



Palestinian National Authority
Palestinian Water Authority



السلطة الوطنية الفلسطينية
سلطة المياه الفلسطينية

Water Resources & Management Options in West Bank & Gaza Strip

By: Eng. Deeb Abdel-Ghafour

Director of Water Resources Development Dept

PWA

Water Resources

- **Groundwater Resources**

Wells and Springs

- **Surface Water Resources**

Jordan River and ephemeral Wadis

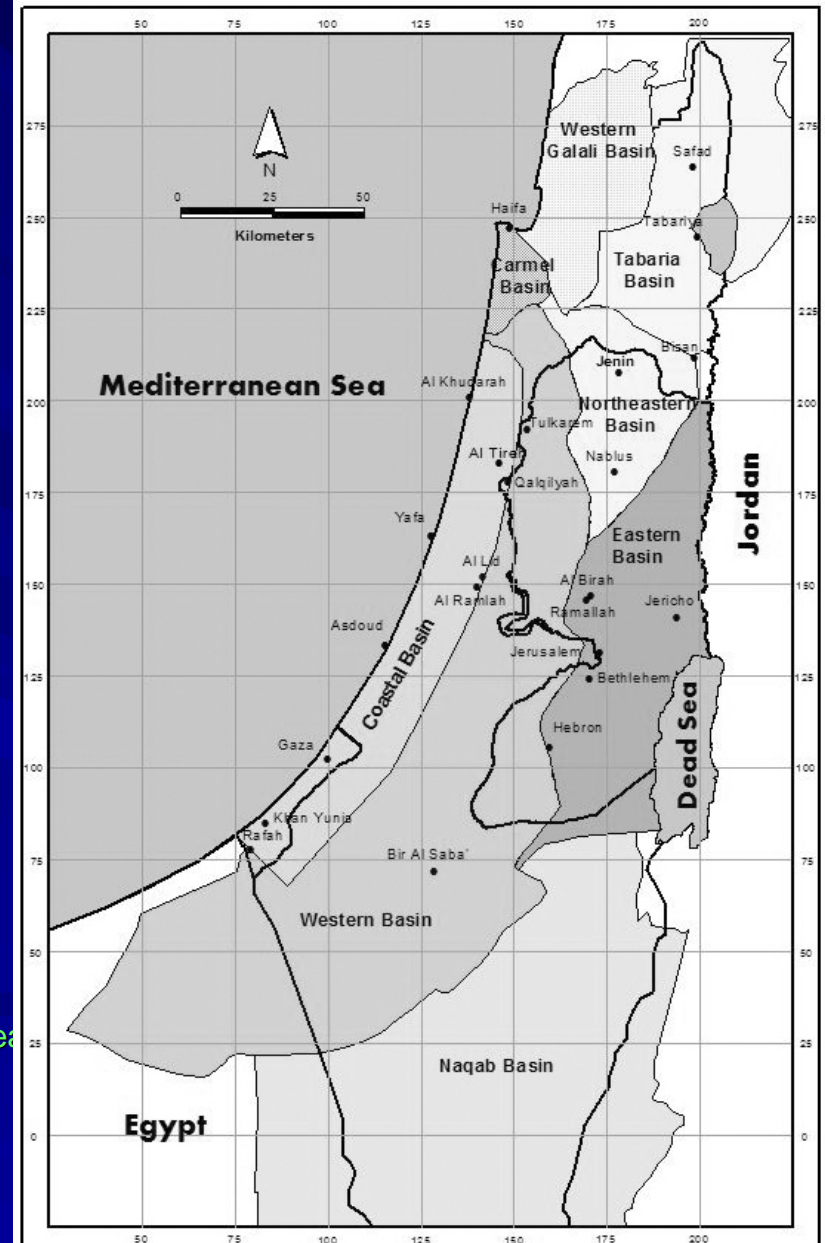
West Bank Water Resources

1. Groundwater Resources

More than 95 % of Palestinian water supply systems for domestic and agricultural use come from groundwater, either from wells or springs.

