

Saving water in irrigation systems:  
the challenges of innovation for agriculture in the Mediterranean area  
5<sup>th</sup> World Water Forum, French Stand, 19<sup>th</sup> March 2009

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## The challenges to agricultural water management in the Mediterranean

Henri-Luc THIBAUT, Director of Plan Bleu

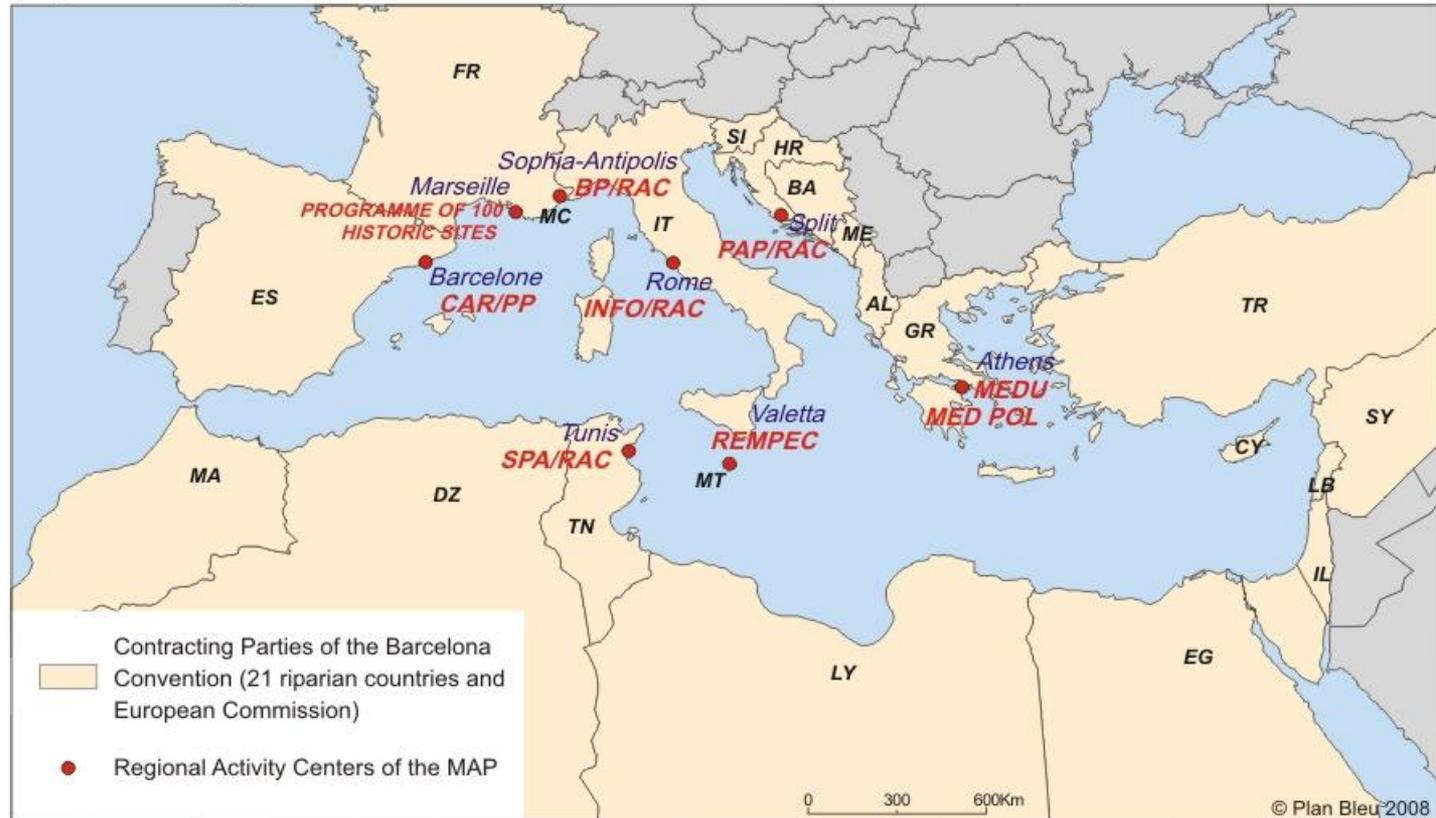


- ✚ **Plan Bleu and the Mediterranean**
- ✚ **Limited water resources, impacted by climate change**
- ✚ **Growing demand for irrigation, the main water consumer**
- ✚ **Paths to more sustainable agricultural water management**



