

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

The challenges to agricultural water management in the Mediterranean

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- ✚ 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

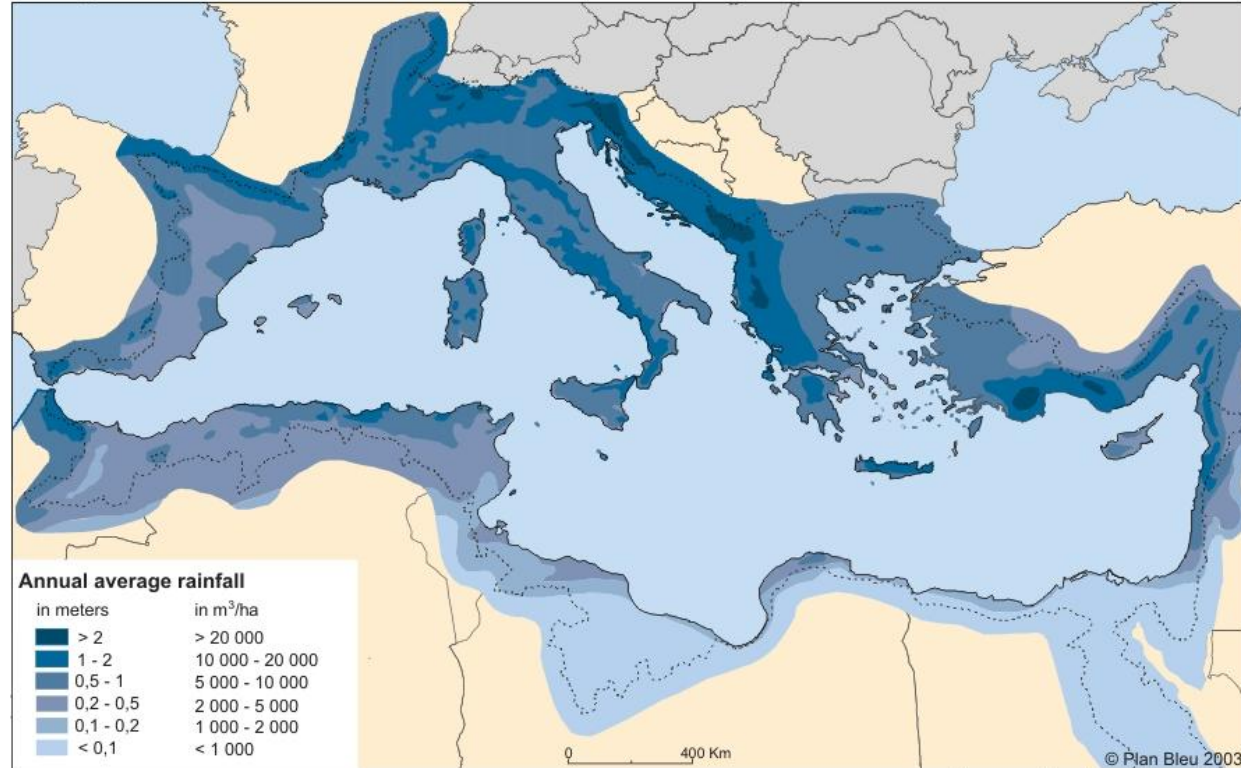
Regional activity centres of MAP



- 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

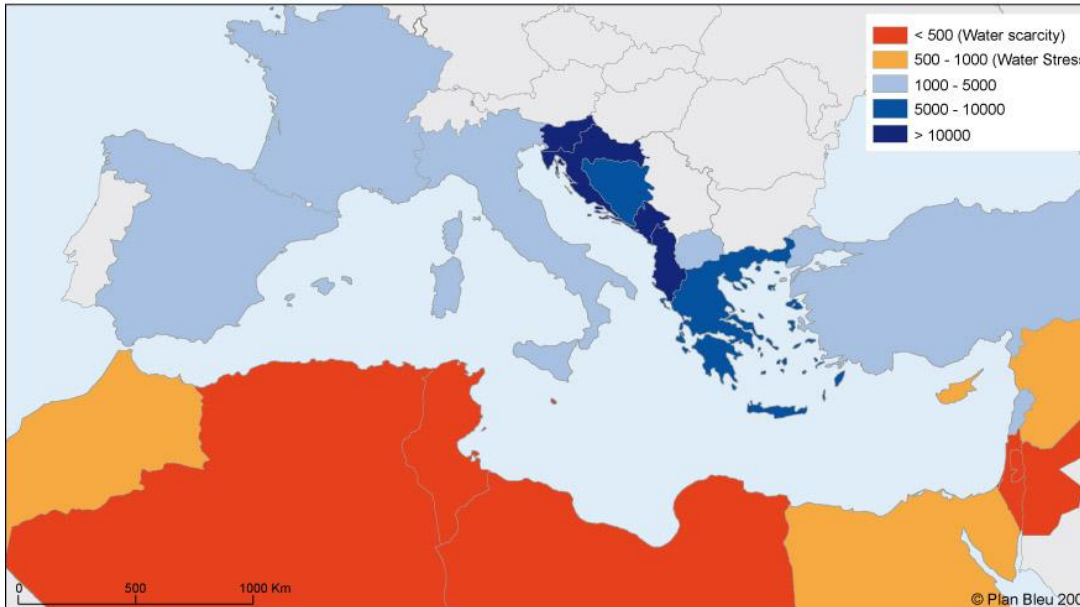


Source : Plan Bleu, Margat 2004

- 3% of the world's water resources for 7% of the world's population
- 60% of the world water poor population (<1000 m³/cap/yr)