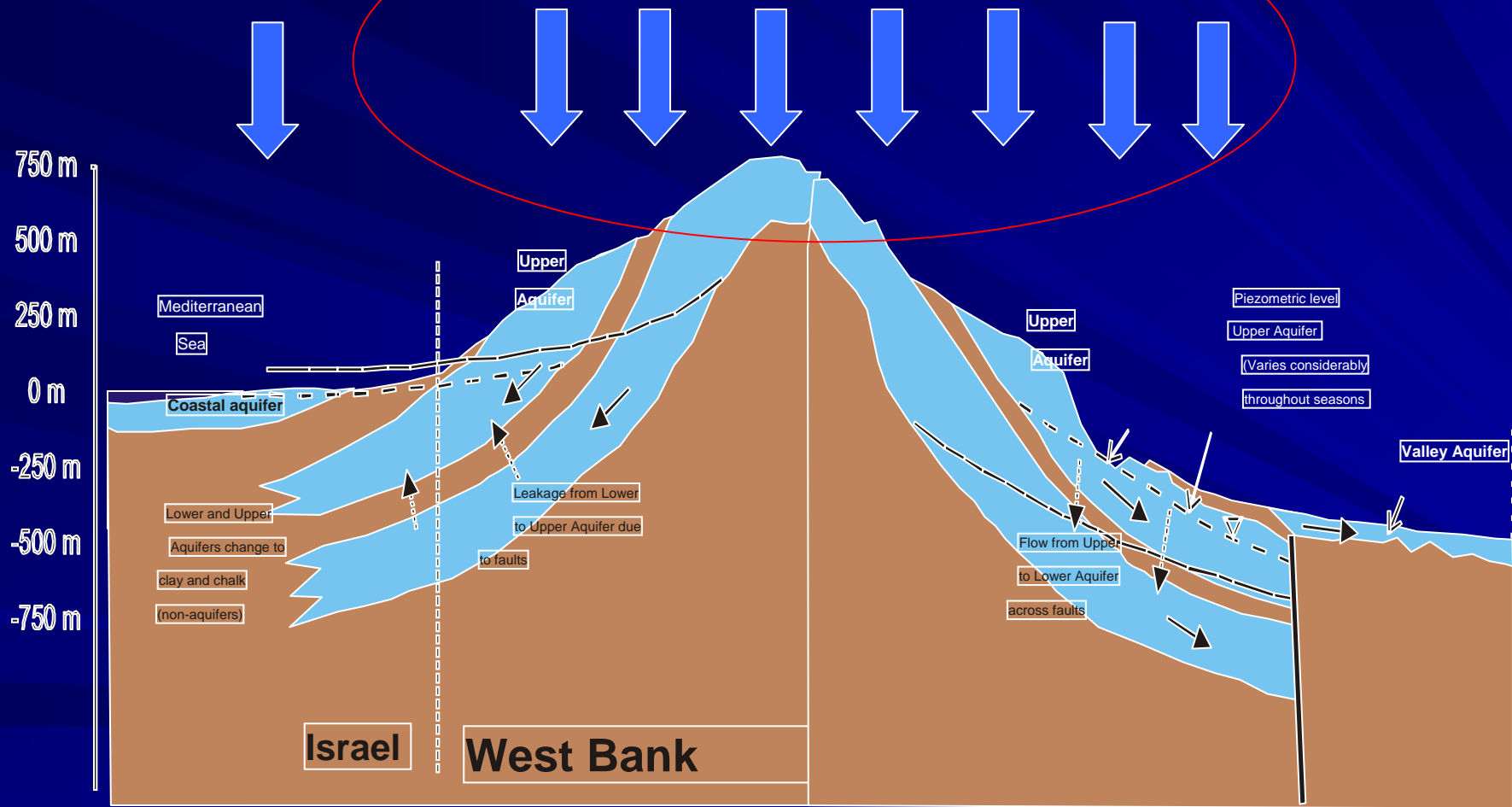
The West Bank includes three primarily groundwater basins:

- Eastern Basin (AASY (wells) = 70-80 MCM/Year)
- Northeastern Basin (AASY (wells) = 80-100 MCM/Year)
- Western Basin (AASY (wells) = 340-360 MCM/Year)



Rainfall is the main Source of Aquifer Recharge

About **700 Mcm/y** of Groundwater Recharge originates inside West Bank



West



Recharge Estimates of GW basins

Basin	Range of Estimates (Mcm/y)
Eastern	125 – 197
Northeastern	132 – 177
Western	330 – 370
Costal Aquifer	50 – 55
Total	637 – 799