## A Regional Activity Centre of the Mediterranean Action Plan

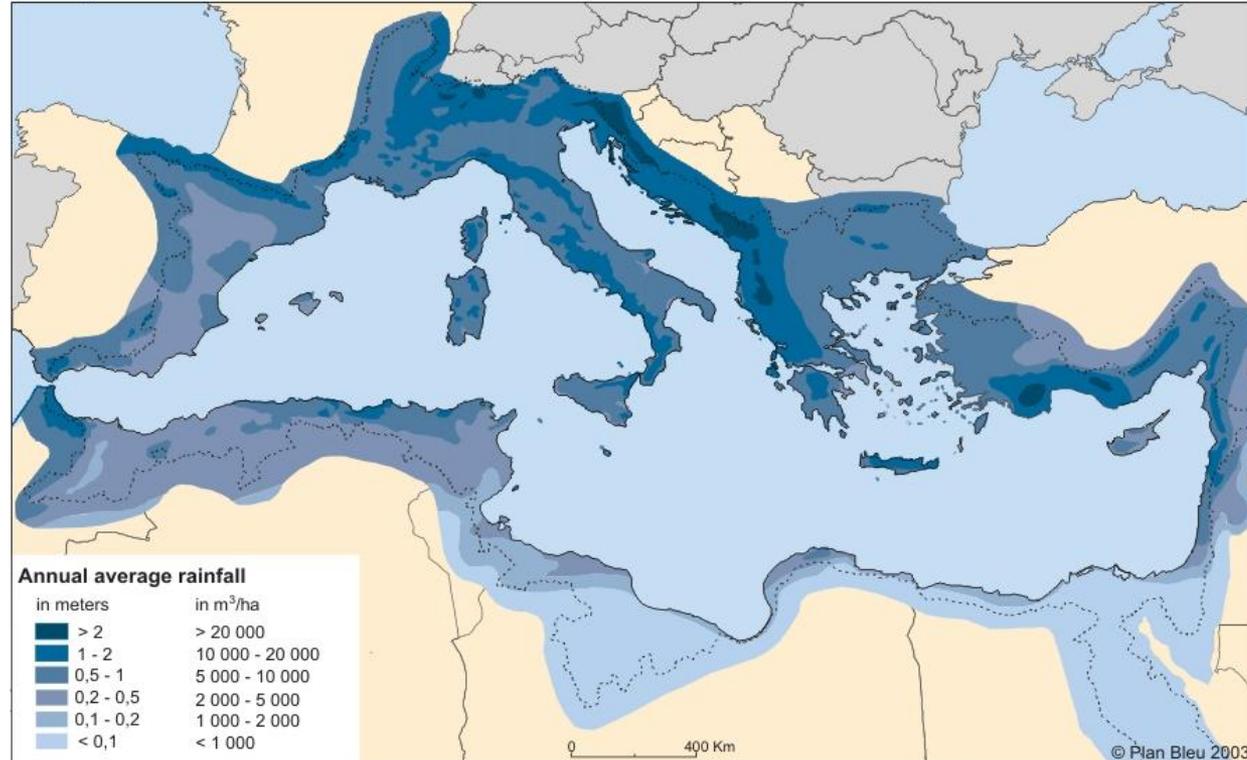
Regional activity centres of MAP



- Created 30 years ago as a systemic and prospective analysis centre
- Connected to the MAP, one of the UNEP regional seas programmes
- Meant for assisting the 21 Mediterranean-rim countries and the EC (Barcelona Convention)

*Limited and very unevenly distributed water resources*

Average rainfall distribution in the Mediterranean basin

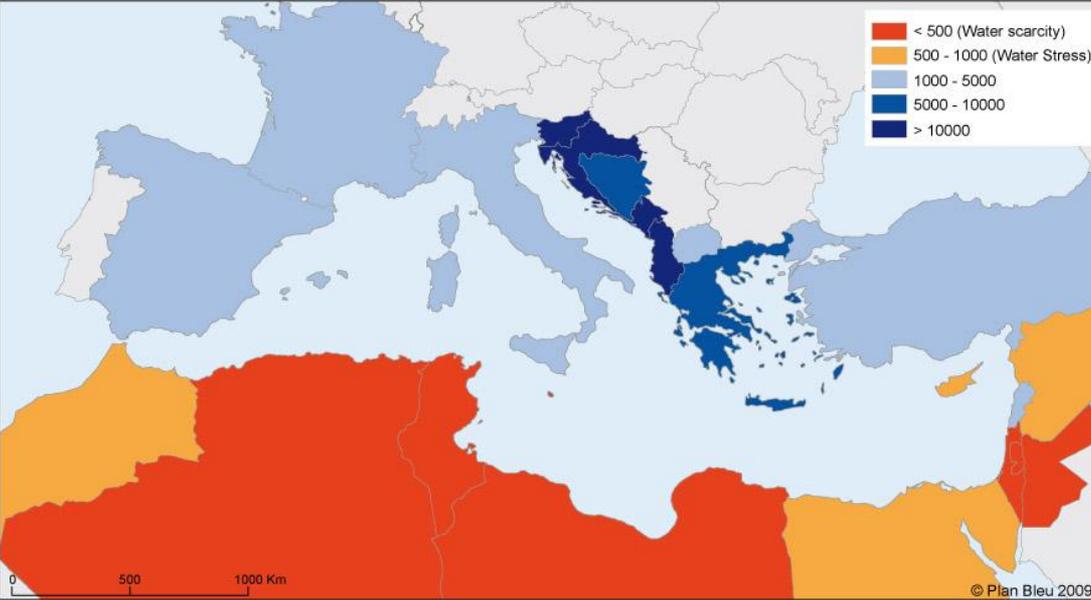


Source : Plan Bleu, Margat 2004

- 3% of the world's water resources for 7% of the world's population
- 60% of the world water poor population (<1000 m<sup>3</sup>/cap/yr)