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

Renewable natural water resources per inhabitant per year in 2005

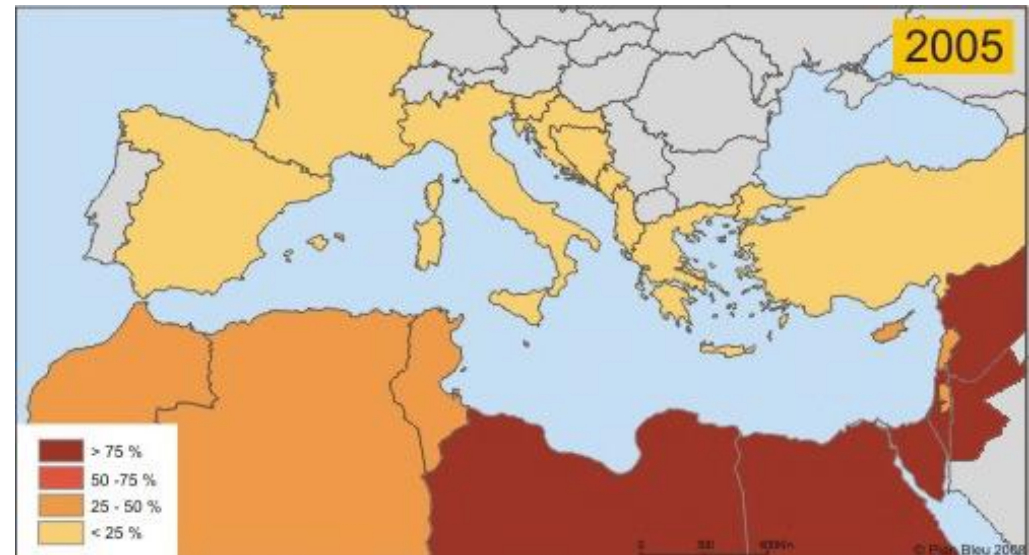


From 50 (Gaza) to...
25 000 (Montenegro)
m³/capita/year

Mediterranean
average: 2400
m³/capita/year

Pressures on water resources

Exploitation index of renewable natural water resource in 2005



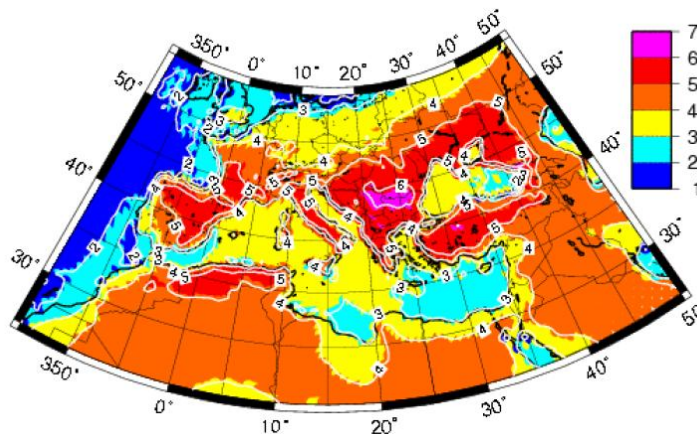
Source: Plan Bleu, 2008

... exacerbated by the impacts of climate change

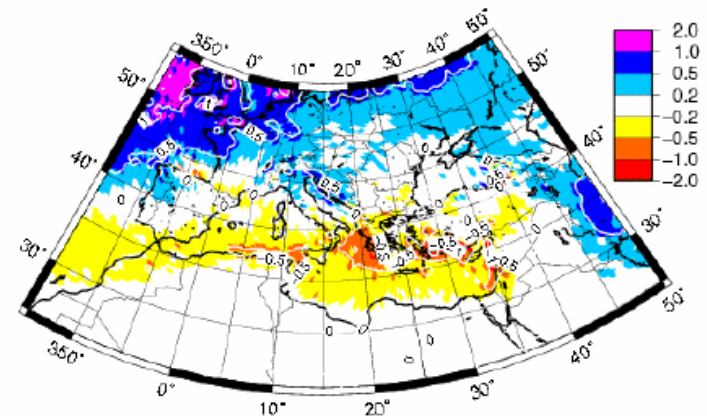
IPCC Projections for the Mediterranean 1980-1999 vs 2080-2099, A1B scenario

- 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



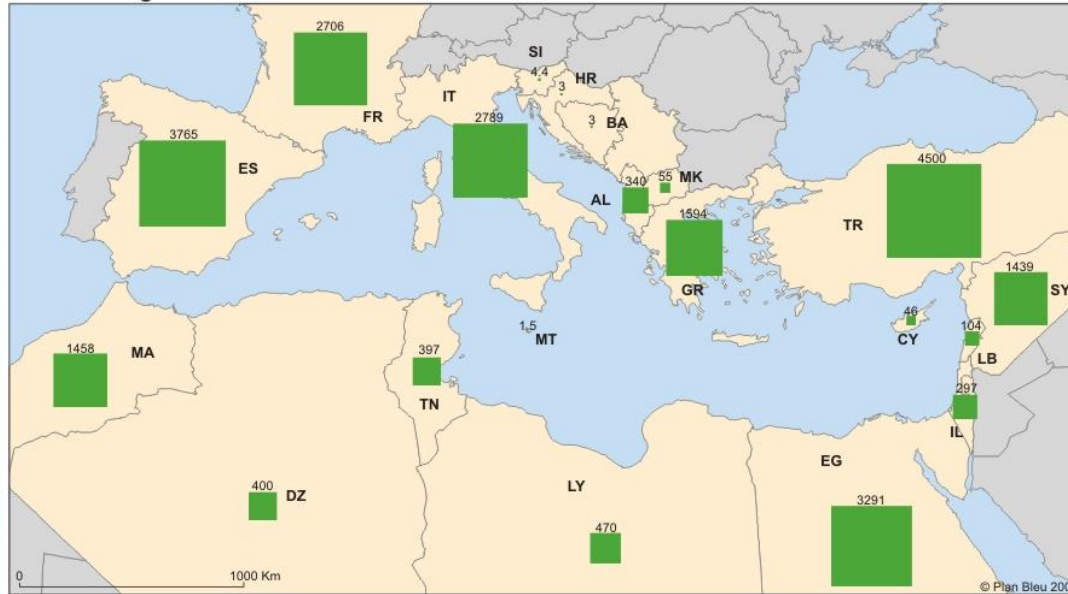
Seasonal precipitation (mm/d) :
2070-2099 vs. 1961-1990
Winter



