

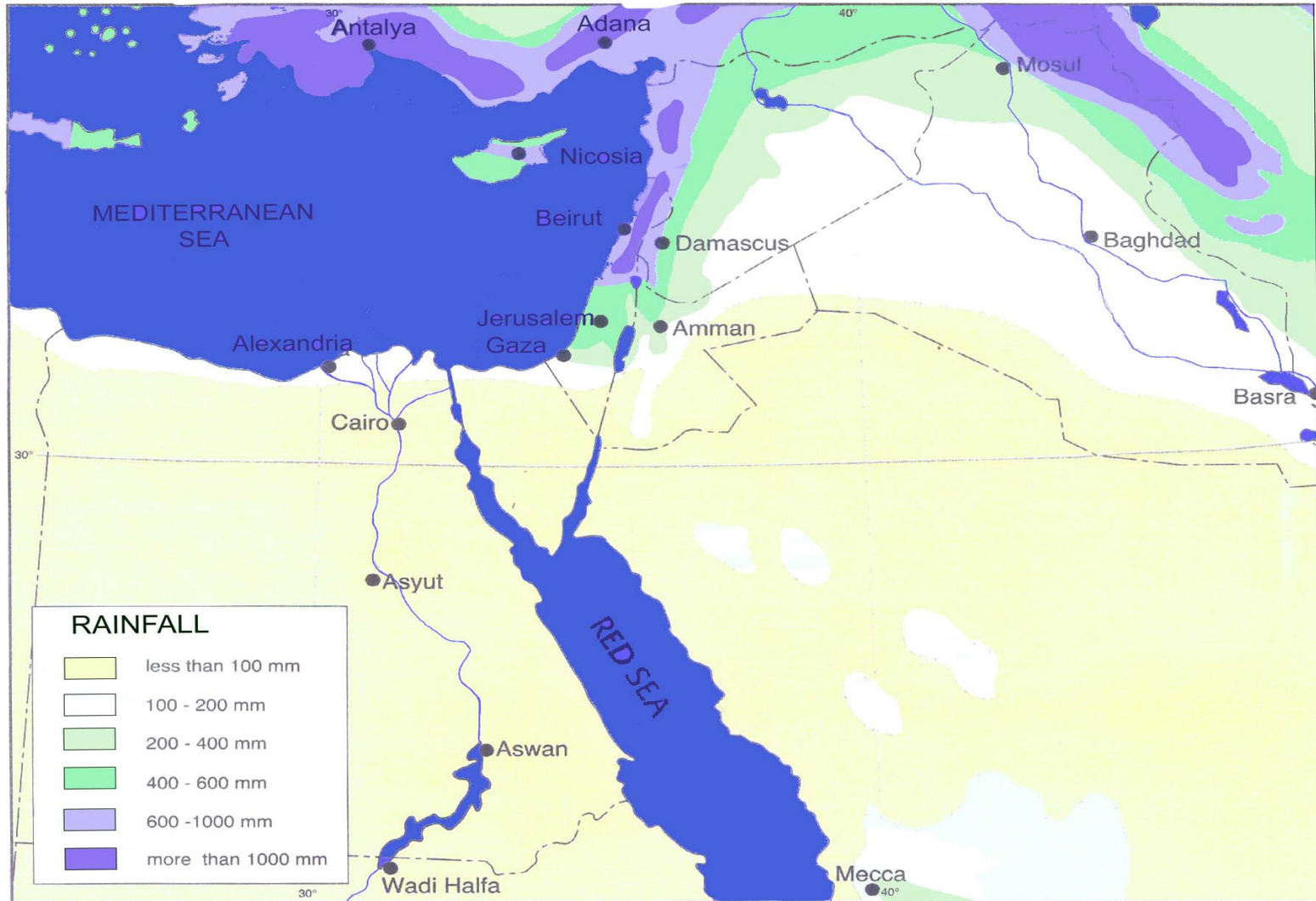
Water needs in the Middle East Region

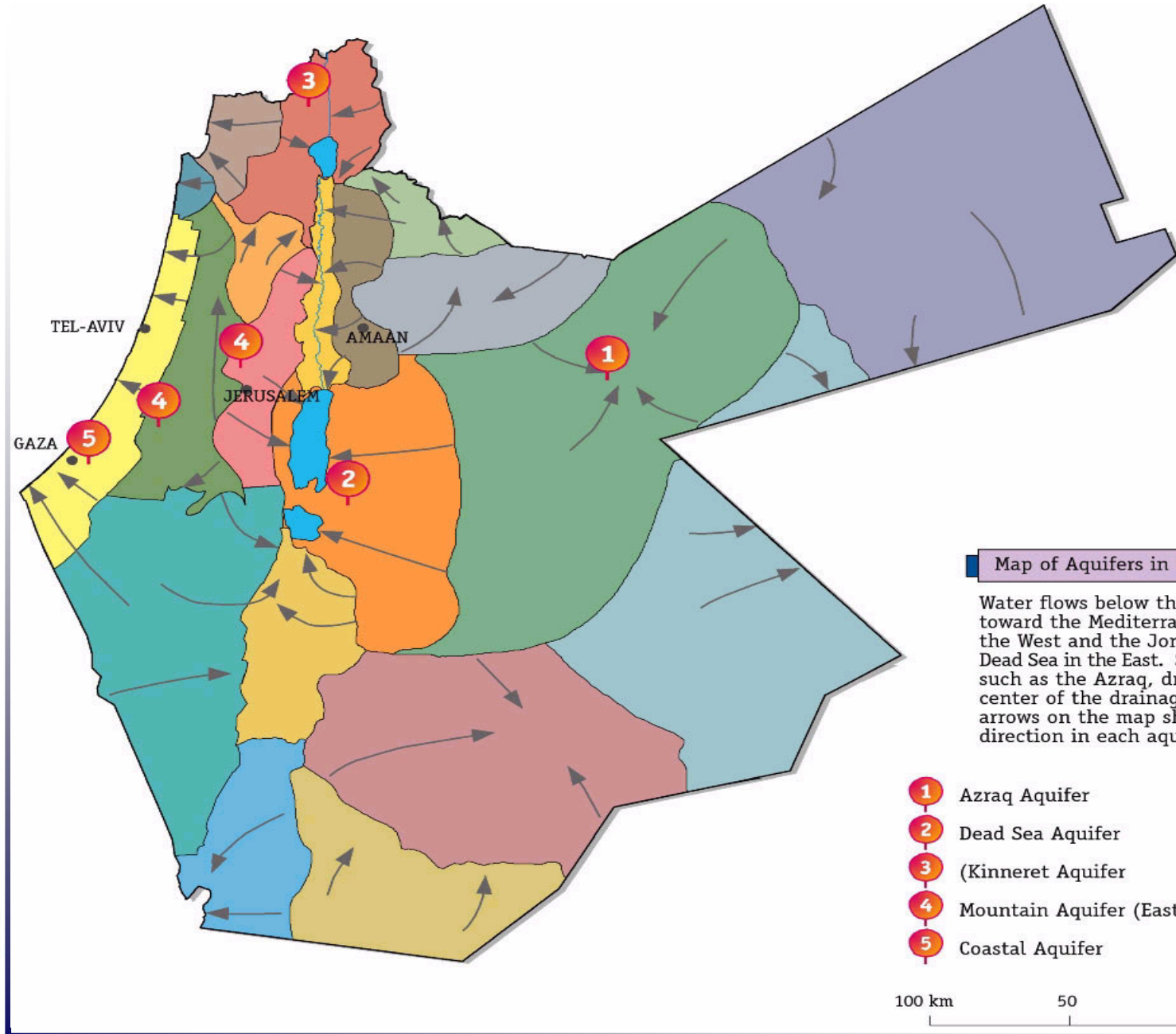
Shimon Tal



The Extent of Water Shortage

The Desert Strip in the Middle-East





The Extent of Water Shortage