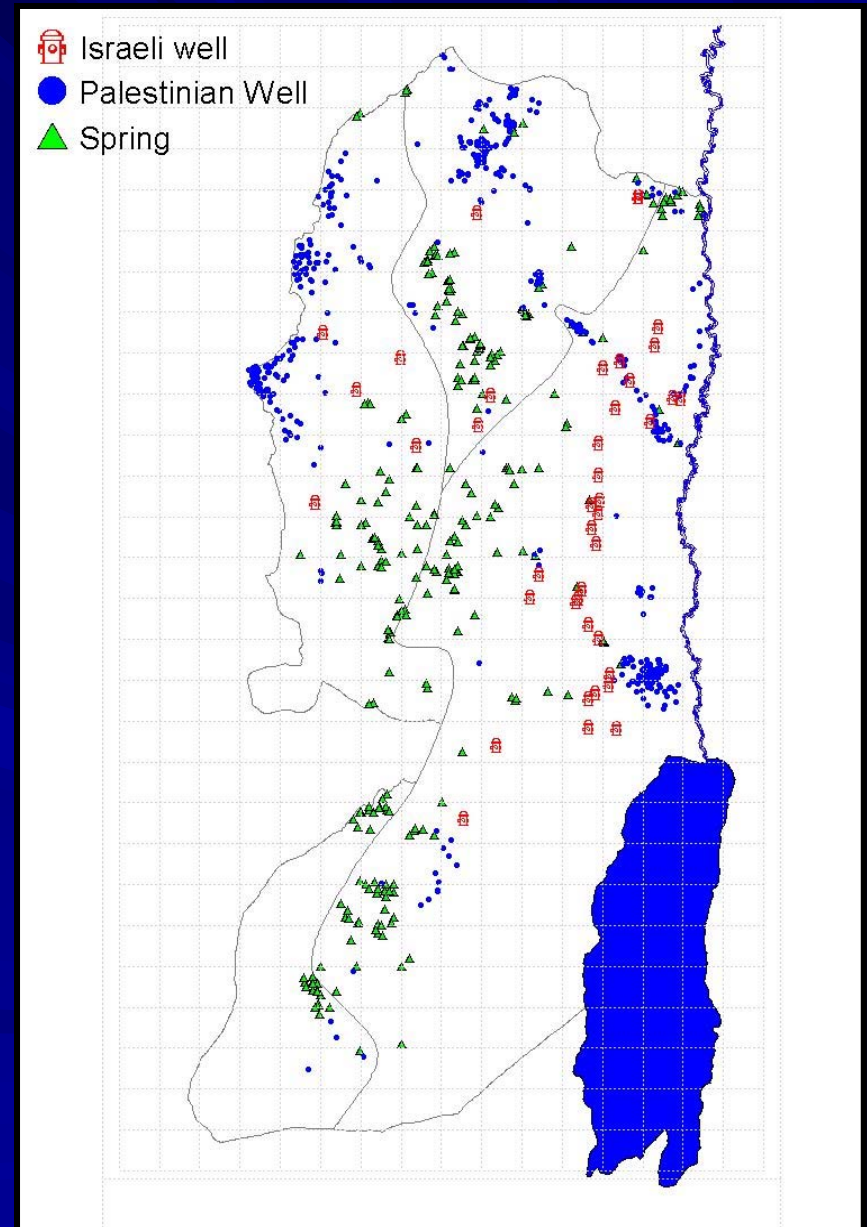
1. Wells in the West Bank

Palestinian wells

Basin	No of wells	Abstraction (Mcm/Y)
Eastern	95	25
Northeastern	76	16
Western	134	22
Total	305	63

Israeli wells

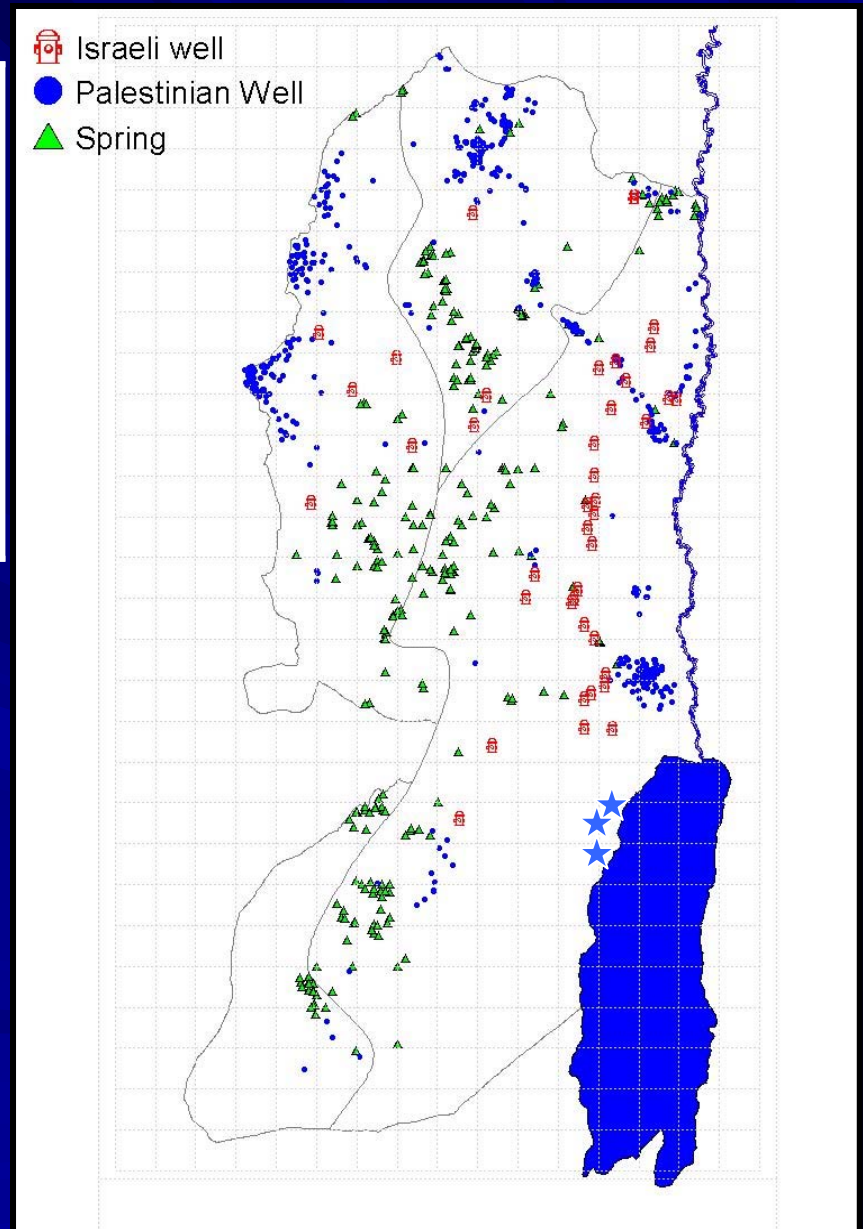
Basin	No of wells	Abstraction (Mcm/Y)
Eastern	35	40
Northeastern	3	4
Western	4	2
Total	42	46



