Plan Bleu pour l'environnement et le développement en Méditerranée

Water demand management: Mediterranean context

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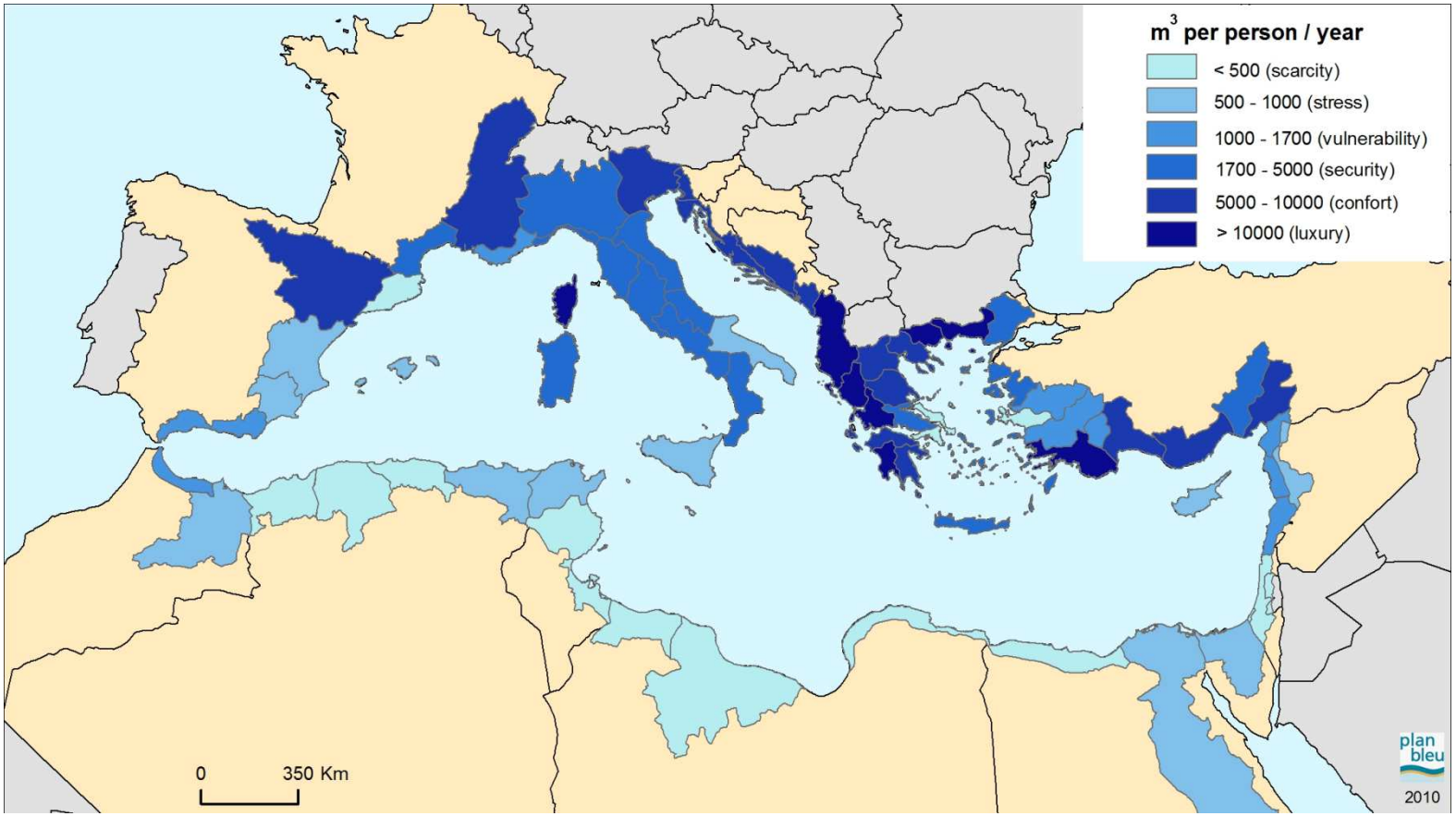
Regional workshop on water demand management in the Mediterranean