Availability of Freshwater in 2000
Average River Flows and Groundwater Recharge

200 m³/y/capita – 40% of “Shortage Red Line” of UN

2025 – Domestic and Municipal needs only

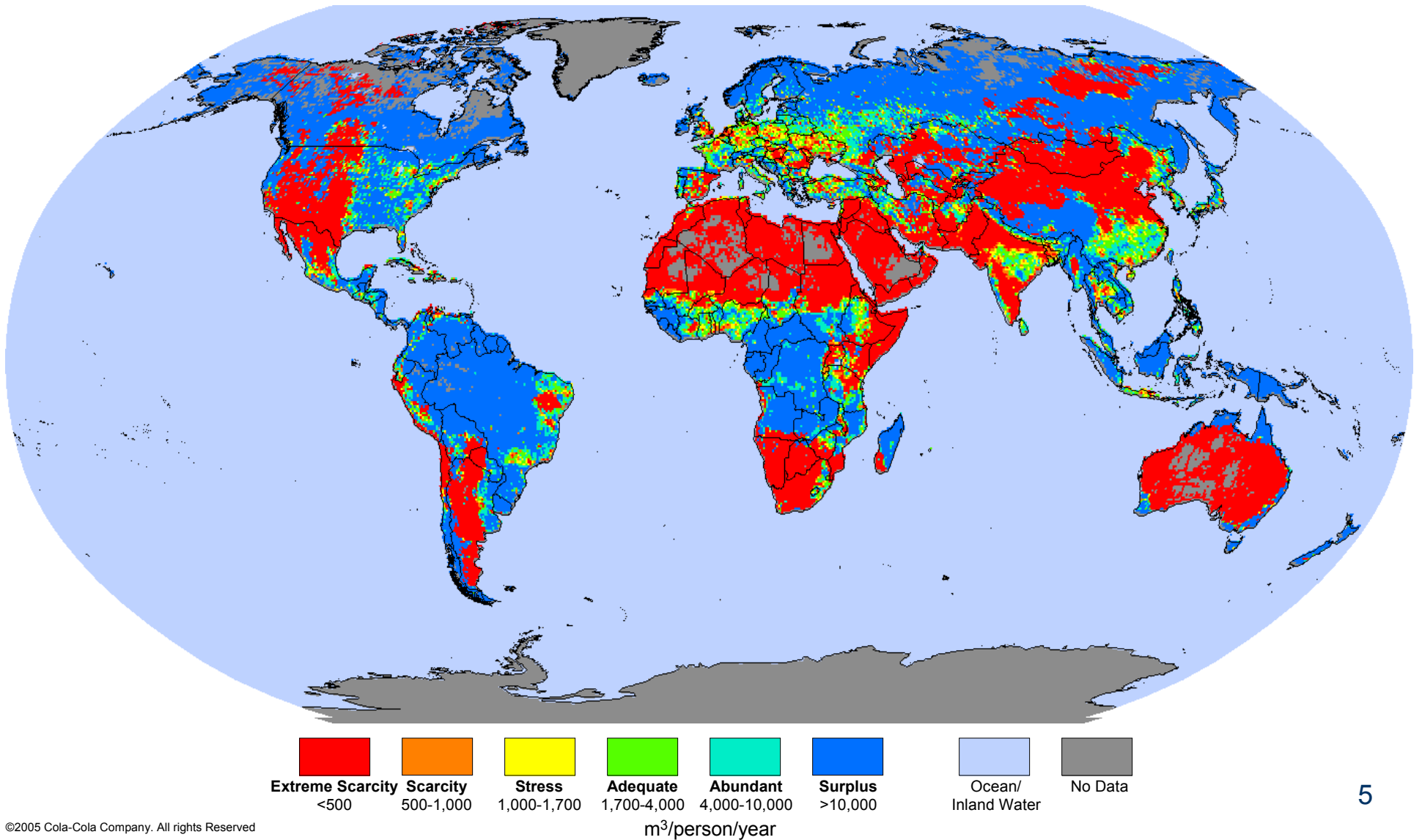
the least freshwater resources
Egypt : 26