Somot & al., 2007

Irrigated areas

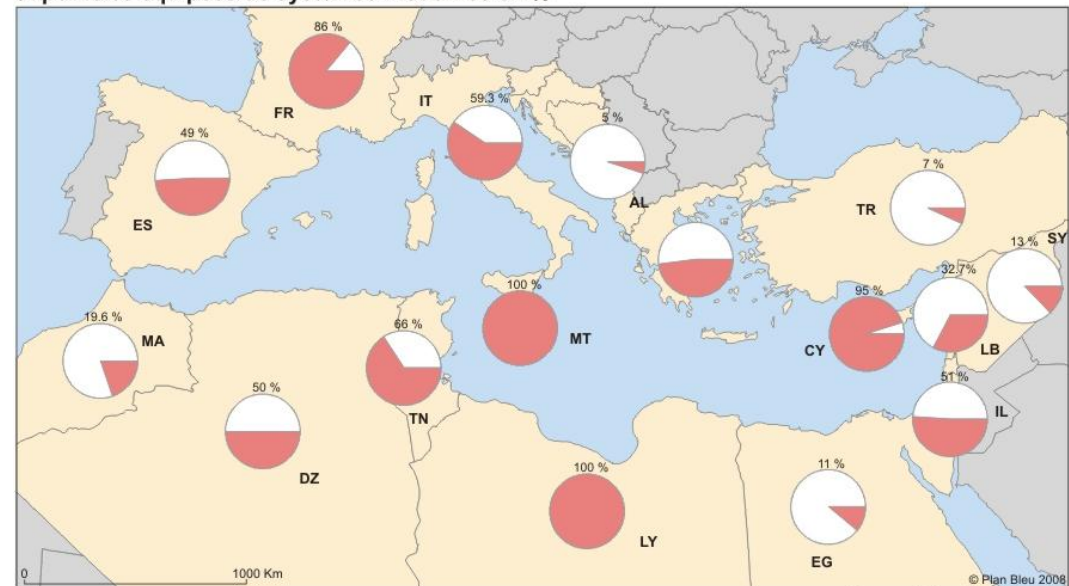
Surfaces irriguées en 1000 ha



Source : Plan Bleu, Aquastat

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

Superficies équipées de systèmes modernes en %

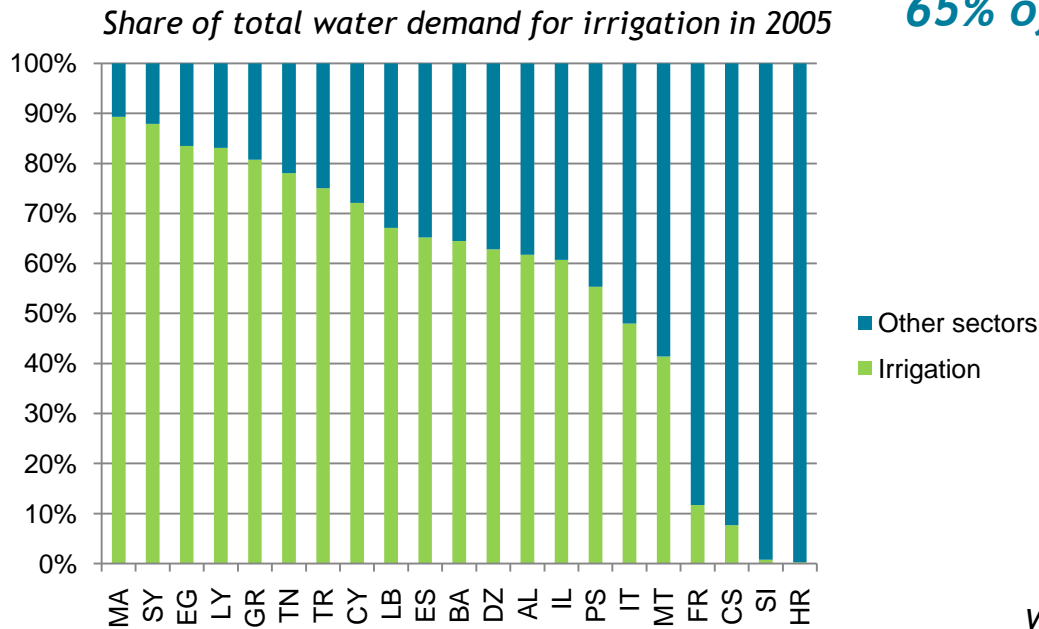