# Water poverty & scarcity, Pressures on water resources...

Renewable natural water resources per inhabitant per year in 2005

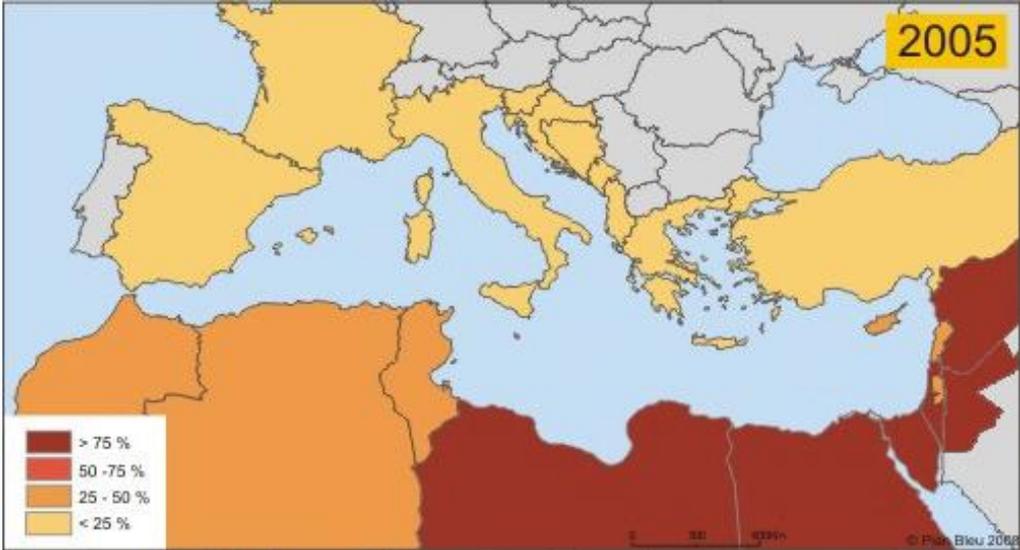


From 50 (Gaza) to...  
25 000 (Montenegro)  
m<sup>3</sup>/capita/year

Mediterranean  
average: 2400  
m<sup>3</sup>/capita/year

## Pressures on water resources

Exploitation index of renewable natural water resource in 2005



Source: Plan Bleu, 2008

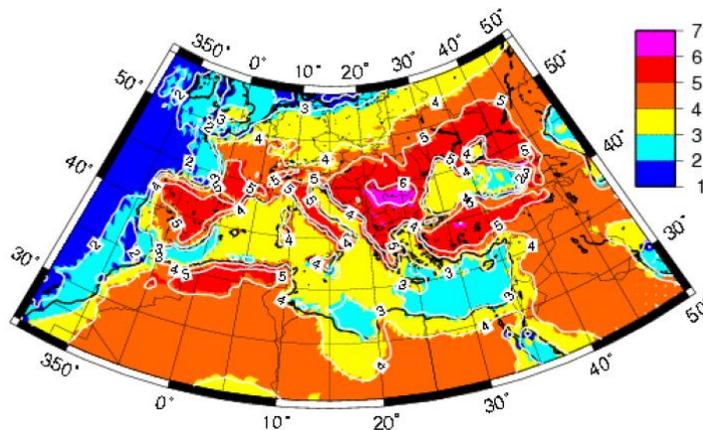


*... exacerbated by the impacts of climate change*

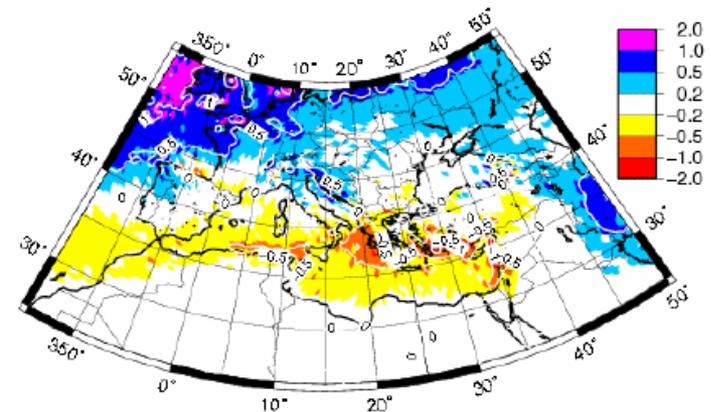
## IPCC Projections for the Mediterranean 1980-1999 vs 2080-2099, A1B scenario

- Increase in temperature from 2,2 to 5,1°C
- Decrease in average rainfall from 4 to 27%
- Increase in extreme events (droughts, floods)