Complicated Operation

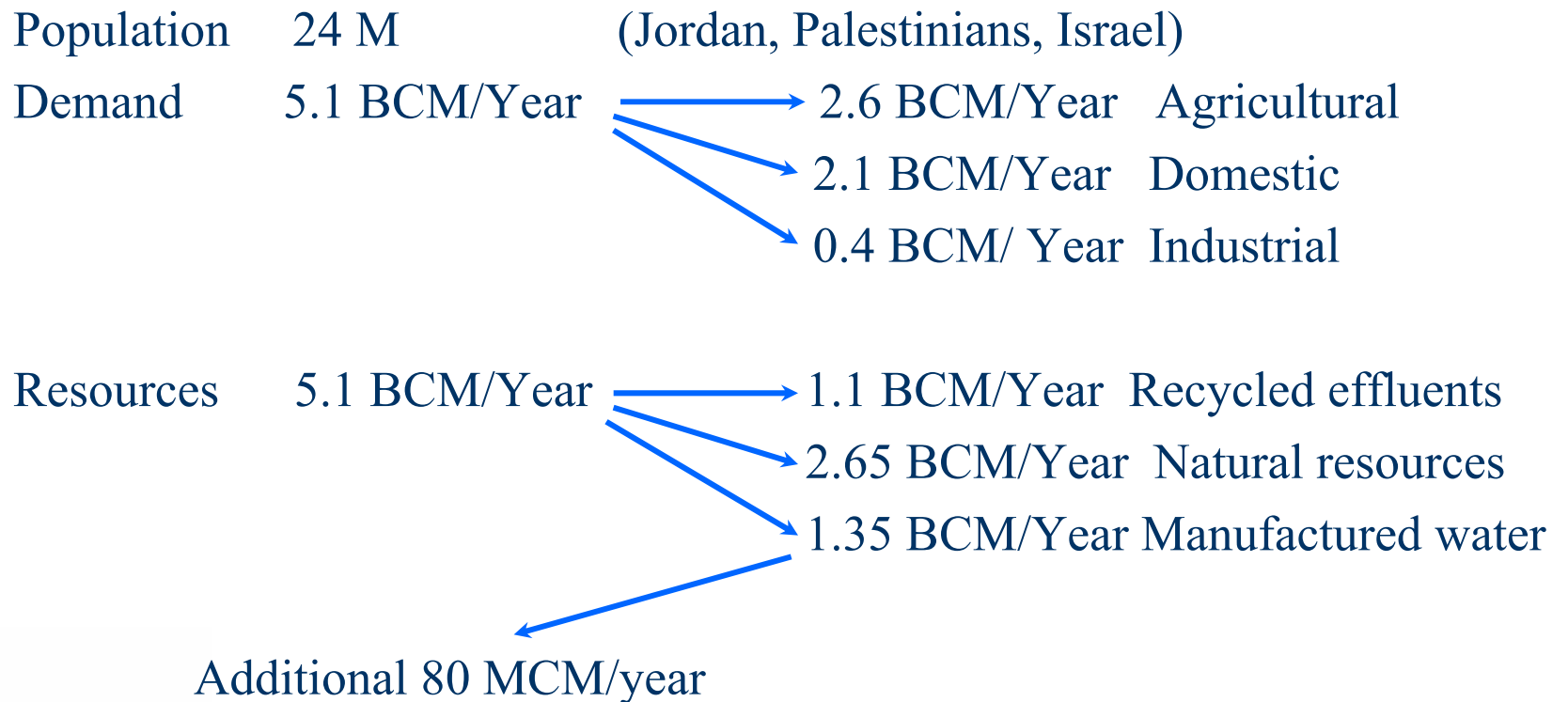


Source: World Resources 2000-2001, People and Ecosystems: The Fraying Web of Life, World Resources Institute (WRI), Washington DC, 2000.

