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Water Allocation System (WAS v1.0)

Developed by: The Harvard Middle East Water Project

Year: 2010 - Middle Palestinian Growth Scenario

Scenario CURRENT+: Current Links and Recycling with Jordan River Links

Quota File: qta.inc 6 files Jordan Valley AGR

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Water Allocation System (WAS v1.0)
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 Scenario CURRENT+: Current Links and Recycling with Jordan River Links
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OPTIMAL GAMS RESULTS FOR WAS.GMS
 PRICES

ISRAEL

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Hacola	0.356	0.356	0.66	0.66	0.36
Kinneret	0.356	0.356	0.66	0.66	0.36
WestGalil	0.381	0.381	0.68	0.68	0.38
Haifa	0.401	0.401	0.70	0.70	0.40
Afula	0.435	0.435	0.74	0.74	0.44
Hadera	0.451	0.451	0.75	0.75	0.45
Netanya	0.446	0.446	0.75	0.75	0.45
PTiqwa	0.492	0.492	0.79	0.79	0.49
TelAviv	0.503	0.111	0.80	0.80	0.15
Ramla	0.484	0.484	0.78	0.78	0.48
Rehovot	0.466	0.466	0.77	0.77	0.47
Lachish	0.780	0.179	1.08	1.08	0.26
Negev	0.838	0.837	1.14	1.14	0.84

JORDAN

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
JordanV	0.436	0.009	0.74	0.74	0.01
NHighland	0.429	0.429	0.51	0.51	0.43
Amman	0.665	0.469	0.72	0.72	0.51
DeadSea	0.165	0.165	0.47	0.46	0.17
Azraq	0.041	0.041	0.34	0.34	0.04
WadiAraba	0.800	0.800	1.10	1.10	0.80
MaanDisi	0.467	0.467	0.77	0.77	0.47
Hammad	0.132	0.132	0.43	0.43	0.13

PALESTINE

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Jenin	0.461	0.461	0.76	0.76	0.46
Tulkarem	0.463	0.463	0.76	0.76	0.46
Nablus	0.502	0.502	0.80	0.80	0.50
Ramallah	0.504	0.504	0.80	0.80	0.50
Bethlehem	0.732	0.732	1.03	1.03	0.73
Hebron	0.831	0.831	1.13	1.13	0.83
GazaN	0.800	0.800	1.10	1.10	0.80
GazaS	0.800	0.800	1.10	1.10	0.80
Jericho	0.280	0.280	0.58	0.58	0.28

GOLAN

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Golan	0.332	0.332	0.63	0.63	0.33

JERUSALEM

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Jerusalem	0.501	0.100	0.80	0.80	0.14

Net Price of water in dispute in the Sea of Galilee is 0.356
 Average Net Price of water in dispute in the mountain aquifer is 0.289

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OPTIMAL GAMS RESULTS FOR WAS.GMS
 QUANTITIES

ISRAEL

DISTRICT	PRODN	NET.EXP	URBDEM	INDDM	AGRDEM
Hacola	80.00	-5.61	12.25	1.51	71.85
Kinneret	560.00	496.64	12.25	0.78	50.33
WestGalil	102.00	5.03	56.47	2.32	38.17
Haifa	183.00	11.70	46.15	3.48	121.67
Afula	40.00	-56.51	73.82	13.82	8.87
Hadera	7.00	-88.01	31.52	7.50	55.98
Netanya	222.00	121.93	37.80	1.62	60.65
PTiqwa	40.00	-55.87	59.19	1.13	35.55
TelAviv	8.00	-171.30	173.20	5.20	8.45
Ramla	124.89	77.47	19.53	2.73	25.16
Rehovot	243.00	151.87	47.61	4.12	39.39
Lachish	59.00	4.39	35.48	2.09	127.23
Negev	44.85	-106.96	49.43	21.99	80.39
TOTAL	1713.74	384.77	654.72	68.31	723.69

JORDAN

DISTRICT	PRODN	NET.EXP	URBDEM	INDDM	AGRDEM
JordanV	136.00	-353.64	12.54	0.00	477.10
NHighland	225.00	52.54	45.62	0.03	156.94
Amman	149.50	-72.90	186.82	1.26	158.45
DeadSea	47.52	15.00	21.23	2.98	8.31
Azraq	30.13	28.00	2.13	0.00	0.00
WadiAraba	131.21	0.00	10.16	0.03	121.02
MaanDisi	124.00	0.00	2.85	1.07	120.08
Hammad	0.31	0.00	0.31	0.00	0.00
TOTAL	843.67	-331.00	281.65	5.37	1041.91

