



EU Water Initiative Water Scarcity and Drought Working Group

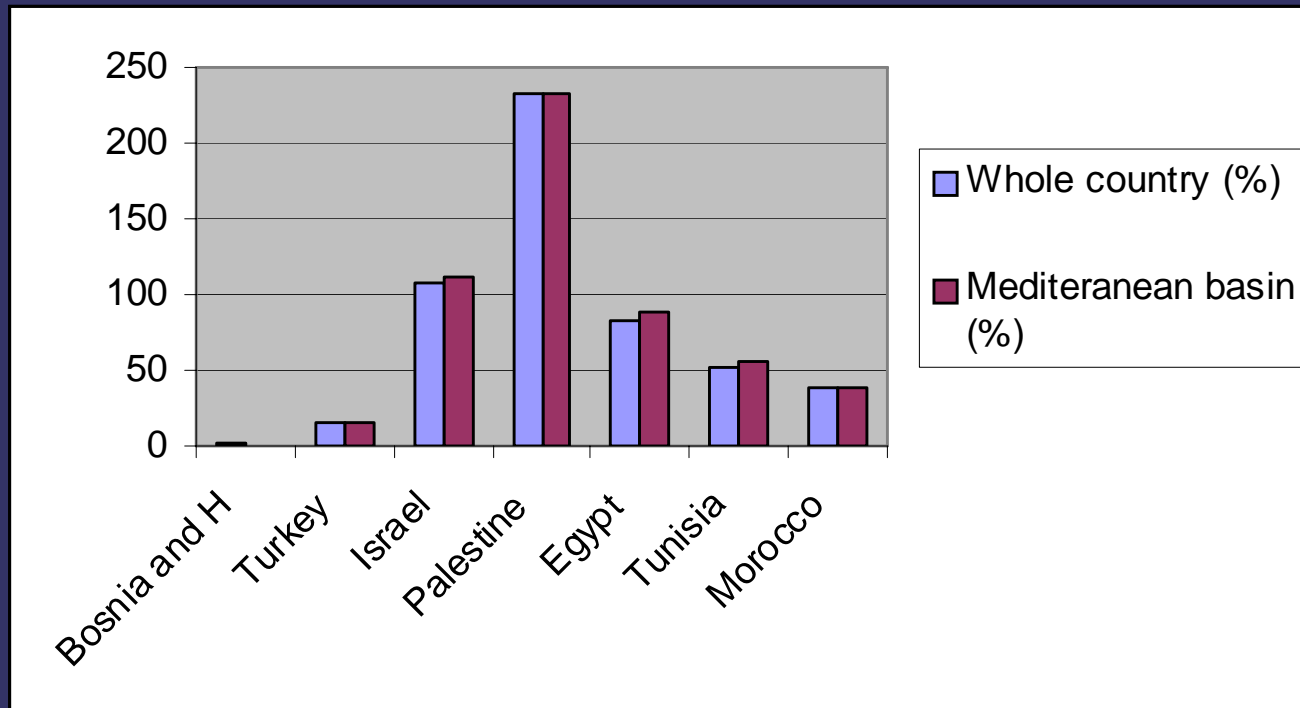
Survey Results

19th June 2007, Seville

Background

- **Aim of survey: Identify current status of water scarcity and drought in Med countries and measures put in place to deal with them**
- **Returns: Responses received from Turkey, Palestine, Morocco, Bosnia and Herzegovina, Tunisia and Jordan**
- **Strengths: Valuable selection of qualitative data/ success stories**
- **Limitations: Very incomplete data sets, difficulty of respondents to obtain the data, likely methodological inconsistencies amongst respondents**

Scope of impact: Water Exploitation Index



Example: Impacts of the 1999 drought in Israel, Jordan and the Palestinian territories

Winter 1998/1999- rainfall only 30% of annual average

Impacts:

- **Economic: Severe agricultural water use restrictions, collapse of rain-fed farming in the West Bank, purchase of water on the black market**
- **Social: water rationing in Jordan and the Palestinian Territories, with resulting health implications**
- **Environmental: Degradation of stream water quality, sharp water depletion and increased salinity of groundwater systems, increased salinity of soils**
- **Other: political ramifications**