Sub-national Water Availability: 2003

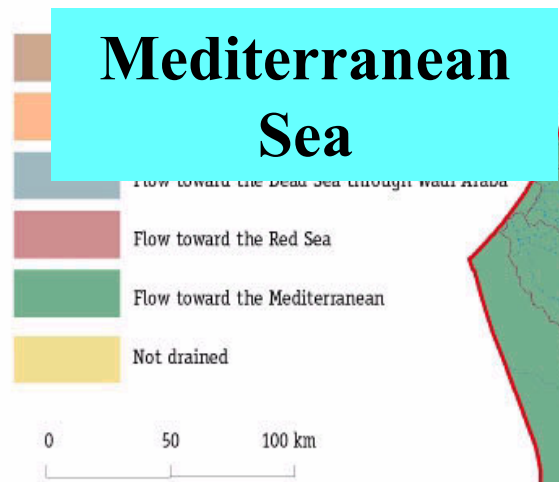


Water Demand in the Region 2020



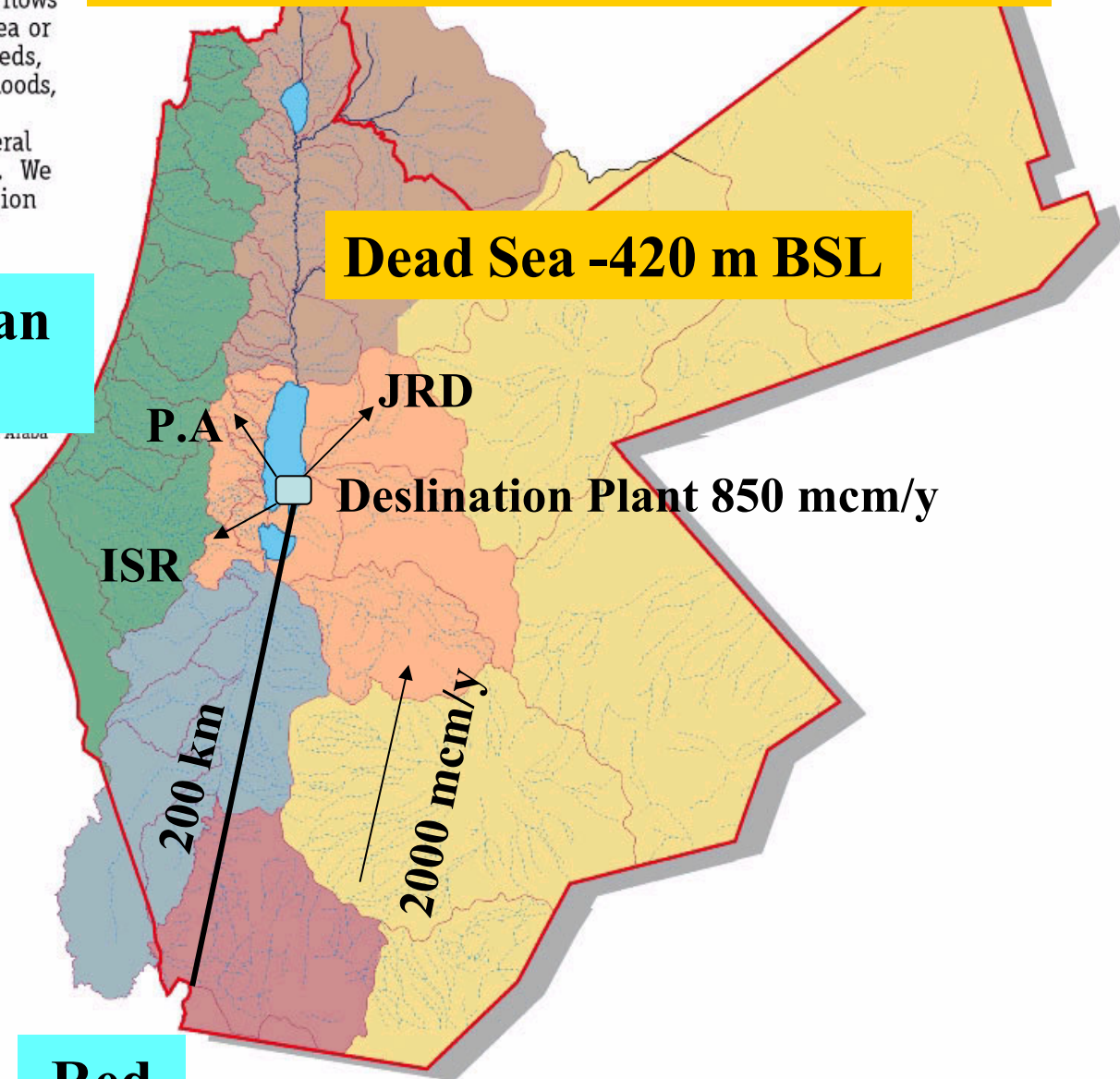
Map of Drainage Basins and Watersheds

Surface water in the region ultimately flows to the Mediterranean Sea, the Red Sea or the Dead Sea. In the desert watersheds, water flows on rare occasions during floods, and most of the water evaporates or penetrates into the ground. Ephemeral streams are marked by a broken line. We can see that most streams in the region are ephemeral.



Red-Sea Dead-Sea Canal

Dead Sea -420 m BSL



Red Sea



Regional Relationships and Solutions

Redistribution of scarce natural water resources is not a solution in Water-Stressed Environments.

Water should be a catalyst for cooperation and not a cause for arguments and disputes.



