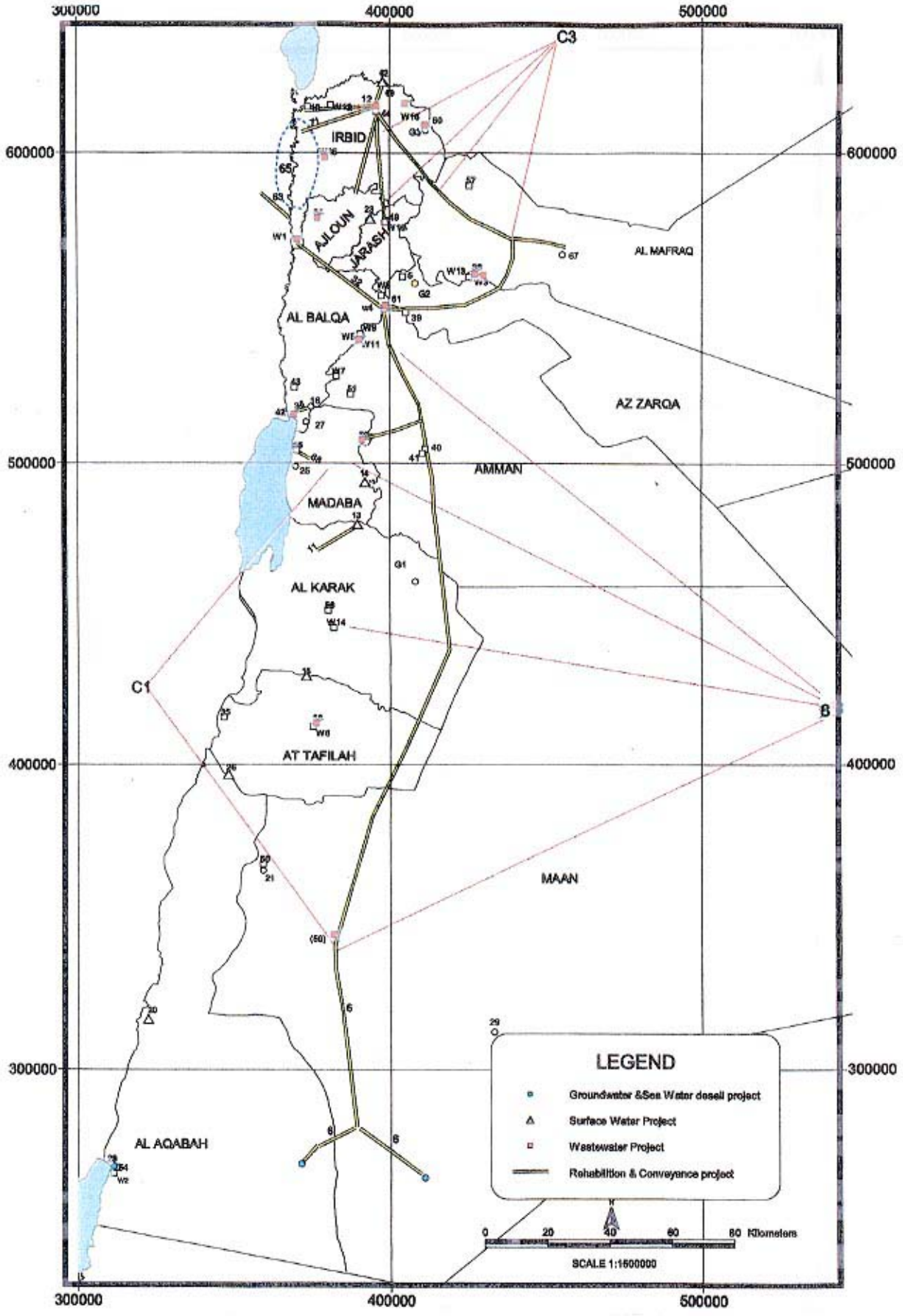
For the ranking criteria, refer to Table 10.1-1