Surface air temperature (°C) :  
2070-2099 vs. 1961-1990  
Summer



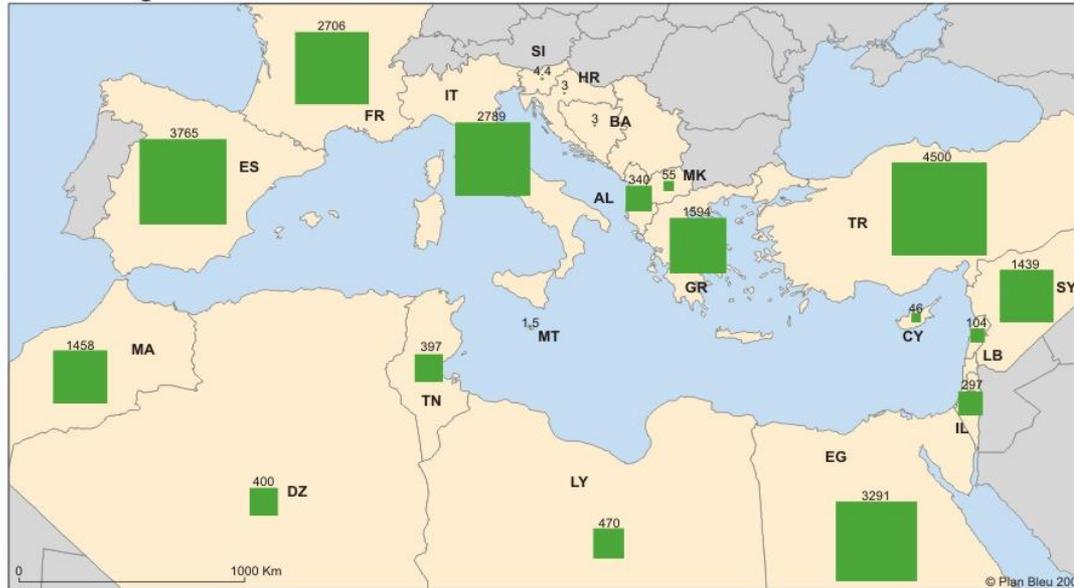
Seasonal precipitation (mm/d) :  
2070-2099 vs. 1961-1990  
Winter



Somot & al., 2007

## Irrigated areas

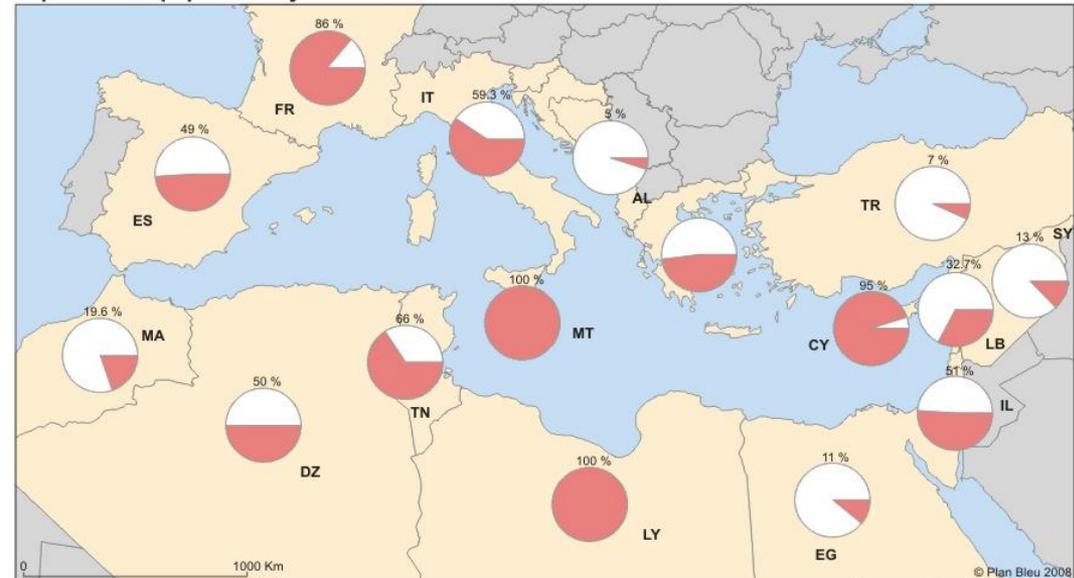
Surfaces irriguées en 1000 ha



Source : Plan Bleu, Aqustat

Irrigated areas:  
24 million ha  
20% of total arable land  
and permanent crops