Sustainable Approach - Objectives, Plans, Actions

- ***Reliable Water Supply*** to meet all needs
- **Improvement the efficiency of water use**
- **Significant improvements towards conservation of the quality of natural water resources & water systems**
- **Institutional, administrative and legal modifications to meet new approach**



Sustainability in Water Sector

WATER RESOURCES



WATER DEMAND

Natural Resources

Quantity, Quality

Rivers, Floods,
Springs, Aquifers

Manufactured Resources

New Water Resources

Treated Wastewater

Efficient Use

Essential needs and Quality of Life

Domestic

Municipal

Industry

Public Requirements National Interests

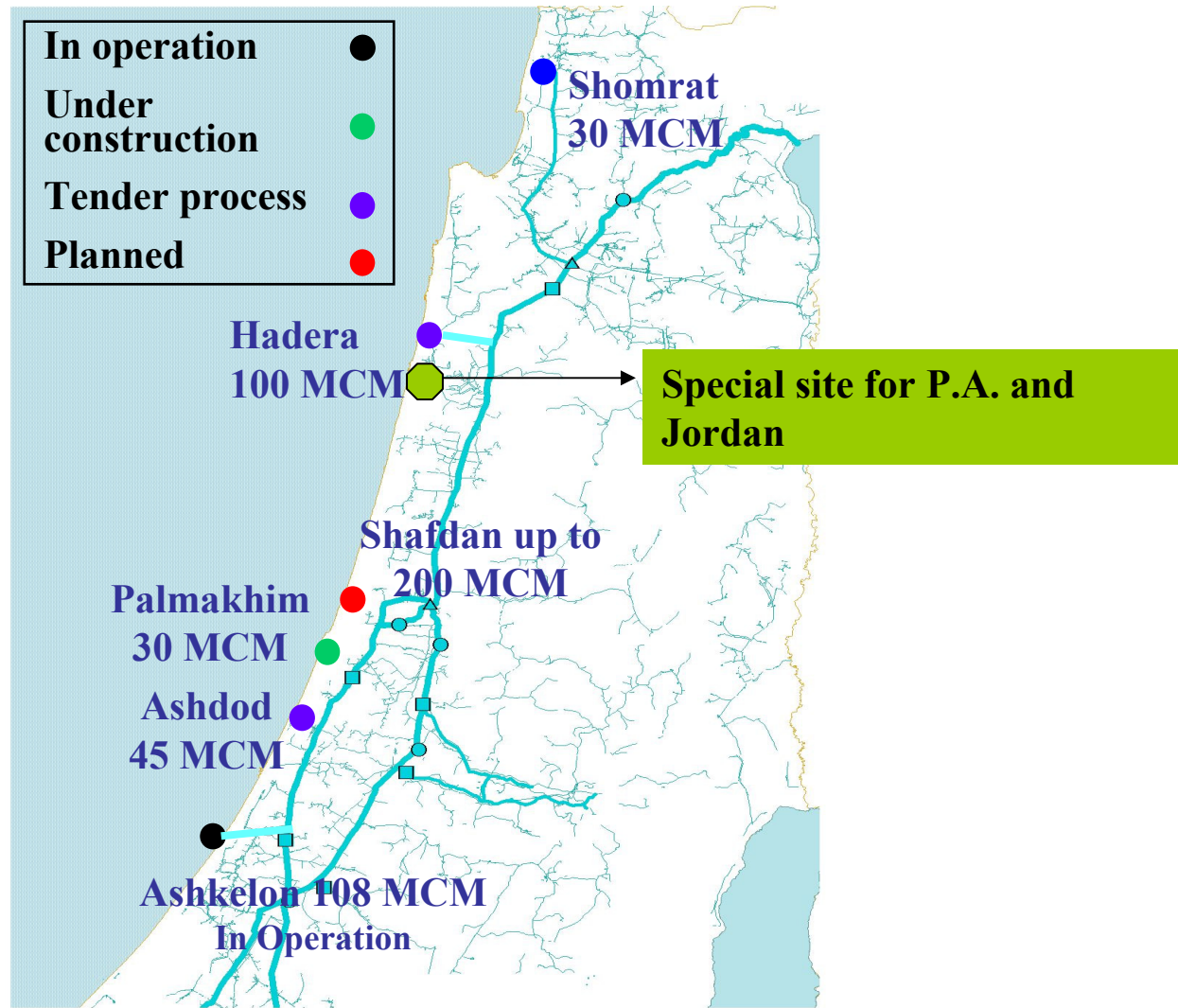
Agriculture (Open Lands, Congestion of
Population, Guarding of Borders, Keeping
National Lands)