2nd Mediterranean Water Forum
Murcia, 25/11/2014

Mediterranean context: most of South and East Rim countries in ‘water stress’

Natural renewable water resources per capita in the main Mediterranean watersheds



3% of global water resources for 7% of world population

Mediterranean context: Increasing pressure on water resources

Exploitation index of natural renewable water resources at watershed level (2005-2010)

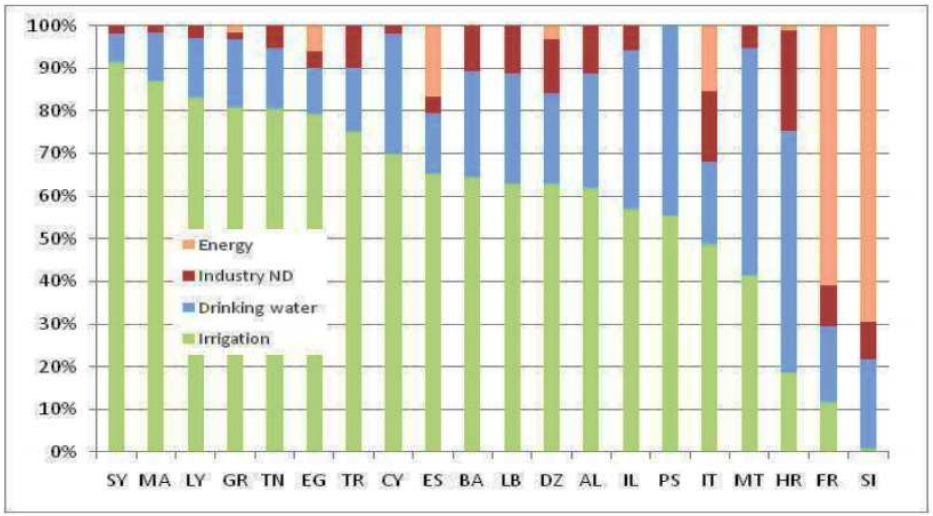
Overexploitation of renewable water

(Egypt, Israel, Jordan, Libya, Malta, Syria, Palestinian Territories)

Agricultural use → largest user of water in the Mediterranean

64% of Total water demand

Water demand per sector (2005-2010)



Source: Plan Bleu from national so

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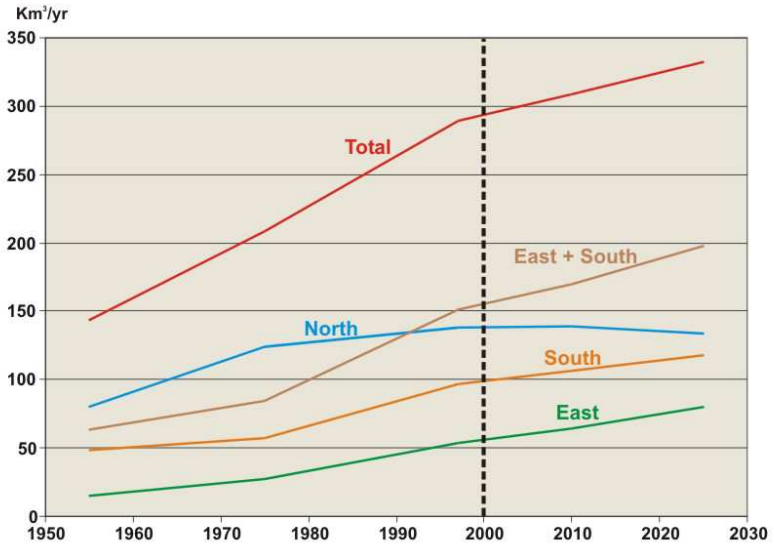
Mediterranean context:
Increasing pressures on water resources