Superficies équipées de systèmes modernes en %



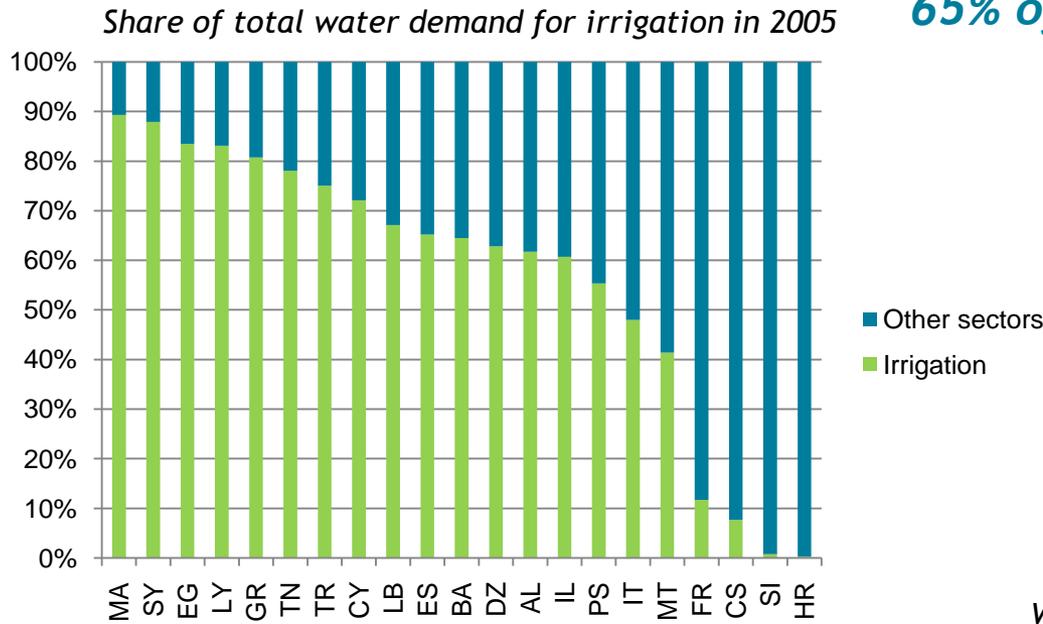
Source : Plan Bleu, Aqustat

Plot irrigation efficiency:  
from 45 to 90%

Irrigation water demand:  
from 1500 to more than  
15 000 m<sup>3</sup>/ha/year



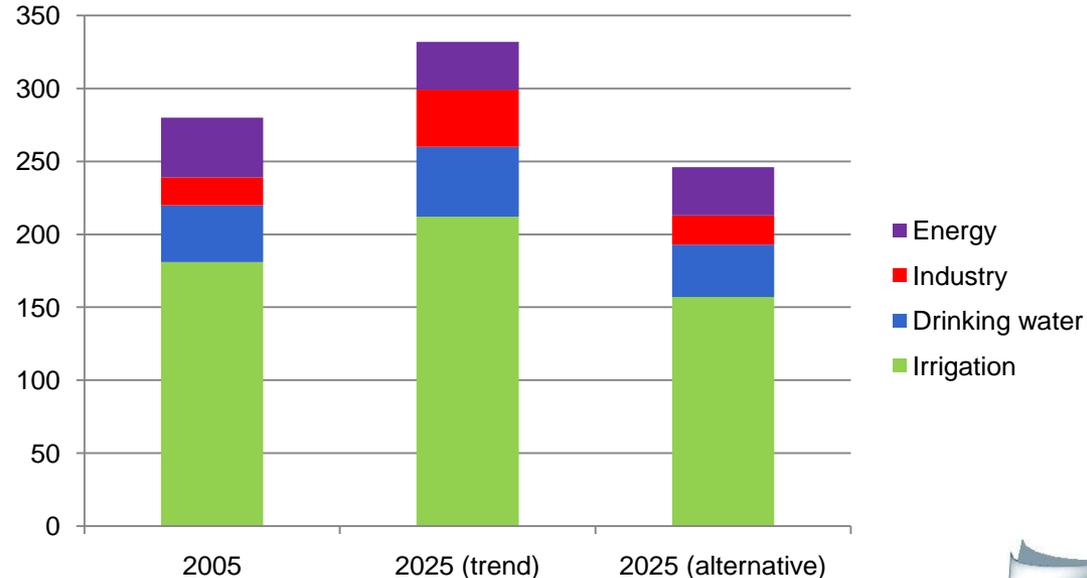
65% of Med. total water demand



Irrigation: 81% of total water demand in the South & East

Source: Plan Bleu, 2008

Water demand per sector in 2005 & 2025 (trend and alternative scenarios)