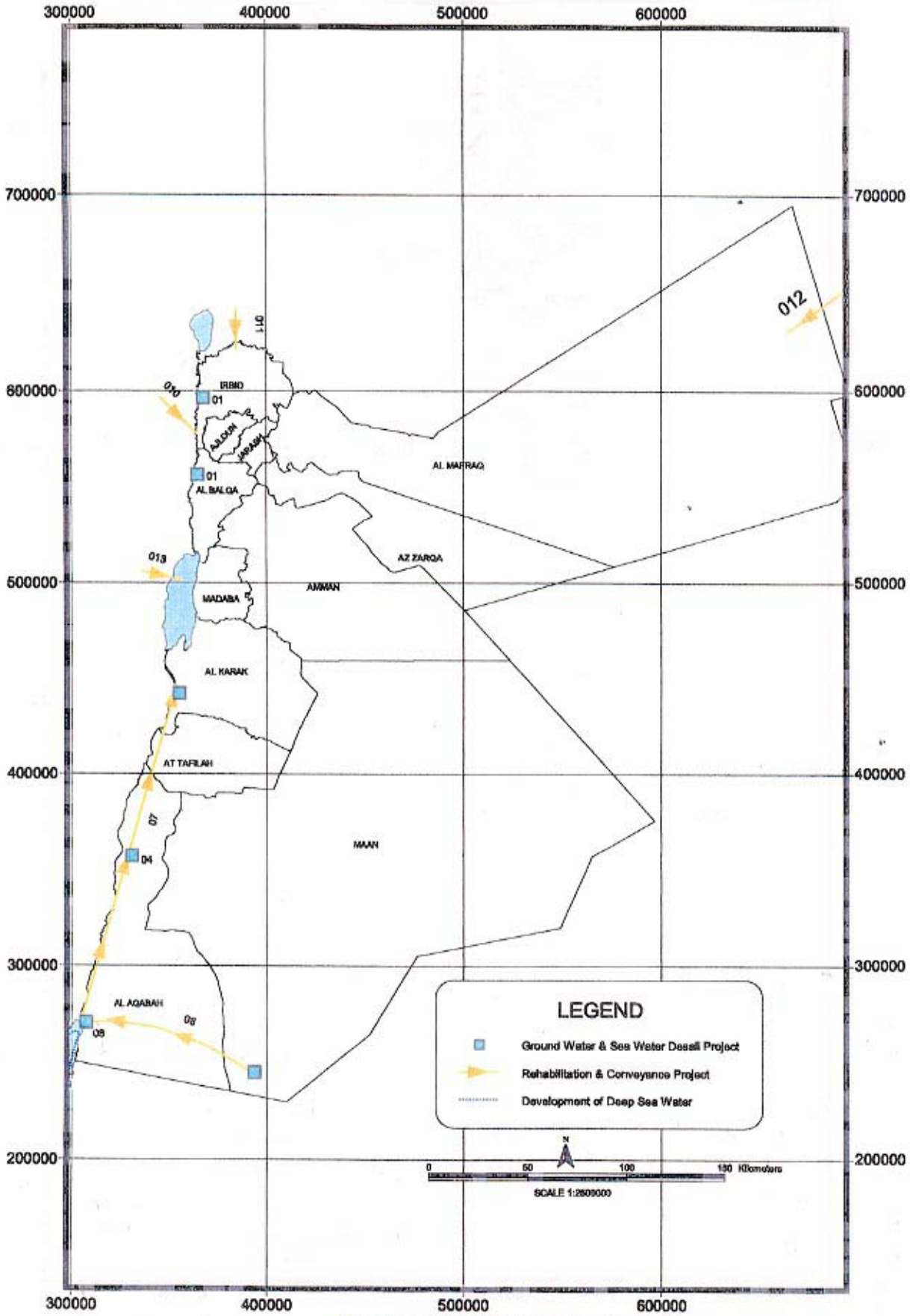
Location of Water Projects of Short Term (2001 – 2005)



Location of Water Projects of Mid Term (2006 – 2010)



Location of Water Projects of Long Term (2011 – 2020)



Location of Other Water Projects