Total water demand
(evolution 1950-2000 and trend projections 2000-2025)

High increase in water demand by 2025

- Population growth
- Economic growth (tourism, industry, irrigated agriculture)

Aggravating factors:

- Impact of climate change
- Anthropogenic degradation & pollution

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Water demand management (WDM): a concept developed since the 1990s

- **Water demand management** aims to encourage better use of existing water resources – via a cost-efficient management – before plans are made to increase supply.
- It comprises all measures intended to **enhance the technical, social, economic, environmental and institutional efficiency**
- within various water uses (intra-sectoral efficiency) but also for a better water allocation between various uses (inter-sectoral efficiency)

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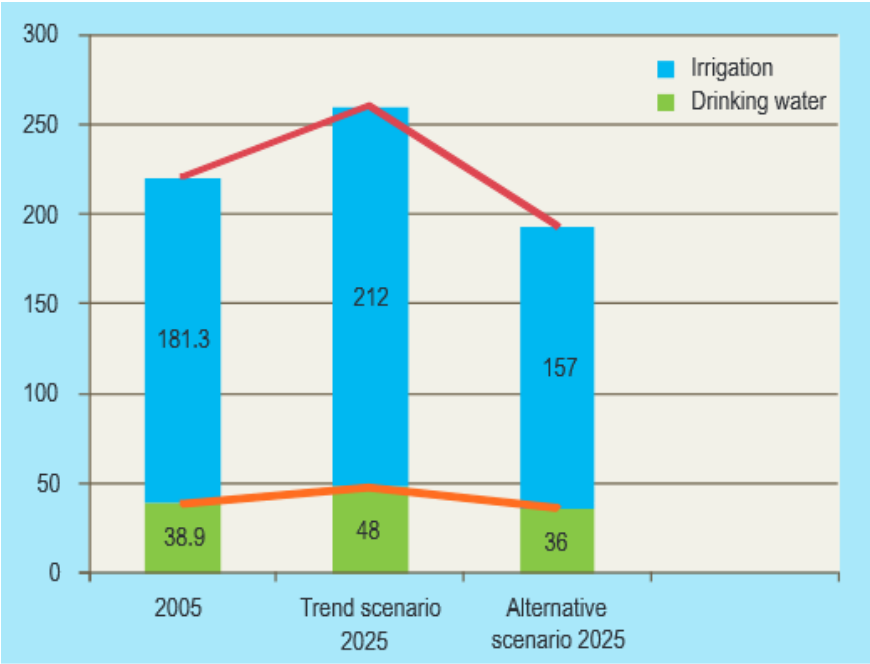
Significant potential water savings: Leaks and low use efficiency

Per-sector water demand in the Mediterranean: anticipated savings by 2025



Source: Plan Bleu, 2005

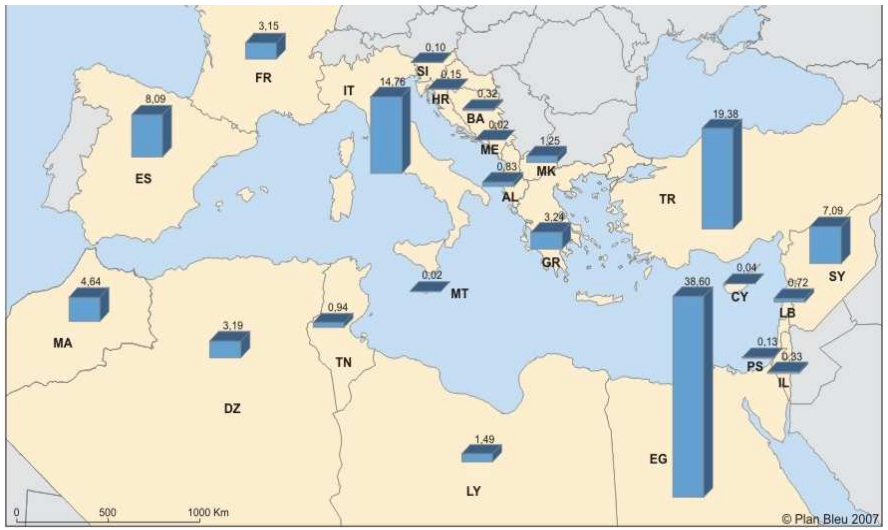
Potential water savings in 2025:
67 km³/year