2. Springs in the West Bank

Basin	No of Springs	Discharge (Mcm/Y)
Eastern*	46	37
Northeastern	37	13
Western	48	2
Total	131	52

*Dead Sea Group=21 springs, producing 75 Mcm/y



Surface Water Resources

Jordan River

- Jordan River is considered as the main surface water Resource in WB.
- The historical Palestinian water rights in JR is around 250 MCM/Y

Historical Flow of JR into Dead Sea

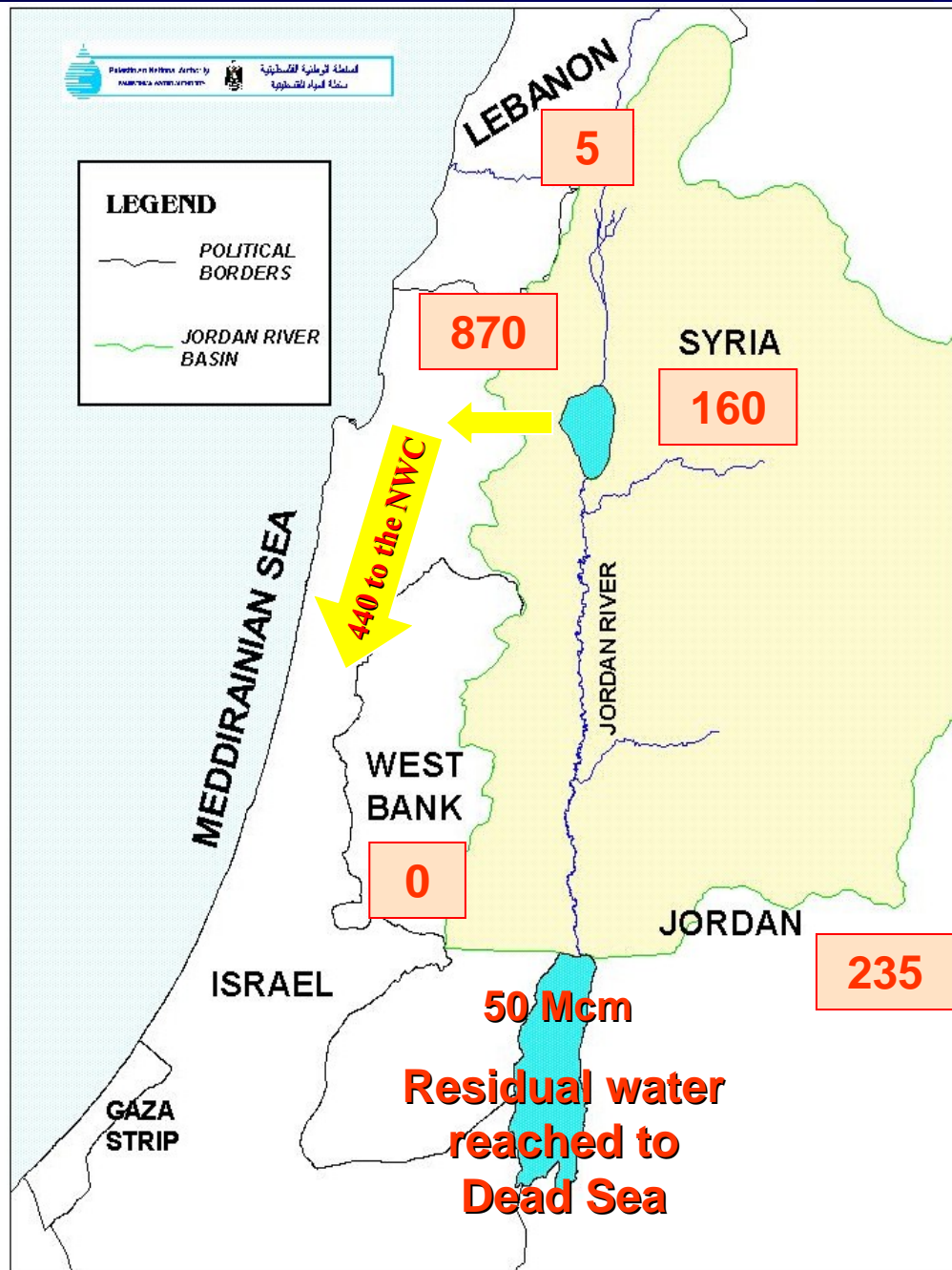
Year	FLOW (Mcm/year)
1948	1600
1967	700
1982	500
1990	150
2005	50

Surface Water

Jordan River

Existing Utilization of Jordan River Water:

Utilization (Mcm)	Country
870	Israel
0	Palestine
235	Jordan
160	Syria
5	Lebanon
50	Reached to Dead Sea
1320	Total