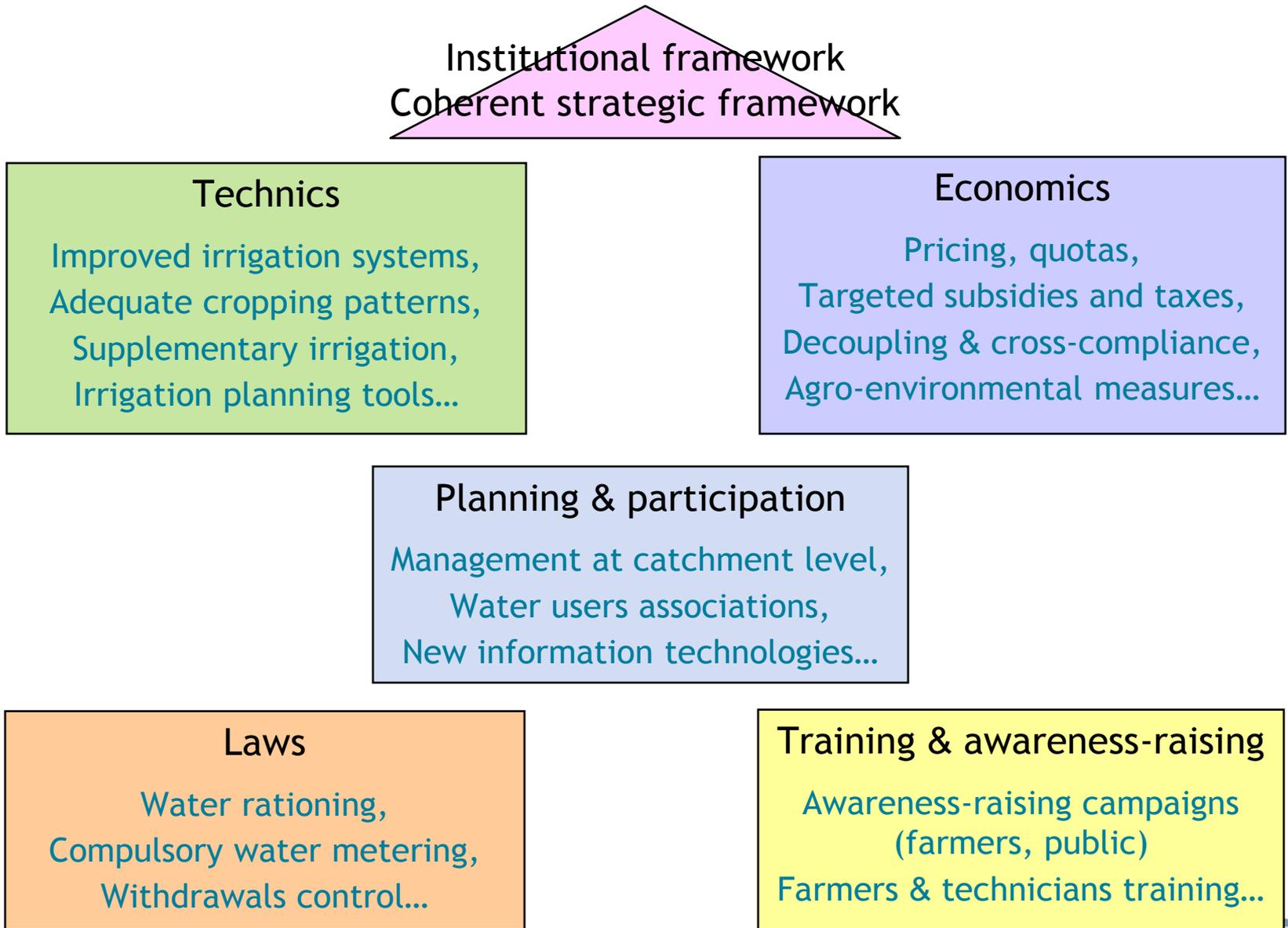


Water demand for irrigation: from 180 to 210 km<sup>3</sup>/yr by 2025

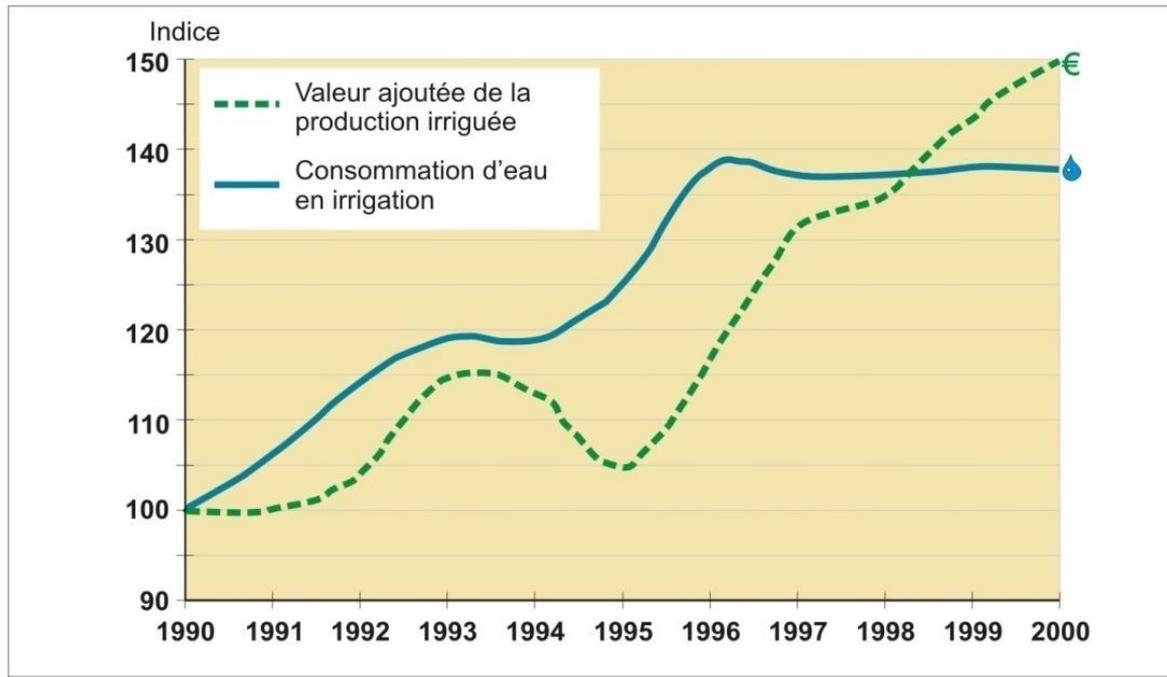
Alternative scenario: water savings ~25%