Nature Purposes

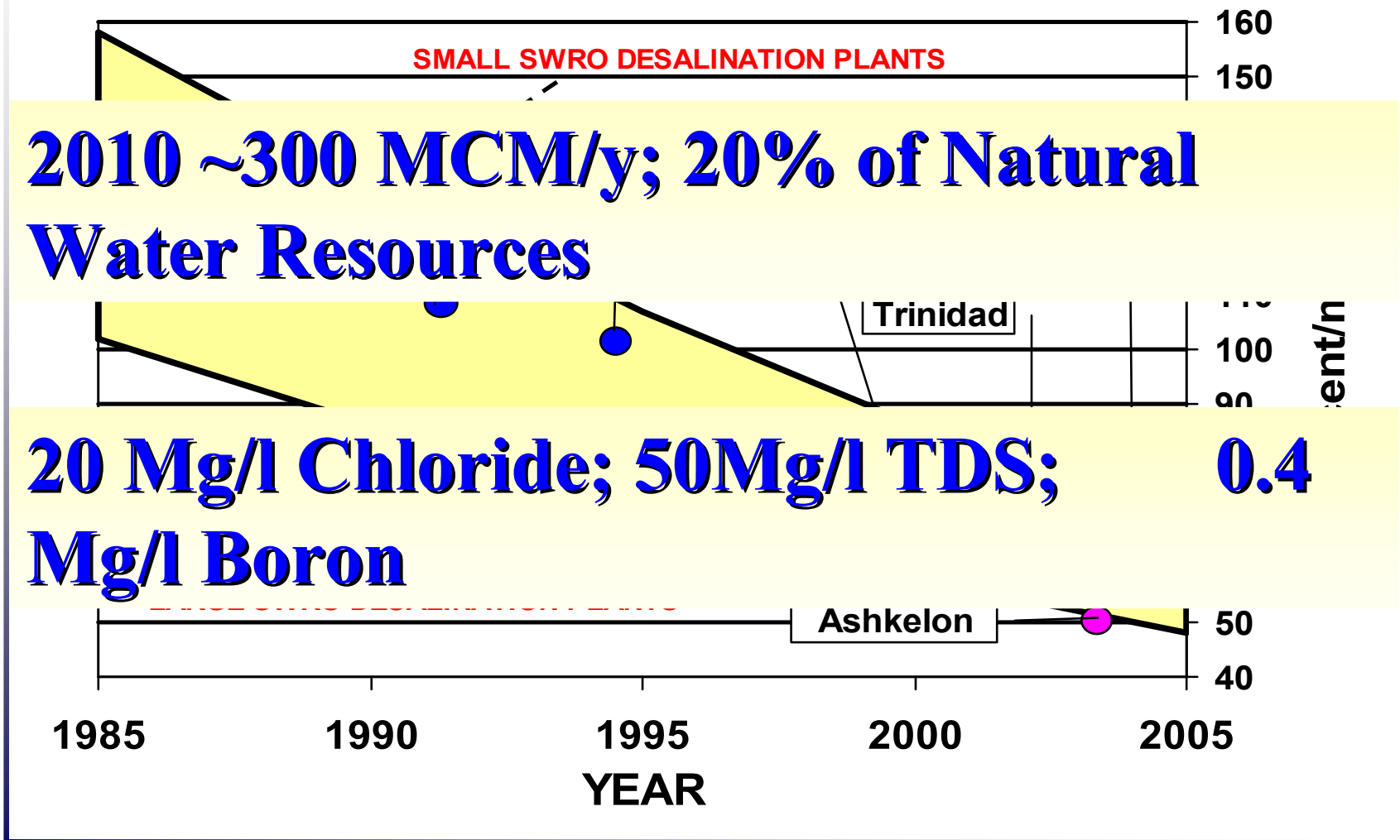
Peace Process



Production of Manufactured Fresh Water Resources in Large Scales



Desalinated Sea Water Cost Range





Reuse of All Sewage Effluents

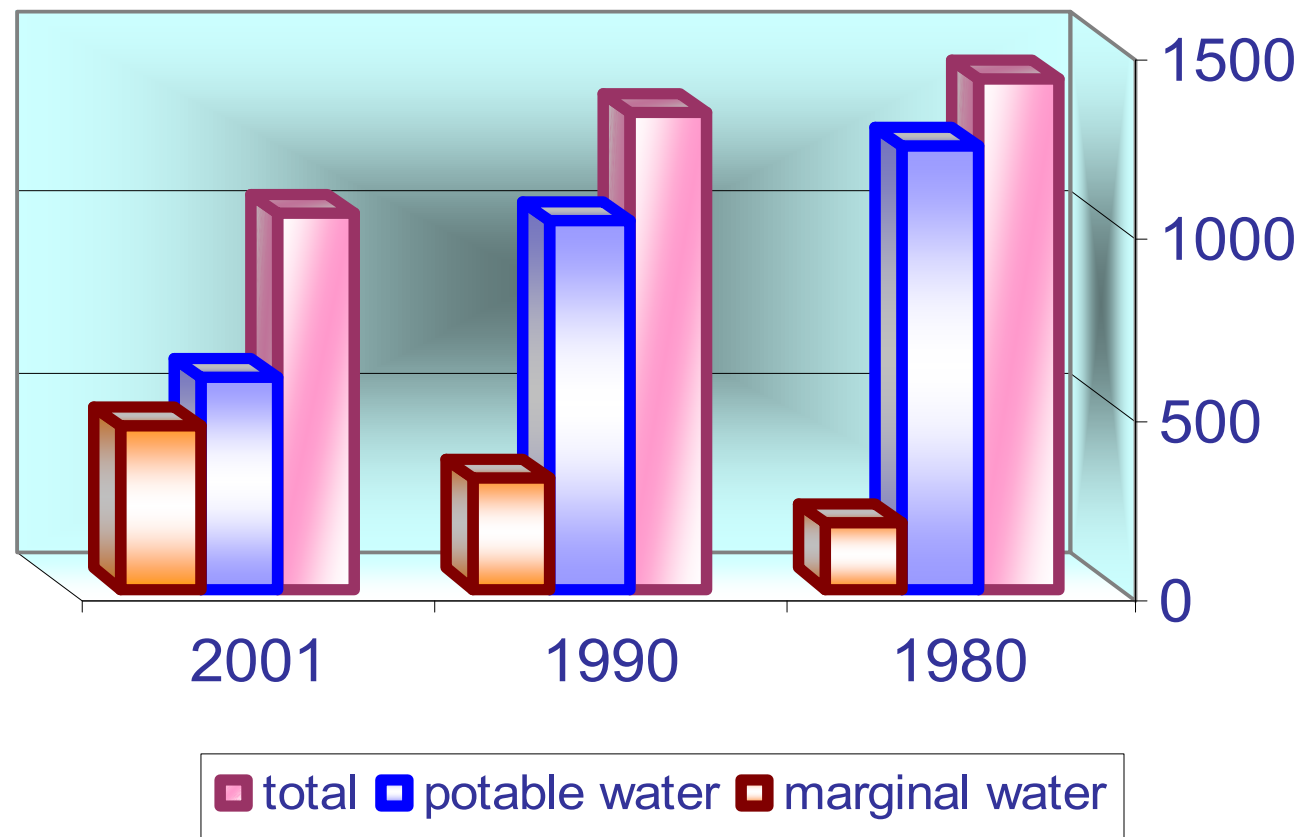
Reuse of 510 MCM/Year in 2010 (340 today)

**Sewage effluents for Agriculture – 50%
of allocations in 2010**

**Tertiary treatment – unrestricted
irrigation**

Nutrients and Salt Removal

The development of water consumption in Agriculture (M.C.M)



Sustainability in Water Sector

Year MCM/Y	Desalination MCM/Y	Sewage Effluents MCM/Y	Total MCM/Y	%of Natural Resources
2000	0	280	280	18%
2005	120	340	460	30%
2010	365	510	875	56%



Water Conservation

Must become a way of life in our region!