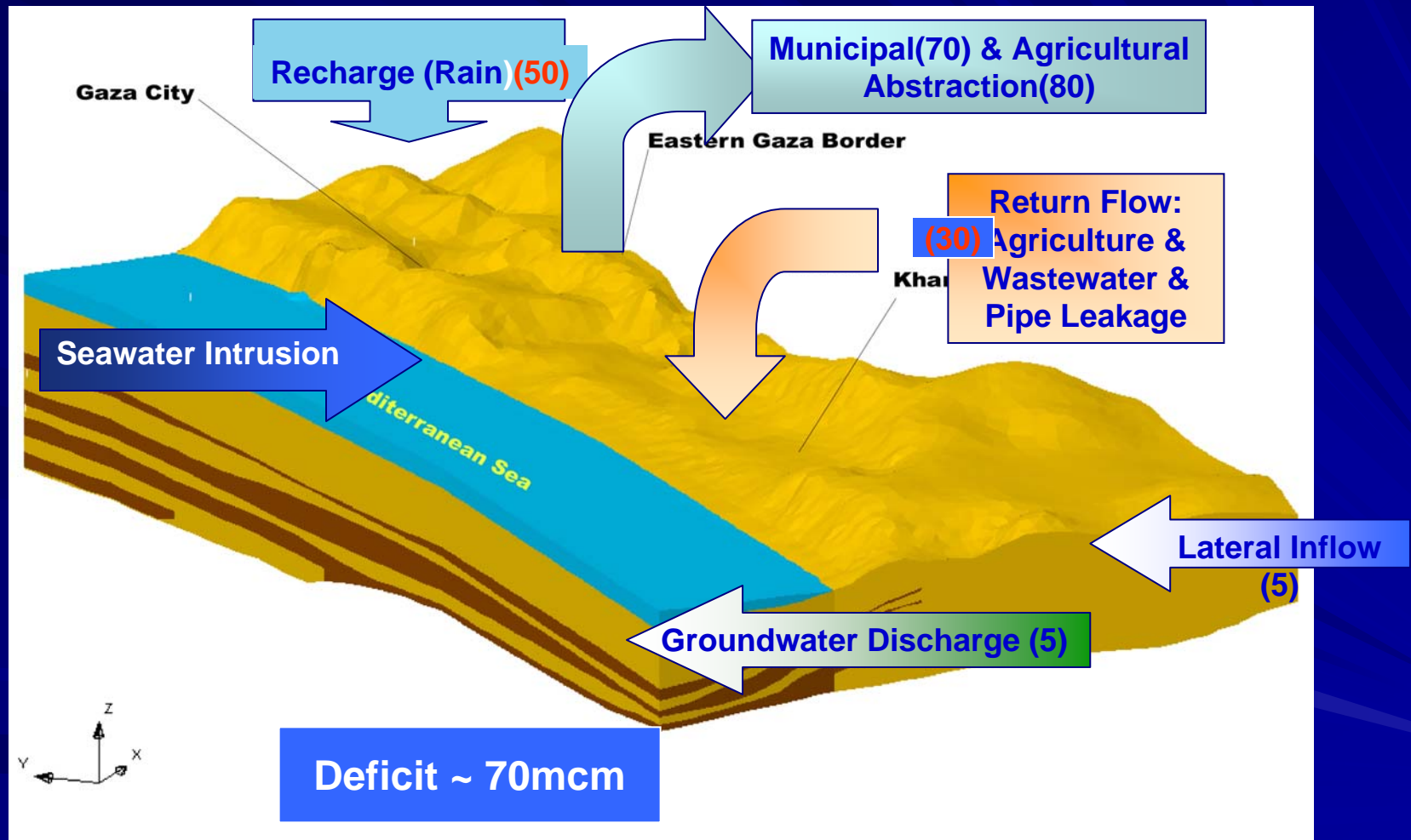


Flood water in Wadis

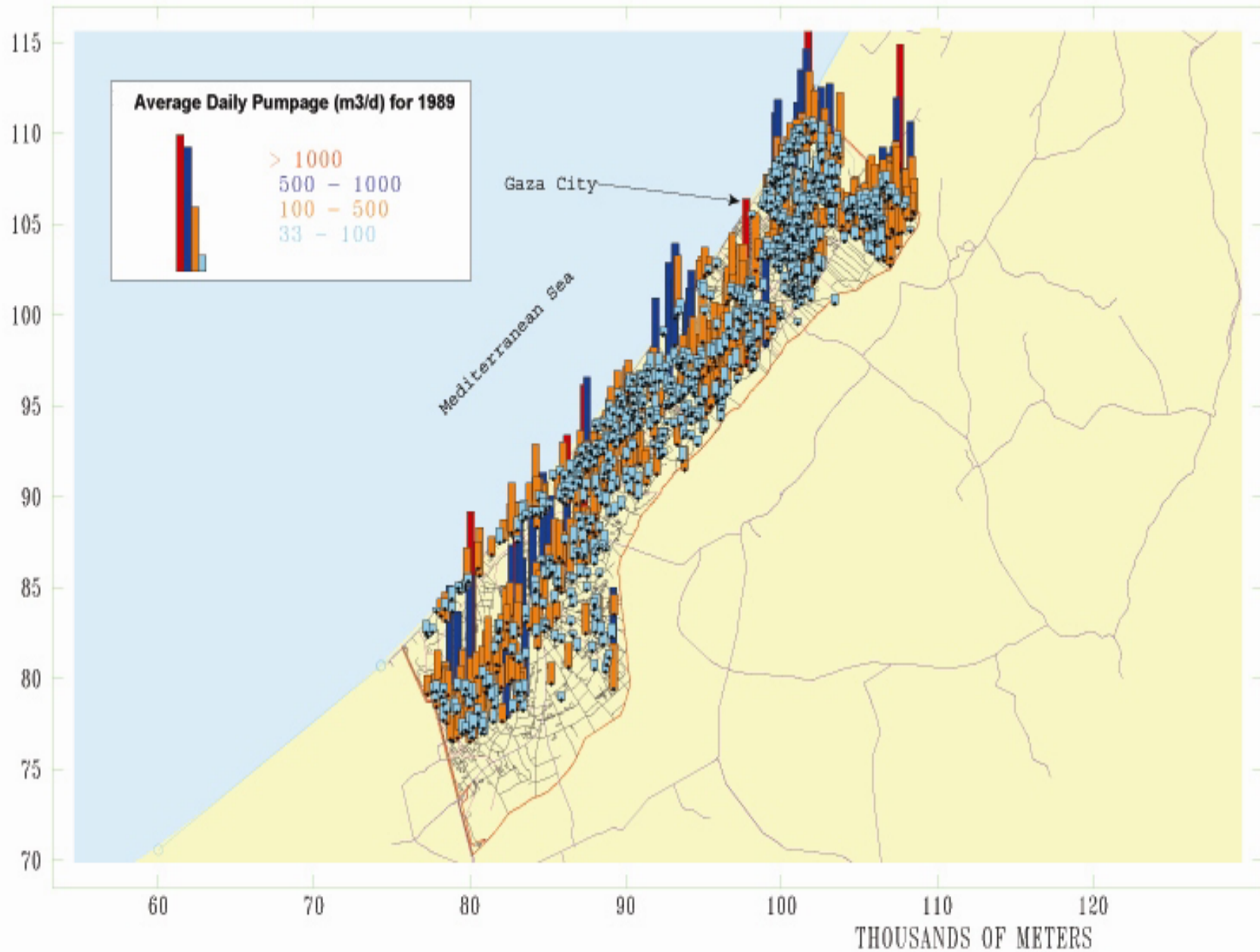
Average flow of flood water in West Bank wadis is around 100 Mcm/y



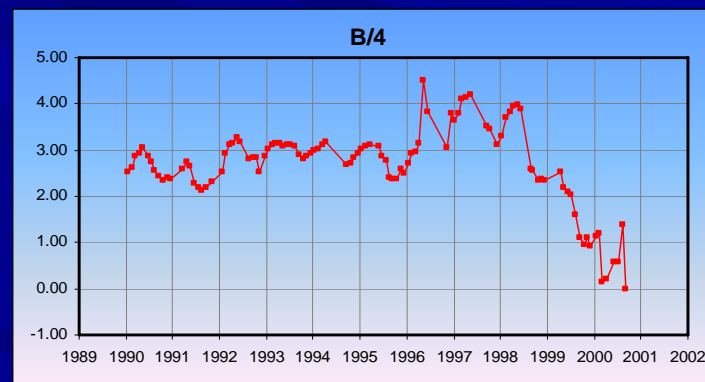