Example: Tunisia

- **40% of years experienced drought in the last 12, with 2 acute droughts in 87/89 and 93/95**

Impacts:

- **Economic: Restrictions of water use in agriculture, and fall in agricultural production (olives and cereals)**
- **Social: Decrease in farmers' revenue**
- **Environmental: Sharp increase in salinity of surface water and soils, drying up of lakes**

Monitoring and planning indicators

Indicators used for resource management:

- Indicators commonly used in the region: surface water quality, groundwater quality, precipitation, reservoir storage levels

Indicators used for demand management:

- Indicators commonly used in the region: population, water demand for drinking, industrial uses, irrigation; Other indicators: Municipal network losses, number of public awareness campaigns

Other indicators:

- Morocco: Number of months without rain; Tunisia: % of population living under the poverty threshold, urban migration, type of agricultural land, rate of irrigated lands equipped with water saving devices; Palestine: Status of water networks, status of water infrastructure projects and investments

Drought thresholds

- **Morocco: rain deficit >30% of the 1970-2002 average; rain deficit >60% of the Oct, Nov, Dec, March and April average**
- **Jordan: Rainfall <70% monthly average since 1937**
- **Tunisia: Moderate drought if deficit rainfall is 20-40% less than average, drought year if the deficit is 40-60% of average, severe drought >60%**

Preparation to drought and water scarcity situations: supply side management measures

Countries/ Actions	New storage facilities	Use of marginal resources (groundwater)	Acquifer recharge	Improved efficiency of water distribution networks	Relaxing environmental constraints	Water transfers	Desalination	Waste water reuse	Other
Turkey	Yes	Yes				Yes			
Morocco	Yes	Yes	Yes	Yes		Yes	Yes	Yes	
Tunisia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Palestine	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
Jordan	Yes	Yes	Yes		Yes	Yes	Yes	Yes	
Bosnia and Herzegovina	No	Yes	No	Yes	No	No	No	No	No

Demand side management measures

	Water metering	Mandatory rationing	Restriction on municipal use	Water markets (tariffs) and full cost recovery	Water saving campaigns for voluntary actions	Awareness campaign to adapt to minimize drought
Turkey			Yes		Yes	Yes
Morocco	Yes	Yes	Yes	Yes	Yes	Yes
Tunisia	Yes	Yes	No	No	Yes	Yes
Palestine	Yes	Yes	Yes	Yes	Yes	Yes
Jordan	Yes	Yes	Yes		Yes	Yes
Bosnia and Herzegovina	Yes/no	No	No	Yes	Yes	No

	Increase in the regulation capacity for urban supply	Reduction of irrigation consumption : New irrigation techniques	Reduction of irrigation consumption: new crops demanding less water	Reduction of irrigation consumption: Freeze the increase in the irrigation surfaces	Reduction of irrigation consumption: Conversion of irrigated areas to dry farming	Reduction of irrigation consumption : Restriction on annual crops	Remote control	Water recycling in the industry
Turkey		Yes	Yes					
Morocco	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Tunisia	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Palestine	Yes	Yes	Yes	No	No	No	Yes	No
Jordan	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Bosnia and Herzegovina	Yes	No	No	No	No	No	Yes	Yes

Minimising Water Scarcity and Drought Impacts

	Contingency plan	Insurance and economic	Public aid and tax relief	Rehabilitation programmes	Quality based reallocation of resources	Others
Turkey	No	No	No	Yes		
Morocco	Yes	Yes	Yes	Yes	Yes	
Tunisia	Yes	No	Yes	Yes	Yes	Yes
Palestine	Yes	No	No	Yes		
Jordan	Yes		Yes	Yes		
Bosnia and Herzegovina						Yes

Issues for discussion

- **Making the data more robust: How to encourage a greater response rate, how to define consistent methodologies for data collection**
- **Information we would like to gather: Water Exploitation Index at the basin level, areas and populations affected, the environmental, social and economic costs of droughts; more information on thresholds, pre-alert mechanisms, public participation, crisis management and climate change**
- **Any other thoughts?**