Source : Plan Bleu, Aquastat

Plot irrigation efficiency:
from 45 to 90%

Irrigation water demand:
from 1500 to more than
15 000 m³/ha/year

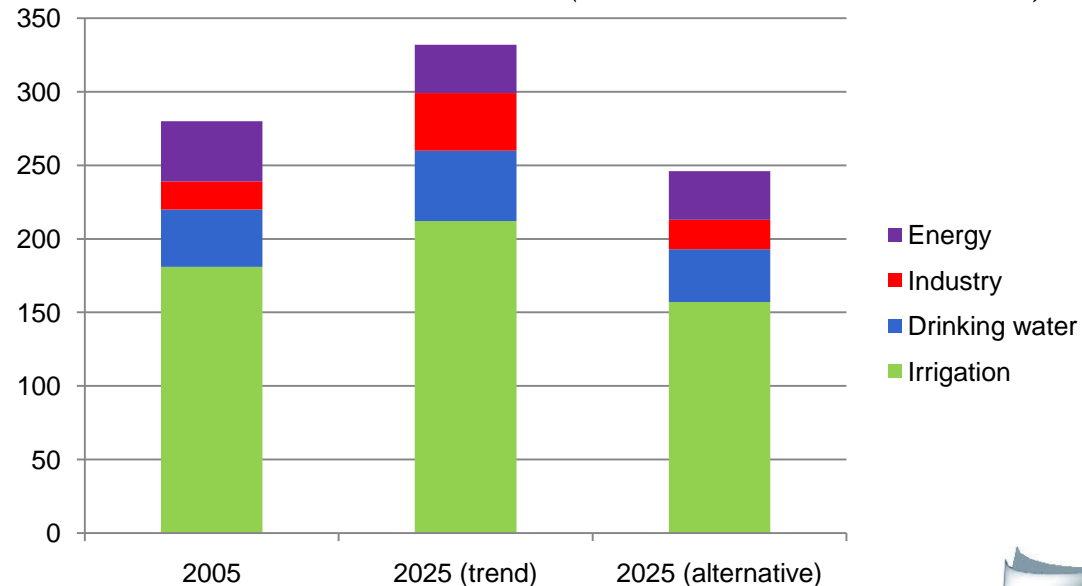
65% of Med. total water demand



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)