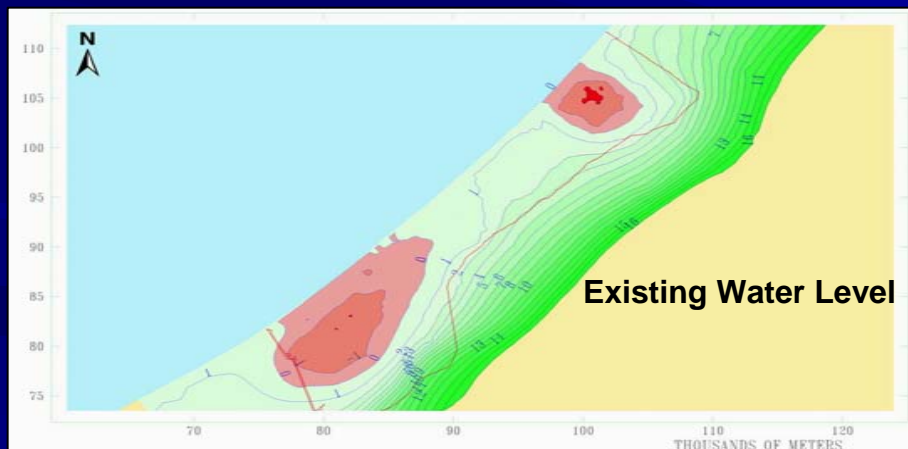
Water Balance of Gaza



Wells Density in Gaza Strip



Overexploitation and Decline of Groundwater Level is one of the most threatens Facing Groundwater Resources in Gaza Strip