PALESTINE

DISTRICT	PRODN	NET.EXP	URBDEM	INDDM	AGRDEM
Jenin	65.41	-42.07	44.67	0.69	62.11
Tulkarem	37.32	-24.14	45.89	2.24	13.33
Nablus	39.97	-28.21	51.78	2.54	13.86
Ramallah	31.37	-27.40	51.45	1.69	5.63
Bethlehem	53.67	17.85	29.58	1.87	4.37
Hebron	62.20	-7.35	54.36	4.43	10.77
GazaN	193.02	92.08	82.91	2.69	15.35
GazaS	96.65	0.00	76.66	2.69	17.30
Jericho	42.21	0.00	6.22	0.38	35.61
TOTAL	621.82	-19.24	443.53	19.21	178.32

GOLAN

DISTRICT	PRODN	NET.EXP	URBDEM	INDDM	AGRDEM
Golan	40.00	10.26	4.29	0.18	25.27

JERUSALEM

DISTRICT	PRODN	NET.EXP	URBDEM	INDDM	AGRDEM
Jerusalem	50.00	-44.78	91.40	0.34	30.42

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OPTIMAL GAMS RESULTS FOR WAS.GMS
 RECYCLED QUANTITIES

ISRAEL

DISTRICT	FrmURB	FrmIND	FrmAGR	ToAGR	NET.EXP
Hacola	0.00	0.00	0.00	0.00	0.00
Kinneret	0.00	0.00	0.00	0.00	0.00
WestGalil	0.00	0.00	0.00	0.00	0.00
Haifa	0.00	0.00	0.00	0.00	0.00
Afula	0.00	0.00	0.00	0.00	0.00
Hadera	0.00	0.00	0.00	0.00	0.00
Netanya	0.00	0.00	0.00	0.00	0.00
PTiqwa	0.00	0.00	0.00	0.00	0.00
TelAviv	114.31	3.43	0.00	7.56	110.19
Ramla	0.00	0.00	0.00	0.00	0.00
Rehovot	0.00	0.00	0.00	0.00	0.00
Lachish	0.00	0.00	0.00	110.19	-110.19
Negev	0.00	0.00	0.00	0.00	0.00
TOTAL	114.31	3.43	0.00	117.75	0.00

JORDAN

DISTRICT	FrmURB	FrmIND	FrmAGR	ToAGR	NET.EXP
JordanV	0.00	0.00	0.00	0.00	0.00
NHighland	30.11	0.02	0.00	30.13	0.00
Amman	123.30	0.83	0.00	124.13	0.00
DeadSea	0.00	0.00	0.00	0.00	0.00
Azraq	0.00	0.00	0.00	0.00	0.00
WadiAraba	0.00	0.00	0.00	0.00	0.00
MaanDisi	0.00	0.00	0.00	0.00	0.00
Hammad	0.00	0.00	0.00	0.00	0.00
TOTAL	153.41	0.85	0.00	154.26	0.00

PALESTINE

DISTRICT	FrmURB	FrmIND	FrmAGR	ToAGR	NET.EXP
Jenin	0.00	0.00	0.00	0.00	0.00
Tulkarem	0.00	0.00	0.00	0.00	0.00
Nablus	0.00	0.00	0.00	0.00	0.00
Ramallah	0.00	0.00	0.00	0.00	0.00
Bethlehem	0.00	0.00	0.00	0.00	0.00
Hebron	0.00	0.00	0.00	0.00	0.00
GazaN	0.00	0.00	0.00	0.00	0.00
GazaS	0.00	0.00	0.00	0.00	0.00
Jericho	0.00	0.00	0.00	0.00	0.00
TOTAL	0.00	0.00	0.00	0.00	0.00

