

06-21-1994 00:57:23

Water Allocation System (WAS v1.0)

Developed by: The Harvard Middle East Water Project

FIXED INDUSTRIAL DEMAND AT JORDAN

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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OPTIMAL GAMS RESULTS FOR WAS.GMS
 PRICES

ISRAEL

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Hacola	0.357	0.357	0.66	0.66	0.36
Kinneret	0.357	0.357	0.66	0.66	0.36
WestGalil	0.382	0.382	0.68	0.68	0.38
Haifa	0.402	0.402	0.70	0.70	0.40
Afula	0.436	0.436	0.74	0.74	0.44
Hadera	0.452	0.452	0.75	0.75	0.45
Netanya	0.447	0.447	0.75	0.75	0.45
PTiqwa	0.493	0.493	0.79	0.79	0.49
TelAviv	0.505	0.111	0.80	0.80	0.15
Ramla	0.485	0.485	0.78	0.78	0.48
Rehovot	0.467	0.467	0.77	0.77	0.47
Lachish	0.780	0.179	1.08	1.08	0.26
Negev	0.838	0.838	1.14	1.14	0.84

JORDAN

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
JordanV	0.437	0.009	0.74	0.00	0.01
NHighland	0.430	0.430	0.51	0.00	0.43
Amman	1.287	0.465	1.35	0.00	0.64
DeadSea	0.330	0.330	0.63	0.00	0.33
Azraq	0.041	0.041	0.34	0.00	0.04
WadiAraba	0.800	0.800	1.10	0.00	0.80
MaanDisi	0.672	0.672	0.97	0.00	0.67
Hammad	0.132	0.132	0.43	0.00	0.13

PALESTINE

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Jenin	0.462	0.462	0.76	0.76	0.46
Tulkarem	0.464	0.464	0.76	0.76	0.46
Nablus	0.503	0.503	0.80	0.80	0.50
Ramallah	0.505	0.505	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	0.333	0.333	0.63	0.63	0.33

JERUSALEM

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Jerusalem	0.502	0.100	0.80	0.80	0.14

Net Price of water in dispute in the Sea of Galilee is 0.357
 Average Net Price of water in dispute in the mountain aquifer is 0.290

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OPTIMAL GAMS RESULTS FOR WAS.GMS
 QUANTITIES

ISRAEL

DISTRICT	PRODN	NET.EXP	URBDEM	INDDM	AGRDEM
Hacola	80.00	-5.50	12.25	1.51	71.75
Kinneret	560.00	496.72	12.25	0.78	50.25
WestGalil	102.00	5.10	56.45	2.32	38.12
Haifa	183.00	11.88	46.14	3.48	121.51
Afula	40.00	-56.47	73.80	13.81	8.86
Hadera	7.00	-87.93	31.51	7.49	55.92
Netanya	222.00	122.01	37.79	1.62	60.58
PTiqwa	40.00	-55.81	59.17	1.13	35.51
TelAviv	8.00	-171.25	173.16	5.20	8.45
Ramla	124.89	77.50	19.53	2.73	25.13
Rehovot	243.00	151.93	47.60	4.12	39.35
Lachish	59.00	4.39	35.48	2.09	127.20
Negev	44.85	-106.96	49.43	21.99	80.39
TOTAL	1713.74	385.60	654.56	68.29	723.01

JORDAN

DISTRICT	PRODN	NET.EXP	URBDEM	INDDM	AGRDEM
JordanV	136.00	-353.63	12.53	0.00	477.10
NHighland	225.00	52.57	45.62	0.50	156.75
Amman	149.50	-74.00	164.88	24.30	159.18
DeadSea	90.60	15.00	19.98	49.75	5.88
Azraq	30.13	28.00	2.13	0.00	0.00
WadiAraba	131.79	0.00	10.16	0.60	121.02
MaanDisi	124.00	0.00	2.72	21.20	100.08
Hammad	0.31	0.00	0.31	0.00	0.00
TOTAL	887.33	-332.06	258.32	96.35	1020.01

PALESTINE

DISTRICT	PRODN	NET.EXP	URBDEM	INDDM	AGRDEM
Jenin	65.40	-41.99	44.66	0.69	62.04
Tulkarem	37.32	-24.11	45.88	2.24	13.32
Nablus	39.97	-28.18	51.77	2.54	13.84
Ramallah	31.37	-27.38	51.44	1.69	5.62
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	-19.08	443.48	19.21	178.21