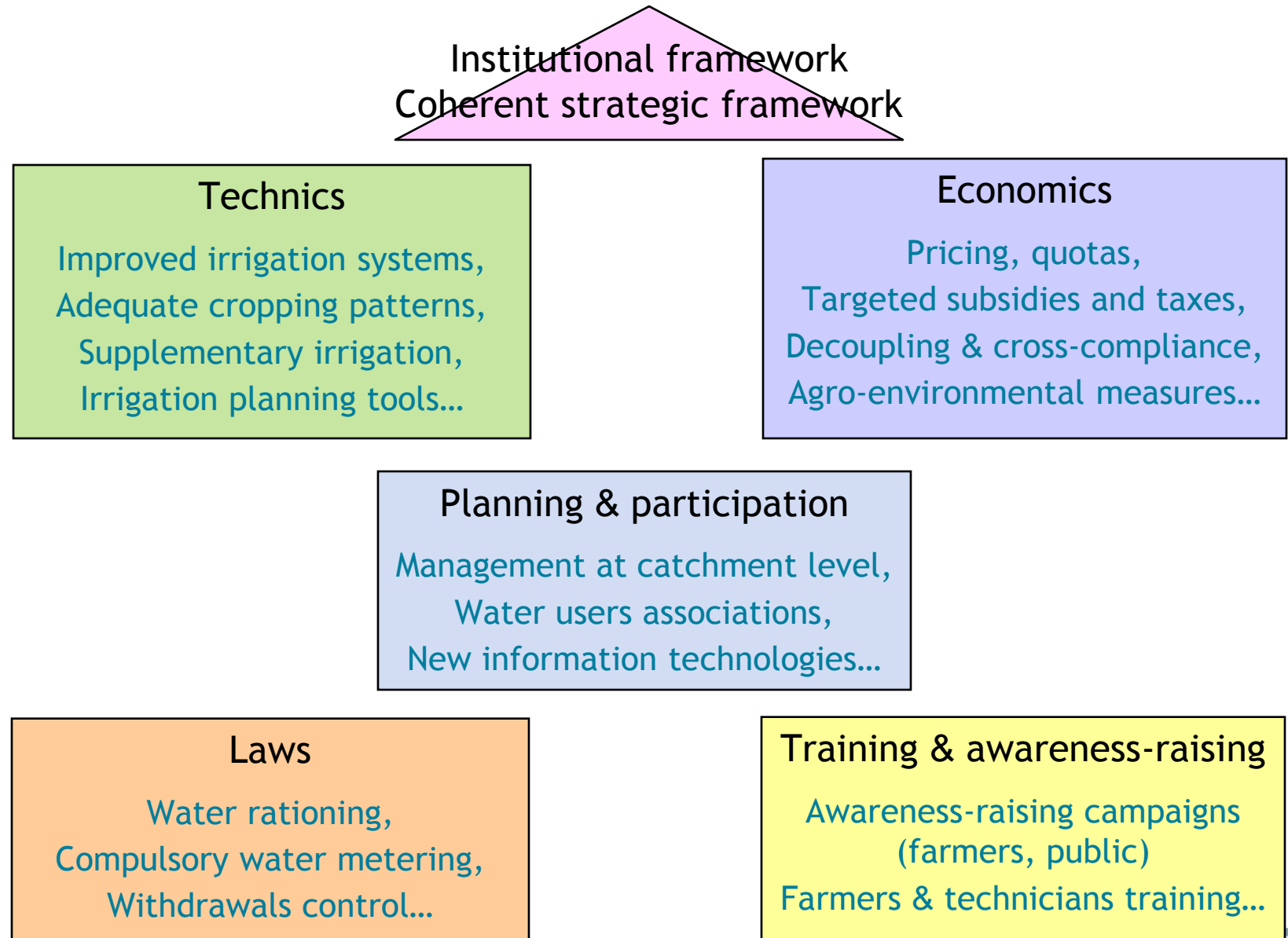


Water demand for irrigation: from 180 to 210 km³/yr by 2025