## Combination of instruments for water demand management



## Tunisian national strategy for managing water demand



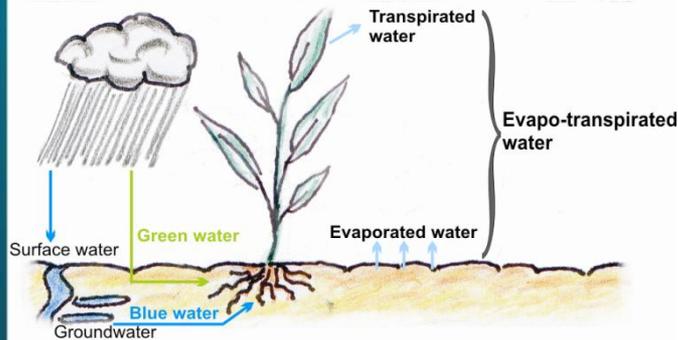
Water consumption and added value of irrigation, 1990-2000

Source: Hamdane, Plan Bleu, 2002

- National water saving programme for irrigation (1995)
- PISEAU (2001): water savings, pricing, participative approach
- X<sup>th</sup> & XI<sup>th</sup> Plans (2007-2011): mobilisation of new water resources, modernisation of irrigated areas, improving resource management
- Long term: maintenance & modernisation of infrastructures, water demand management, unconventional resources

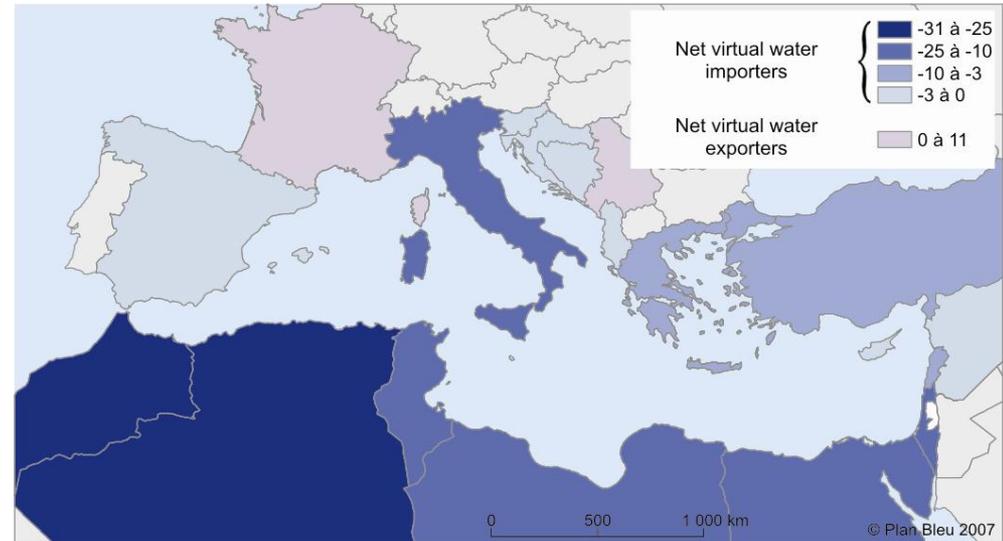
## Virtual water: which perspective for water management?

*Virtual water = evapo-transpirated water*

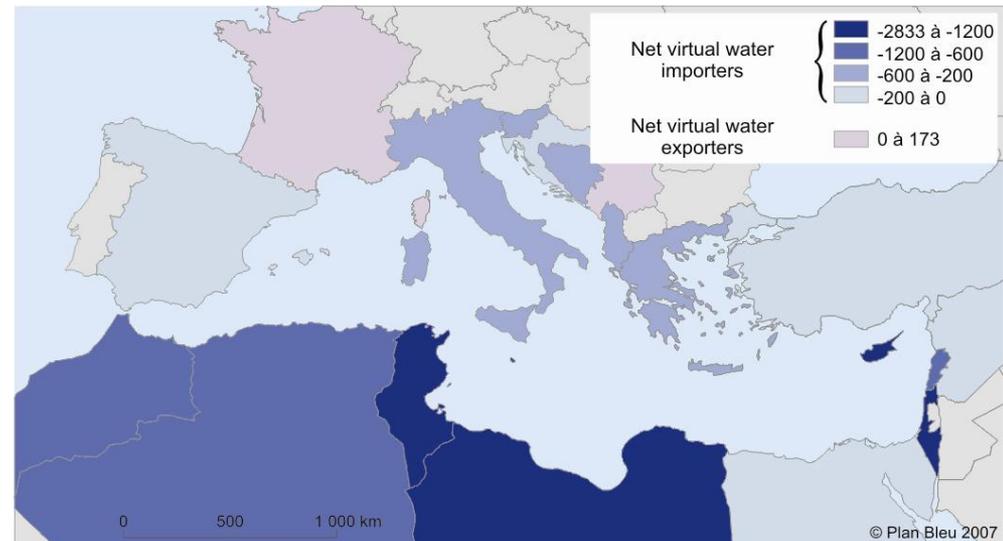


*Net balance of virtual water exchanges related to international trade in grain, soya bean, olives, specific crop products and bovine meat, average over 2000-2004*