25% of Total water demand

Losses and misuses in 2005:
~110 km³/y

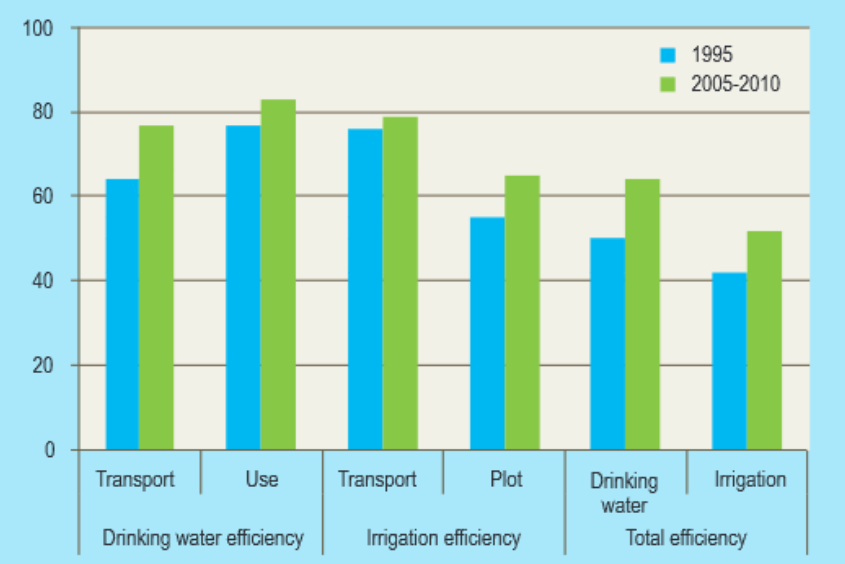
45% of Total water demand

Amounts of water removed and lost or unused in 2005 (transport-related losses, leakages, irrigation inefficiencies)



Is water-use efficiency improving in the Mediterranean?

Water efficiency (total and per sector) in Med countries



Source: Plan Bleu, 2011

Table 3. Estimates of losses recovered in the drinking-water and irrigation sectors between 1995 and 2010 (km^3)

Sectors of use	Mediterranean sub-regions (whole countries)		MED region
	Northern	Southern & Eastern	
Agriculture irriguée	5	12	17
Collectivités (eau potable)	1	4	5
Total	6	16	22

Source: M. Blinda, 2011, estimates based on national sources, Plan Bleu (the figures are rounded).

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Water demand management (WDM): A variety of instruments…

Technical:

- Water service provider: leak detection and repair, reduction of pressure, alternating distribution…
- User: water-saving equipment

Economic and legal:

- Pricing of domestic water (progressive, flat-rate…) and agricultural water (volumetric, flat-rate per ha, by type of crop…)
- Environnemental taxes and taxes on water abstraction
- Subsidies on practices or technologies
- Quotas, transfer of water rights / restriction of use (drilling)
- Payments for ecosystem services (PES)
- Policies of agriculture and land, encourage water efficient or high added-value productions, including their import/export

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Water demand management: …applicable at different scales (1/3)

1. At user level:

- Water-saving behaviour (sensibilisation, training) *(ex. CY, TN SONEDE, MA ONEP)*
- Water-saving equipments and systems *(ex. JO IDARA, ES)*
- Agronomic practices, on-plot water management *(ex. MA PNEEI)*
- Industrial process optimization *(ex. MA OCP)*