Cheapest most available source of water

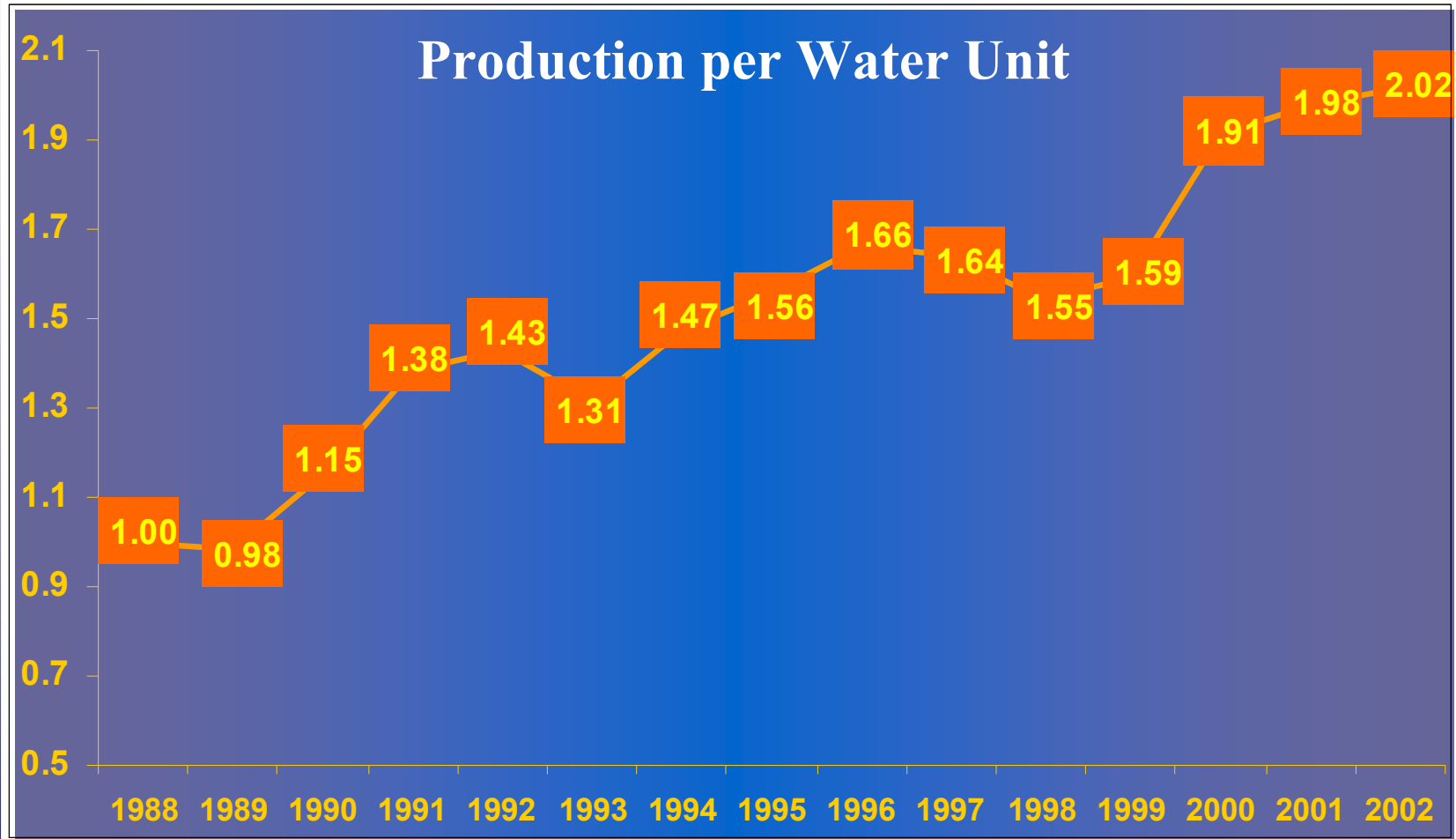
Education and Publicity

Saving Water Technologies:

- **Water Recycling (Grey Water, Car Wash)**
- **Water Saving Devices**
- **Advanced Technologies for *Irrigation***
 - L.V. I. (Low Volume Irrigation)



Water Saving in Agricultural Sector



Source: Israel Farmer's Federation



Water and Conflict

“Fierce competition for fresh water may well become a source of conflict and wars in the future”

Kofi Annan, March 2001



Water and Cooperation

“But the water problems of our world need not be only a cause of tension;

They can also be a catalyst for cooperation

....If we work together, a secure and sustainable water future can be ours”

Kofi Annan, February 2002