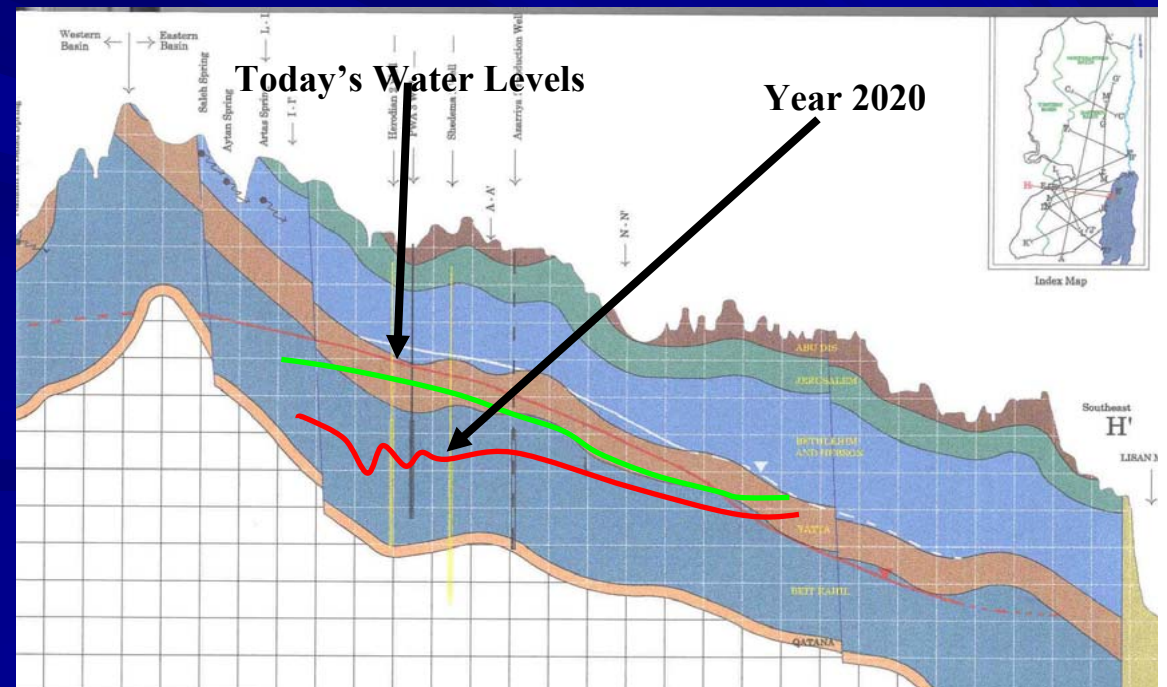


Main Challenges facing the Water Resources in West Bank & Gaza

- Drought conditions that minimize aquifer Recharge (climate change).
- Salinization and pollution (mainly sewage).
- Overpumping of groundwater aquifers (by wells)
- Occupation
 - Israeli settlements
 - Control of Water resources
 - Desertification (Israeli military camps,.. etc).

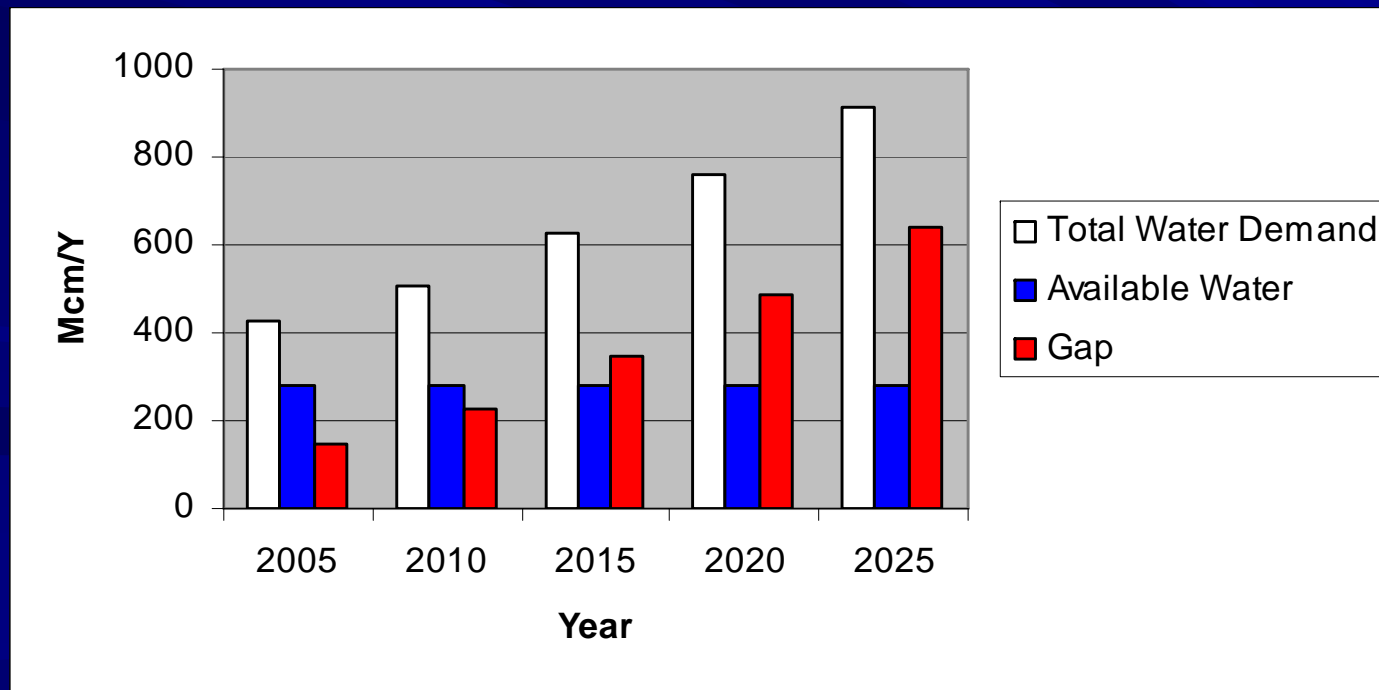
Main Challenges facing the Water Sector in Palestine

- Mismanagement of Transboundary water resources (shared aquifers).
- Drilling of Illegal Wells
- Drop in groundwater levels in some aquifers.