Net balance per country (billion m<sup>3</sup>/year)



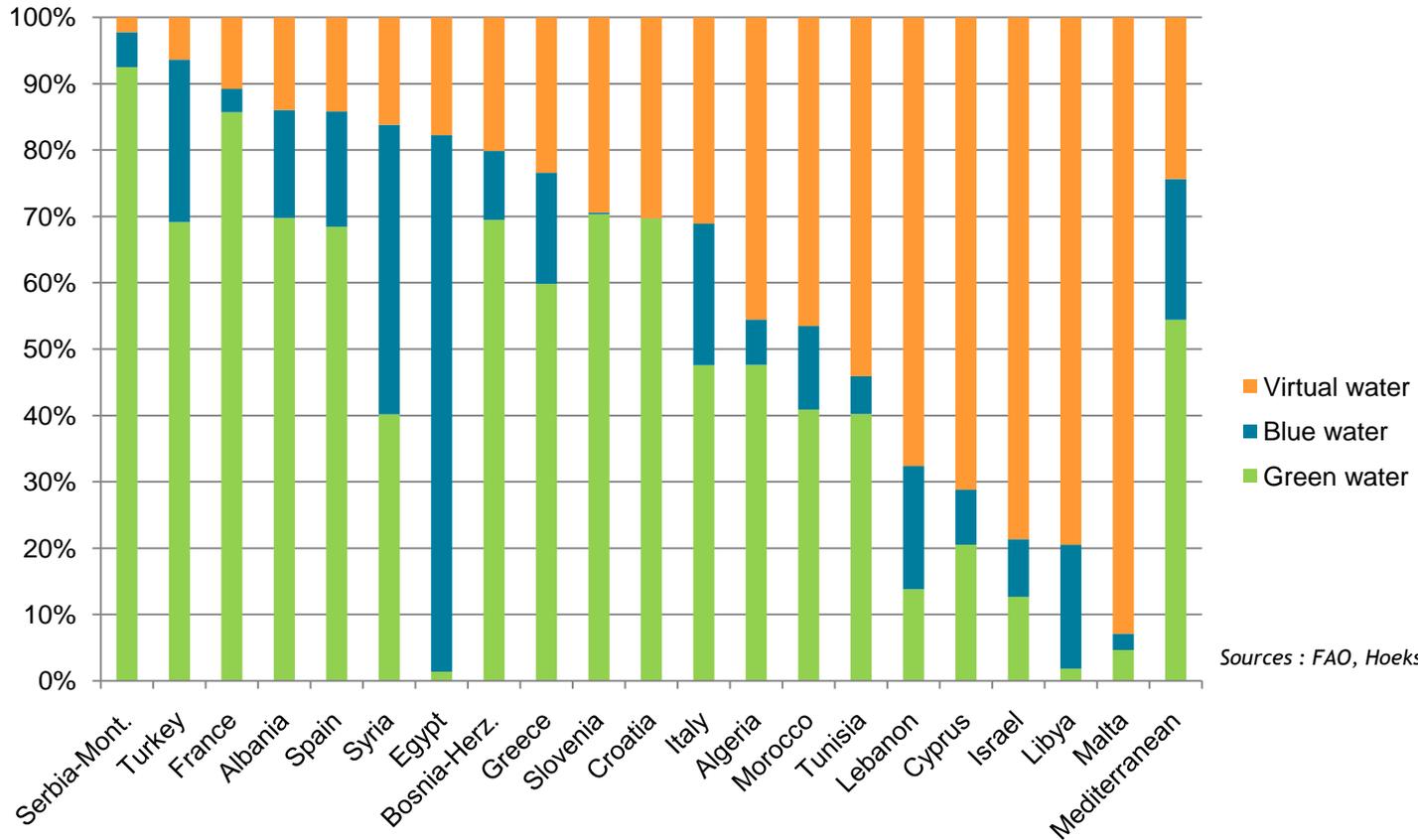
Net balance per capita (m<sup>3</sup>/capita/year)



Sources of data: FAO, Hoekstra & al

## Virtual water: which perspective for water management?

Green, blue and virtual water in the Med. countries water demand for agriculture and food in 2005



Sources : FAO, Hoekstra & al

Green & virtual water:  
~80% of water demand for agriculture and food in the Mediterranean



## Managing water demand... and not only the supply

- **Water in the Mediterranean: an agricultural and food security-related issue... and vice versa,**
- **Towards a comprehensive vision for water including blue water, but also green and virtual water,**
- **Water demand management: a major political stake in the Mediterranean,**
- **Taking into account the development potential of non conventional water resources,**
- **A need for adapting water and agricultural policies to face the increasing water resource scarcity.**



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