2. At water utilities level:

- Rehabilitation and renewal of irrigation systems with pressurization *(ex. MA PNEEI)*
- Improvement of urban networks yields *(ex. AL Alger, JO Aqaba, MA Agadir, TP Bethléem)*
- Modification of tariffs and cost recovery *(ex. irrigation water TN, urban water TP)*

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Water demand management: …applicable at different scales (2/3)

3. At territory level:

- Concerted and coordinated management, regulation/control of overexploitation of aquifers *(JO HWF, MA Souss-Massa)*
- Steering of cross-sectoral water transfers (RTWW in agriculture, safe water for domestic sector)
- Information systems for a better knowledge of water resources
- Planning and concerted action tools to improve cross-sectoral management, coverage of water requirements of ecosystems *(ex. FR Agence de l'eau RMC, MA politique de sauvegarde écosystèmes)*
- Cost-efficiency approach for WDM measures at watershed level *(ex. ES Guadalquivir)*
- Improvement of stormwater management (soil and water conservation, rainwater retention works…) *(ex. TN, MA)*

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Un bassin de rétention des eaux pluviales à ciel ouvert dans le Haut-Atlas.

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Water demand management: …applicable at different scales (3/3)

4. At national level:

- Institutionnalisation, strengthening institutional framework for WDM with a gradual and continuous implementation of a combination of measures *(JO cellule GDE, IS plan national d'amélioration de l'efficience de l'eau, TN stratégie économie d'eau d'irrigation, MA stratégie nationale de l'eau*)
- Pricing, equalization, taxation to increase the value added per cubic metre of water used and decrease footprint via international exchanges (to be developed)

5. At regional level:

- Benchmarking, exchange of good practices *(CMI programme on WDM)*

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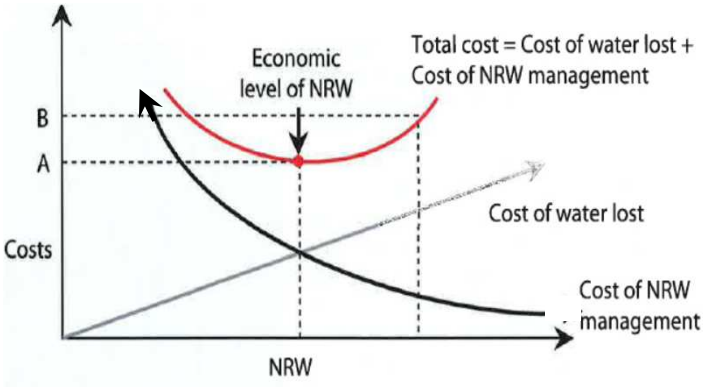
Water demand management (WDM): …which requires rationalization for implementation

➢ Economic rationalization

- Example: non revenue water (NRW)
  - *Sales price valuation (unmet demand)*
  - *Distinction and prioritization of commercial losses (always profitable) and physical losses (seek optimum)*
- Models for sectoral allocation
- Price sensitivity of demand, willingness to pay…