Palestinian Water Deficit (West Bank & Gaza Strip)

Year	Total Water Demand	Palestinian Control	Gap
2005	427	271	148
2010	507	271	228
2015	625	271	346
2020	763	271	484
2025	916	271	637



Management Options.....**As Solutions for the coming 20 years**

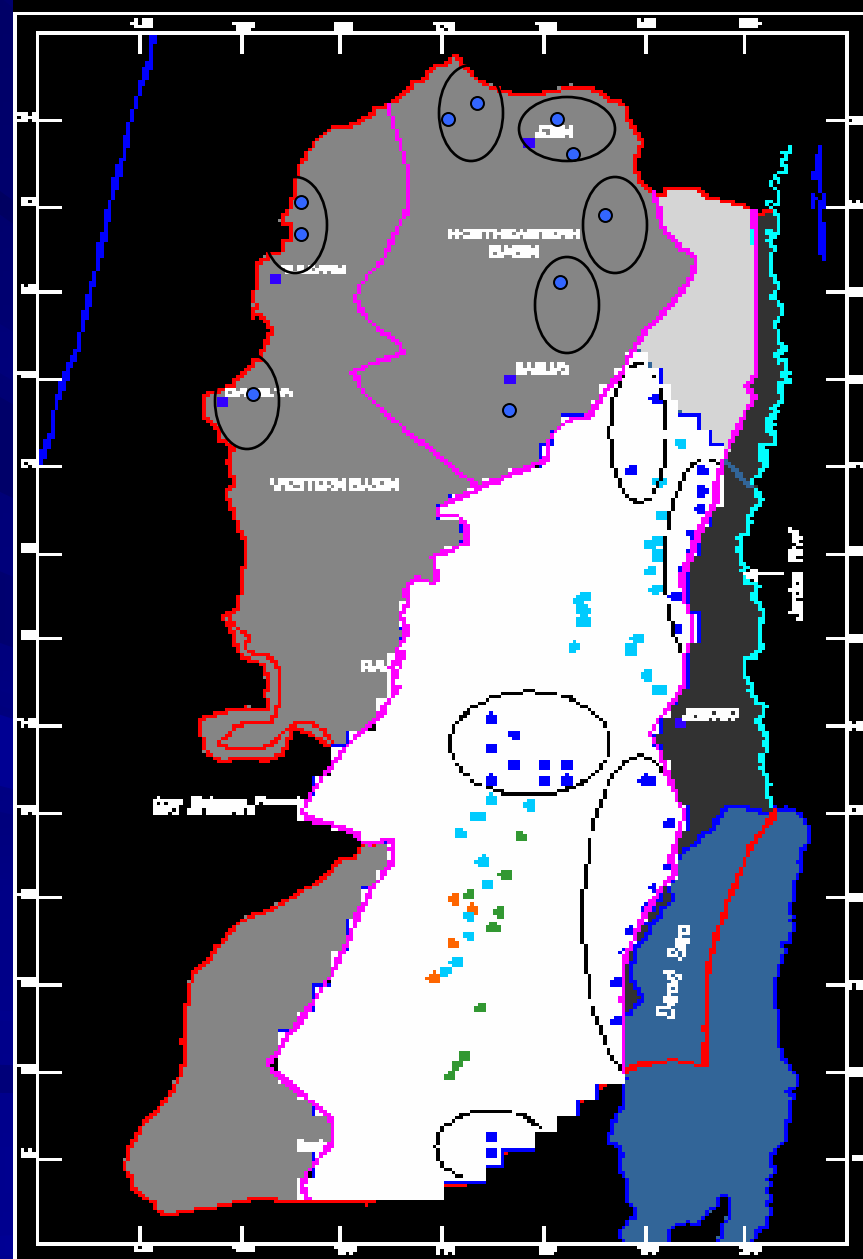
- Groundwater Supply Development:
 - Drilling of new wells
 - Rehabilitation of wells



New Wellfields will be Required to Increase Water Supply

Concerns :

- Distance
- Capital Cost
- Pumping Cost
- Quality



Solutions

Flood (storm) water Harvesting:

- For Irrigation
- For Groundwater Artificial Recharge



Solutions

■ Desalination:

- Desalination of brackish water.

■ Improving of Water Infrastructures:

- Rehabilitation of water networks and leak detection
- Rehabilitation of springs conveyance systems



Solutions

- Water demand management.
- Re-allocation between sectors.
- Installation of new water networks, reservoirs and main transmission lines
- Constructing of Wastewater Collection, Treatment Plants and Reuse Systems for agricultural
- Public Awareness and Capacity Building
- Project Coordination

In summary:

- The water issue is one of the many difficult issues to be discussed and resolved in the final agreement.
- Palestinian Water Rights and Equitable Sharing of Regional Water Resources are among the main issues that need an equitable solution.
- Till a political solution is achieved, cooperative management on the technical level appears to be the only alternative to prevent further degradation of the shared water resources and to protect groundwater basins.

THANK YOU