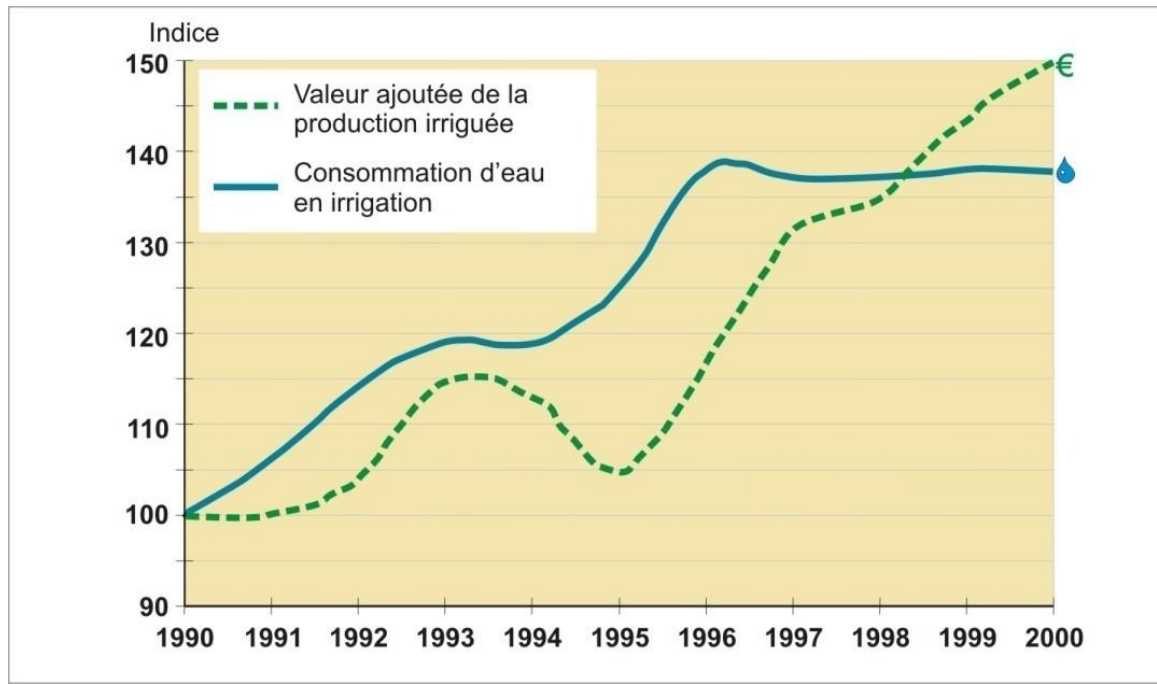
Alternative scenario: water savings ~25%