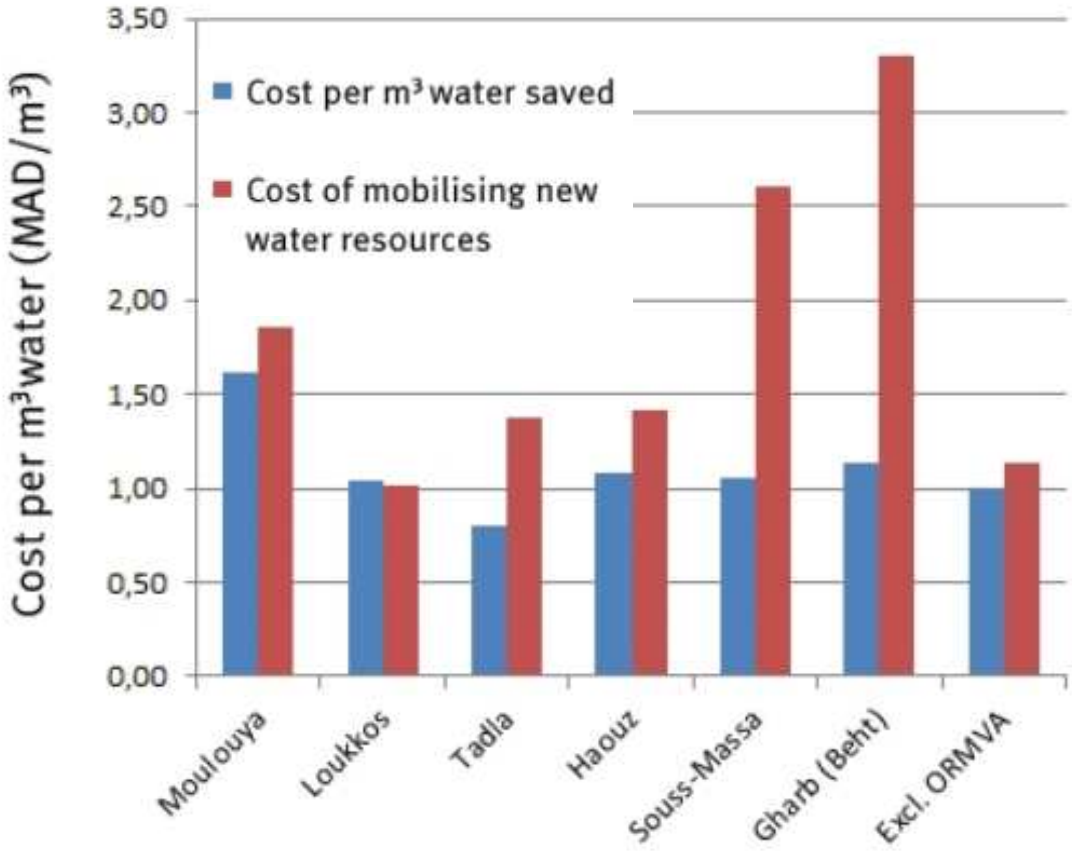


➢ Based on a well-reasoned quantification:

- Without overestimating demand, but distinguishing it from actual use often below
- By calculating volumes at rough water distribution points, making sectoral comparison possible
- By adjusting demand from losses volumes between these points and the user (connection or plot)
- Taking into account returns to system: wastewater reuse, groundwater recharge through irrigation.

(Source : AFD)

WDM measures: often cost-effective



Source : Belghiti (2008)

Comparing costs per m3 of water saved by converting to localised irrigation with mobilising new resources in Morocco

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Conditions and drivers for implementing WDM (1/2)

- Strong political drive and support at the highest level of government
- Assess present and future water demand in order to identify areas of water saving (Foresight exercises)
- Promote and embed WDM in the different sectoral policies
- Area-based implementation of WDM
- Choose a combination of WDM tools appropriate to each situation/country

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Conditions and drivers for implementing WDM (2/2)

- Importance of training and raising awareness of water professionals and users
- Make more use of cost/benefit or cost/effectiveness analyses to compare various WDM measures
- Consider mobilization of new resources for optimizing water supply / demand approach
- Promote a cross-cutting vision and use instruments to align environmental, water and sector policies

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Thank you for your attention!

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Economiser un quart des demandes

Gains théoriques escomptables suivant un jeu d'hypothèses d'économie d'eau en km³/an (2005)

Sous-régions des pays méditerranéens	AEP Efficience réseaux 85% et usagers 90%	Irrigation Efficience réseaux 90% et parcelle 80%	Industries Recyclage généralisé à 50%	Total
Nord	4.4	15.7	9.5	29.6
Est	1.8	12.2	2.2	16.2
Sud	2.5	17.9	4.1	24.5
Total	8.7	45.8	15.8	70.3

Potentiel d'économies d'eau réalisables :
25 % de la demande actuelle en Méditerranée