GOLAN

DISTRICT	FrmURB	FrmIND	FrmAGR	ToAGR	NET.EXP
Golan	0.00	0.00	0.00	0.00	0.00

JERUSALEM

DISTRICT	FrmURB	FrmIND	FrmAGR	ToAGR	NET.EXP
Jerusalem	27.38	0.00	0.00	27.38	0.00

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OPTIMAL GAMS RESULTS FOR WAS.GMS
 SOCIAL WELFARE RESULTS

ISRAEL				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Hacola	12.446	0.000	103.545	115.991
Kinneret	199.118	0.000	75.880	274.999
WestGalil	24.166	0.000	108.157	132.323
Haifa	14.805	0.000	206.712	221.517
Afula	10.679	0.000	103.410	114.089
Hadera	1.993	0.000	114.963	116.955
Netanya	63.954	0.000	119.550	183.504
PTiqwa	11.655	0.000	107.968	119.623
TelAviv	0.828	0.000	185.379	186.207
Ramla	35.315	0.000	56.625	91.941
Rehovot	38.891	0.000	105.074	143.966
Lachish	30.231	0.000	155.101	185.331
Negev	19.503	0.000	191.473	210.976
TOTAL	463.583	0.000	1633.838	2097.422
JORDAN				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
JordanV	41.285	203.516	147.212	188.498
NHighland	38.978	0.000	250.980	289.958
Amman	69.243	0.000	394.269	463.512
DeadSea	0.000	0.000	33.625	33.625
Azraq	1.107	0.000	2.166	3.273
WadiAraba	13.132	0.000	185.640	198.772
MaanDisi	43.147	0.000	163.693	206.839
Hammad	0.000	0.000	0.321	0.321
TOTAL	206.892	203.516	1177.906	1384.798
PALESTINE				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Jenin	10.156	0.000	127.675	137.831
Tulkarem	9.024	0.000	66.316	75.340
Nablus	10.455	0.000	73.309	83.764
Ramallah	7.813	0.000	60.767	68.581
Bethlehem	21.304	0.000	36.865	58.168
Hebron	31.698	0.000	72.130	103.829
GazaN	23.400	0.000	103.693	127.093
GazaS	16.900	0.000	100.664	117.564
Jericho	7.753	0.000	48.132	55.885
TOTAL	138.503	0.000	689.551	828.054
GOLAN				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Golan	5.263	0.000	35.366	40.628
JERUSALEM				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Jerusalem	5.058	0.000	114.573	119.631

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OPTIMAL GAMS RESULTS FOR WAS.GMS
 TRANSPORT OF FRESH WATER

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LINKAGES USED AND QUANTITIES TRANSPORTED

FROM	TO	QTY. TRANSPORTED
Golan	NC-Golan	10.26
Kinneret	NC-SeaOfGal	496.64
WestGalil	NC-WestGalil	5.03
Haifa	NC-Haifa	11.70
Netanya	NC-Hadera	121.93
Ramla	NC-Ramla	77.47
Rehovot	NC-Rehovot	151.87
Lachish	NC-Lachish	4.39
JordanV	Amman	43.90
NHighlands	JordanV	66.54
DeadSea	Amman	15.00
Azraq	NHighlands	14.00
Azraq	Amman	14.00
Bethlehem	NC-Bethlehem	17.85
GazaN	NC-GazaN	92.08
NC-Hacola	Hacola	5.61
NC-Golan	NC-Hacola	5.61
NC-Golan	NC-SeaOfGal	4.64
NC-SeaOfGal	JordanV	331.00
NC-SeaOfGal	NC-WestGalil	170.28
NC-WestGalil	NC-Haifa	175.31
NC-Haifa	NC-Afula	187.01
NC-Afula	Afula	56.51
NC-Afula	NC-Netanya	130.50
NC-Hadera	NC-Tulkarem	122.36
NC-Netanya	Hadera	88.01
NC-Netanya	NC-Jenin	42.49
NC-PTiqwa	PTiqwa	55.87
NC-PTiqwa	NC-TelAviv	14.14
NC-TelAviv	TelAviv	171.30
NC-Ramla	NC-TelAviv	157.16
NC-Rehovot	NC-Jerusalem	44.78
NC-Rehovot	NC-Ramallah	107.09
NC-Jerusalem	Jerusalem	44.78
NC-Lachish	NC-Hebron	22.24
NC-Negev	Negev	106.96
NC-Jenin	Jenin	42.07
NC-Jenin	NC-Hadera	0.42
NC-Tulkarem	Tulkarem	24.14
NC-Tulkarem	NC-Nablus	98.22
NC-Nablus	Nablus	28.21
NC-Nablus	NC-PTiqwa	70.01
NC-Ramallah	Ramallah	27.40
NC-Ramallah	NC-Ramla	79.69
NC-Bethlehem	NC-Lachish	17.85
NC-Hebron	Hebron	7.35
NC-Hebron	NC-Negev	14.88
NC-GazaN	NC-Negev	92.08

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OPTIMAL GAMS RESULTS FOR WAS.GMS
TRANSPORT OF RECYCLED WATER

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LINKAGES USED AND QUANTITIES TRANSPORTED

FROM	TO	QTY.TRANSPORTED
TelAviv	Lachish	110.19

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OPTIMAL GAMS RESULTS FOR WAS.GMS
DISPUTED QUANTITIES: MOUNTAIN AQUIFER

DISTRICT	SOURCE	QTY. PUMPED	MAX. QTY
Afula	S1	32.00	32.00
Afula	S2	8.00	8.00
Afula	S3	0.00	40.00
Hadera	S1	7.00	7.00
Hadera	S2	0.00	11.00
Netanya	S2	132.00	132.00
Netanya	S3	0.00	37.00
Ramla	S1	124.89	150.00
Lachish	S3	0.00	57.00
Negev	S3	12.85	25.00
Jenin	S4	51.17	98.33
Tulkarem	S3	6.68	6.68
Tulkarem	S4	6.35	134.95
Nablus	S4	20.56	20.56
Ramallah	S4	0.00	128.57
Bethlehem	S3	28.79	28.79
Hebron	S2	9.62	9.62
Hebron	S3	46.68	46.68