Combination of instruments for water demand management



Tunisian national strategy for managing water demand



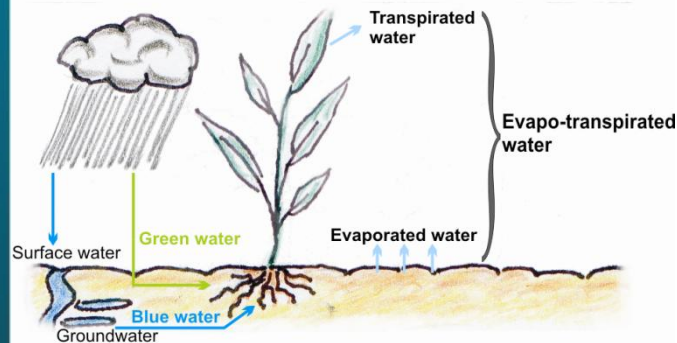
Water consumption and added value of irrigation, 1990-2000

Source: Hamdane, Plan Bleu, 2002

- National water saving programme for irrigation (1995)
- PISEAU (2001): water savings, pricing, participative approach
- Xth & XIth 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

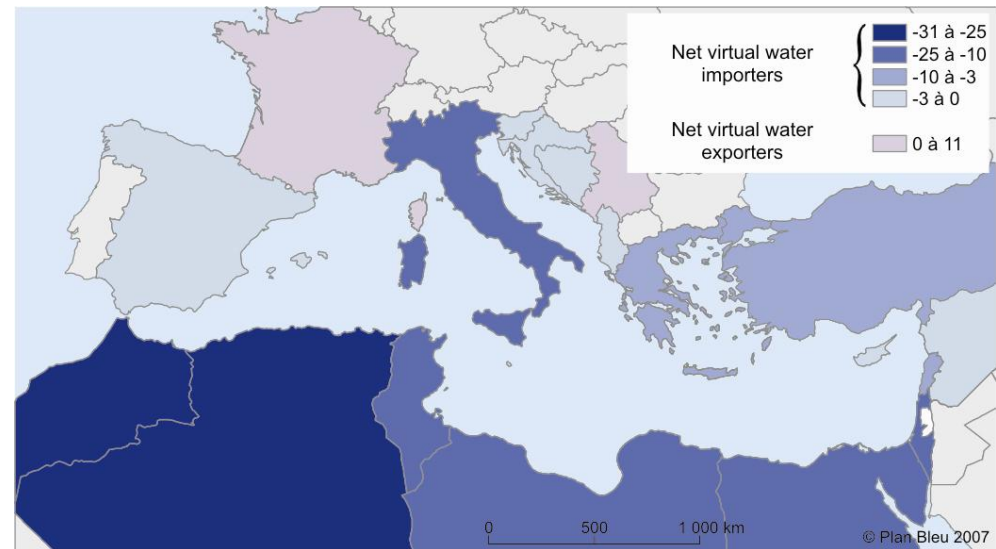
Virtual water: which perspective for water management?

Virtual water = evapo-transpirated water

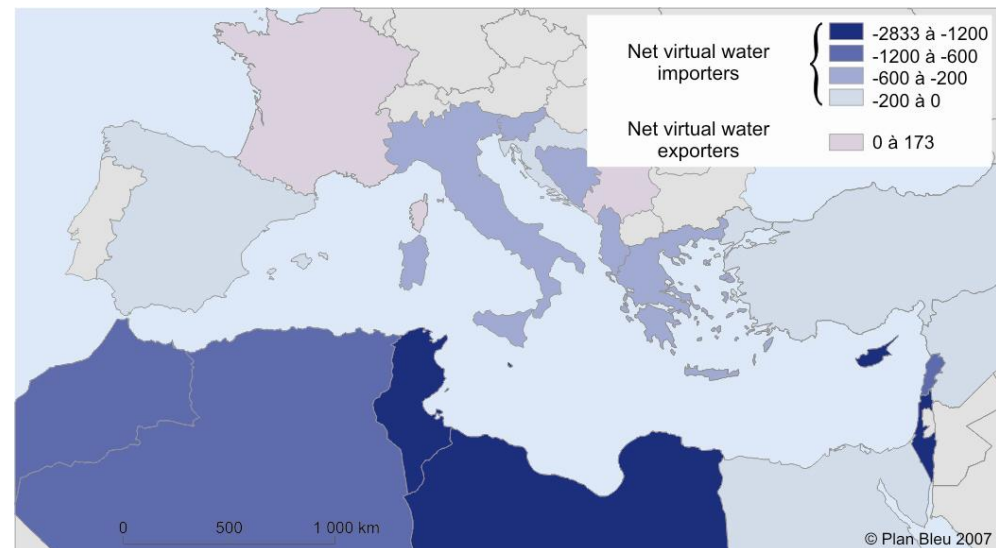


Net balance of virtual water exchanges related to international trade in grain, soya bean, olives, specific crop products and bovine meat, average over 2000-2004