GOLAN

DISTRICT	PRODN	NET.EXP	URBDEM	INDDM	AGRDEM
Golan	40.00	10.30	4.29	0.18	25.23

JERUSALEM

DISTRICT	PRODN	NET.EXP	URBDEM	INDDM	AGRDEM
Jerusalem	50.00	-44.76	91.38	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	114.29	3.43	0.00	7.56	110.16
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	110.16	-110.16
Negev	0.00	0.00	0.00	0.00	0.00
TOTAL	114.29	3.43	0.00	117.72	0.00

JORDAN

DISTRICT	FrmURB	FrmIND	FrmAGR	ToAGR	NET.EXP
JordanV	0.00	0.00	0.00	0.00	0.00
NHighland	30.11	0.33	0.00	30.44	0.00
Amman	108.82	16.04	0.00	124.86	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	138.93	16.37	0.00	155.29	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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FIXED INDUSTRIAL DEMAND AT JORDAN

Year: 2010 - Middle Palestinian Growth Scenario

"Optimal" Scenario

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

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OPTIMAL GAMS RESULTS FOR WAS.GMS
 SOCIAL WELFARE RESULTS

ISRAEL				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Hacola	12.531	0.000	103.477	116.007
Kinneret	199.713	0.000	75.831	275.544
WestGalil	24.274	0.000	108.098	132.372
Haifa	14.999	0.000	206.587	221.586
Afula	10.721	0.000	103.362	114.084
Hadera	2.000	0.000	114.898	116.898
Netanya	64.190	0.000	119.482	183.672
PTiqwa	11.697	0.000	107.913	119.610
TelAviv	0.836	0.000	185.305	186.141
Ramla	35.448	0.000	56.595	92.042
Rehovot	39.149	0.000	105.019	144.168
Lachish	30.231	0.000	155.094	185.324
Negev	19.503	0.000	191.473	210.976
TOTAL	465.293	0.000	1633.133	2098.426
JORDAN				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
JordanV	41.430	204.023	147.207	188.637
NHighland	39.217	0.215	250.857	290.074
Amman	162.316	31.277	338.825	501.141
DeadSea	9.405	16.418	32.741	42.146
Azraq	1.107	0.000	2.166	3.273
WadiAraba	13.132	0.480	185.670	198.802
MaanDisi	68.597	14.253	147.275	215.872
Hammad	0.000	0.000	0.321	0.321
TOTAL	335.203	266.665	1105.063	1440.266
PALESTINE				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Jenin	10.225	0.000	127.604	137.829
Tulkarem	9.064	0.000	66.284	75.348
Nablus	10.498	0.000	73.274	83.772
Ramallah	7.847	0.000	60.740	68.587
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	138.688	0.000	689.386	828.074
GOLAN				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Golan	5.305	0.000	35.342	40.647
JERUSALEM				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Jerusalem	5.112	0.000	114.531	119.643

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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	10.30
Kinneret	NC-SeaOfGal	496.72
WestGalil	NC-WestGalil	5.10
Haifa	NC-Haifa	11.88
Netanya	NC-Hadera	122.01
Ramla	NC-Ramla	77.50
Rehovot	NC-Rehovot	151.93
Lachish	NC-Lachish	4.39
JordanV	Amman	45.00
NHighlands	JordanV	66.57
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	5.50
NC-Golan	NC-Hacola	5.50
NC-Golan	NC-SeaOfGal	4.80
NC-SeaOfGal	JordanV	332.06
NC-SeaOfGal	NC-WestGalil	169.45
NC-WestGalil	NC-Haifa	174.56
NC-Haifa	NC-Afula	186.43
NC-Afula	Afula	56.47
NC-Afula	NC-Netanya	129.96
NC-Hadera	NC-Tulkarem	122.06
NC-Netanya	Hadera	87.93
NC-Netanya	NC-Jenin	42.03
NC-PTiqwa	PTiqwa	55.81
NC-PTiqwa	NC-TelAviv	13.95
NC-TelAviv	TelAviv	171.25
NC-Ramla	NC-TelAviv	157.30
NC-Rehovot	NC-Jerusalem	44.76
NC-Rehovot	NC-Ramallah	107.17
NC-Jerusalem	Jerusalem	44.76
NC-Lachish	NC-Hebron	22.24
NC-Negev	Negev	106.96
NC-Jenin	Jenin	41.99
NC-Jenin	NC-Hadera	0.04
NC-Tulkarem	Tulkarem	24.11
NC-Tulkarem	NC-Nablus	97.95
NC-Nablus	Nablus	28.18
NC-Nablus	NC-PTiqwa	69.77
NC-Ramallah	Ramallah	27.38
NC-Ramallah	NC-Ramla	79.79
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	110.16

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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	51.16	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