

06-20-1994 23:08:01

Water Allocation System (WAS v1.0)

Developed by: The Harvard Middle East Water Project

Year: 2020 - 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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OPTIMAL GAMS RESULTS FOR WAS.GMS
 PRICES

ISRAEL

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Hacola	0.431	0.431	0.73	0.73	0.43
Kinneret	0.431	0.431	0.73	0.73	0.43
WestGalil	0.456	0.456	0.76	0.76	0.46
Haifa	0.476	0.476	0.78	0.78	0.48
Afula	0.511	0.511	0.81	0.81	0.51
Hadera	0.526	0.526	0.83	0.83	0.53
Netanya	0.521	0.521	0.82	0.82	0.52
PTiqwa	0.568	0.568	0.87	0.87	0.57
TelAviv	0.579	0.100	0.88	0.88	0.15
Ramla	0.559	0.559	0.86	0.86	0.56
Rehovot	0.541	0.541	0.84	0.84	0.54
Lachish	0.800	0.168	1.10	1.10	0.25
Negev	0.838	0.837	1.14	1.14	0.84

JORDAN

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
JordanV	0.511	0.009	0.81	0.81	0.01
NHighland	0.504	0.504	0.54	0.54	0.50
Amman	6.901	0.506	6.93	6.93	1.94
DeadSea	0.330	0.330	0.63	0.63	0.33
Azraq	0.041	0.041	0.34	0.34	0.04
WadiAraba	0.800	0.800	1.10	1.10	0.80
MaanDisi	0.480	0.480	0.78	0.78	0.48
Hammad	0.132	0.132	0.43	0.43	0.13

PALESTINE

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Jenin	0.536	0.536	0.84	0.84	0.54
Tulkarem	0.538	0.538	0.84	0.84	0.54
Nablus	0.577	0.577	0.88	0.88	0.58
Ramallah	0.579	0.579	0.88	0.88	0.58
Bethlehem	0.850	0.850	1.15	1.15	0.85
Hebron	0.851	0.851	1.15	1.15	0.85
GazaN	0.800	0.800	1.10	1.10	0.80
GazaS	0.800	0.800	1.10	1.10	0.80
Jericho	0.335	0.335	0.63	0.63	0.33

GOLAN

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Golan	0.407	0.407	0.71	0.71	0.41

JERUSALEM

DISTRICT	FPRICE	RPRICE	PURB	PIND	PAGR
Jerusalem	0.573	0.100	0.87	0.87	0.15

Net Price of water in dispute in the Sea of Galilee is 0.431
 Average Net Price of water in dispute in the mountain aquifer is 0.359

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OPTIMAL GAMS RESULTS FOR WAS.GMS
 QUANTITIES

ISRAEL

DISTRICT	PRODN	NET.EXP	URBDEM	INDDEM	AGRDEM
Hacola	80.00	-0.80	13.91	1.63	65.26
Kinneret	645.00	584.53	13.95	0.81	45.71
WestGalil	150.00	48.30	64.36	2.47	34.87
Haifa	183.00	15.09	52.58	3.71	111.62
Afula	40.00	-67.29	84.21	14.90	8.19
Hadera	7.00	-88.87	35.95	8.10	51.82
Netanya	222.00	120.94	43.18	1.79	56.09
PTiqwa	40.00	-61.92	67.61	1.21	33.10
TelAviv	8.00	-196.02	197.50	5.64	8.92
Ramla	124.89	76.21	22.31	2.98	23.40
Rehovot	243.00	147.64	54.38	4.44	36.54
Lachish	115.20	54.79	41.09	2.28	131.46
Negev	44.85	-117.52	57.48	24.50	80.39
TOTAL	1902.94	515.06	748.49	74.46	687.37

JORDAN

DISTRICT	PRODN	NET.EXP	URBDEM	INDDEM	AGRDEM
JordanV	136.00	-353.98	19.49	0.00	477.10
NHighland	225.00	55.92	71.62	0.03	144.72
Amman	149.50	-74.00	188.35	0.83	152.57
DeadSea	57.22	15.00	31.67	4.67	5.88
Azraq	31.36	28.00	3.36	0.00	0.00
WadiAraba	137.16	0.00	16.11	0.03	121.02
MaanDisi	124.00	0.00	4.51	1.06	118.43
Hammad	0.50	0.00	0.50	0.00	0.00
TOTAL	860.75	-329.07	335.61	6.62	1019.73

PALESTINE

DISTRICT	PRODN	NET.EXP	URBDEM	INDDEM	AGRDEM
Jenin	65.40	-78.51	70.12	1.06	72.74
Tulkarem	37.32	-57.43	71.92	3.56	19.28
Nablus	39.97	-65.93	81.32	4.00	20.58
Ramallah	31.37	-61.54	80.88	2.74	9.29
Bethlehem	53.67	-2.78	46.37	2.90	7.17
Hebron	62.20	-52.01	86.54	7.15	20.52
GazaN	276.49	117.52	139.20	4.42	15.35
GazaS	150.35	0.00	128.63	4.42	17.30
Jericho	61.14	2.62	9.76	0.61	48.15
TOTAL	777.92	-198.05	714.73	30.85	230.38