Net balance per country (billion m³/year)



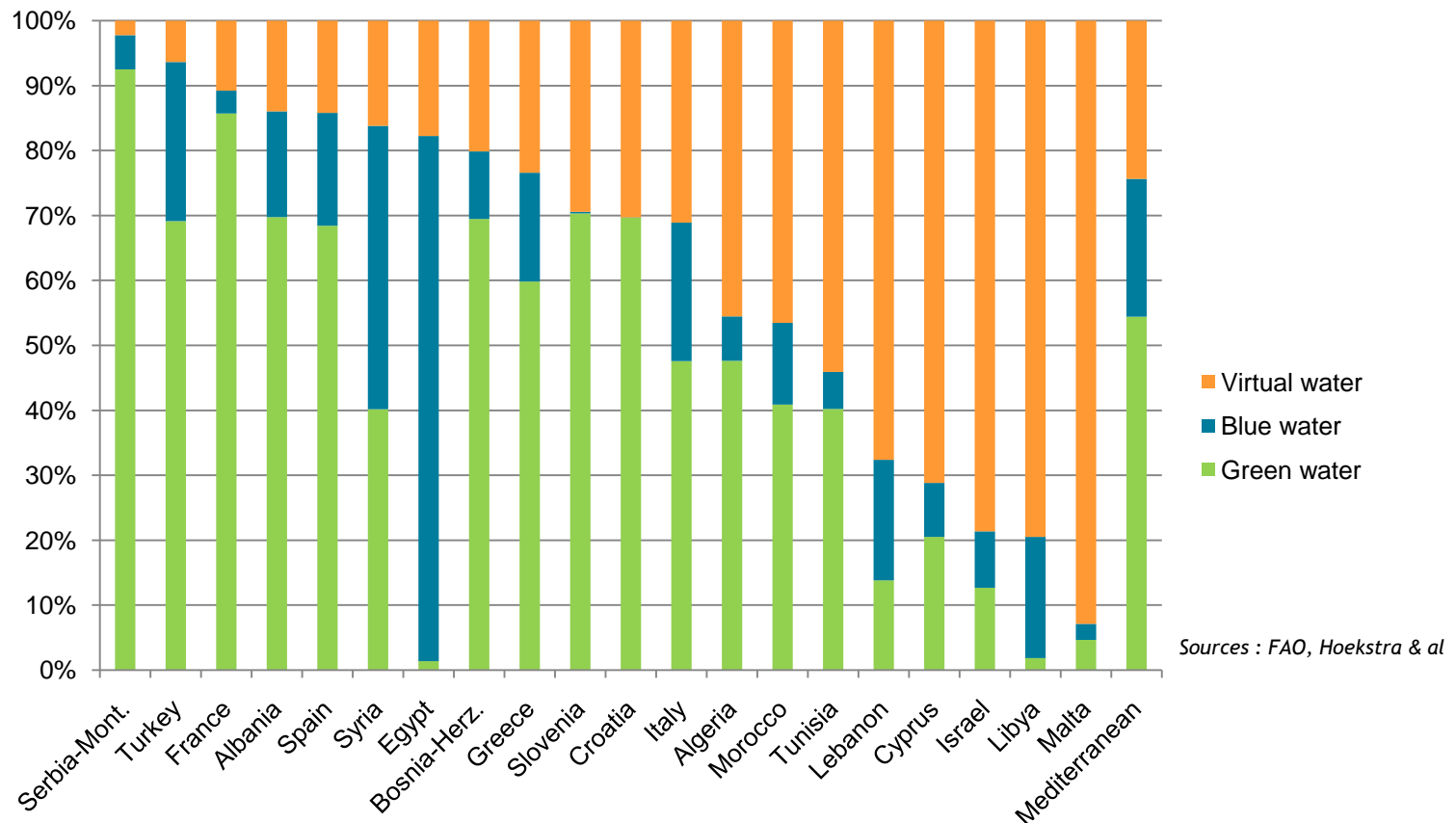
Net balance per capita (m³/capita/year)



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



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.



For more information

www.planbleu.org