GOLAN

DISTRICT	PRODN	NET.EXP	URBDEM	INDDEM	AGRDEM
Golan	40.00	12.06	4.90	0.24	22.81

JERUSALEM

DISTRICT	PRODN	NET.EXP	URBDEM	INDDEM	AGRDEM
Jerusalem	107.92	0.00	104.49	0.38	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	122.45	0.00	0.00	8.03	114.42
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	114.42	-114.42
Negev	0.00	0.00	0.00	0.00	0.00
TOTAL	122.45	0.00	0.00	122.45	0.00

JORDAN

DISTRICT	FrmURB	FrmIND	FrmAGR	ToAGR	NET.EXP
JordanV	0.00	0.00	0.00	6.61	-6.61
NHighland	47.27	0.02	0.00	47.29	0.00
Amman	124.31	0.55	0.00	118.25	6.61
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	171.58	0.57	0.00	172.15	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	18.480	0.000	101.111	119.591
Kinneret	243.993	0.000	74.608	318.600
WestGalil	34.075	0.000	113.481	147.556
Haifa	28.608	0.000	205.989	234.598
Afula	13.696	0.000	113.772	127.468
Hadera	2.521	0.000	116.593	119.114
Netanya	80.699	0.000	121.243	201.943
PTiqwa	14.672	0.000	113.644	128.316
TelAviv	1.431	0.000	207.485	208.916
Ramla	44.735	0.000	58.027	102.762
Rehovot	57.220	0.000	109.387	166.607
Lachish	31.393	0.000	161.251	192.644
Negev	19.503	0.000	202.170	221.674
TOTAL	591.026	0.000	1698.762	2289.788
JORDAN				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
JordanV	51.544	232.915	153.961	205.504
NHighland	55.949	0.000	268.547	324.496
Amman	1001.599	0.000	55.101	1056.700
DeadSea	9.405	0.000	45.291	54.696
Azraq	1.107	0.000	3.429	4.536
WadiAraba	13.132	0.000	191.231	204.362
MaanDisi	44.768	0.000	164.100	208.869
Hammad	0.000	0.000	0.511	0.511
TOTAL	1177.503	232.915	882.171	2059.674
PALESTINE				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Jenin	15.089	0.000	169.966	185.055
Tulkarem	11.839	0.000	101.870	113.709
Nablus	13.470	0.000	113.355	126.825
Ramallah	10.179	0.000	95.614	105.794
Bethlehem	27.610	0.000	57.334	84.944
Hebron	32.924	0.000	119.618	152.542
GazaN	23.400	0.000	158.816	182.216
GazaS	16.900	0.000	151.723	168.623
Jericho	11.115	0.000	69.488	80.604
TOTAL	162.527	0.000	1037.784	1200.311
GOLAN				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Golan	8.280	0.000	34.545	42.825
JERUSALEM				
DISTRICT	PROFITS	GOVT.COSTS	BUYR.SURP.	SOC.WEL
Jerusalem	8.650	0.000	126.243	134.893

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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	12.06
Kinneret	NC-SeaOfGal	584.53
WestGalil	NC-WestGalil	48.30
Haifa	NC-Haifa	15.09
Netanya	NC-Hadera	120.94
Ramla	NC-Ramla	76.21
Rehovot	NC-Rehovot	147.64
Lachish	NC-Lachish	54.79
JordanV	Amman	45.00
NHighlands	JordanV	69.92
DeadSea	Amman	15.00
Azraq	NHighlands	14.00
Azraq	Amman	14.00
GazaN	NC-GazaN	117.52
Jericho	NC-SeaOfGal	2.62
NC-Hacola	Hacola	0.80
NC-Golan	NC-Hacola	0.80
NC-Golan	NC-SeaOfGal	11.26
NC-SeaOfGal	JordanV	329.07
NC-SeaOfGal	NC-WestGalil	269.34
NC-WestGalil	NC-Haifa	317.64
NC-Haifa	NC-Afula	332.73
NC-Afula	Afula	67.29
NC-Afula	NC-Netanya	265.44
NC-Hadera	NC-Tulkarem	219.00
NC-Netanya	Hadera	88.87
NC-Netanya	NC-Jenin	176.57
NC-PTiqwa	PTiqwa	61.92
NC-PTiqwa	NC-TelAviv	33.72
NC-TelAviv	TelAviv	196.02
NC-Ramla	NC-TelAviv	162.31
NC-Rehovot	NC-Ramallah	147.64
NC-Lachish	NC-Bethlehem	2.78
NC-Lachish	NC-Hebron	52.01
NC-Negev	Negev	117.52
NC-Jenin	Jenin	78.51
NC-Jenin	NC-Hadera	98.06
NC-Tulkarem	Tulkarem	57.43
NC-Tulkarem	NC-Nablus	161.57
NC-Nablus	Nablus	65.93
NC-Nablus	NC-PTiqwa	95.64
NC-Ramallah	Ramallah	61.54
NC-Ramallah	NC-Ramla	86.10
NC-Bethlehem	Bethlehem	2.78
NC-Hebron	Hebron	52.01
NC-GazaN	NC-Negev	117.52

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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	114.42
Amman	JordanV	6.61

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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