Global Water Partnership Mediterranean

Experiences on Drought Management in the Mediterranean

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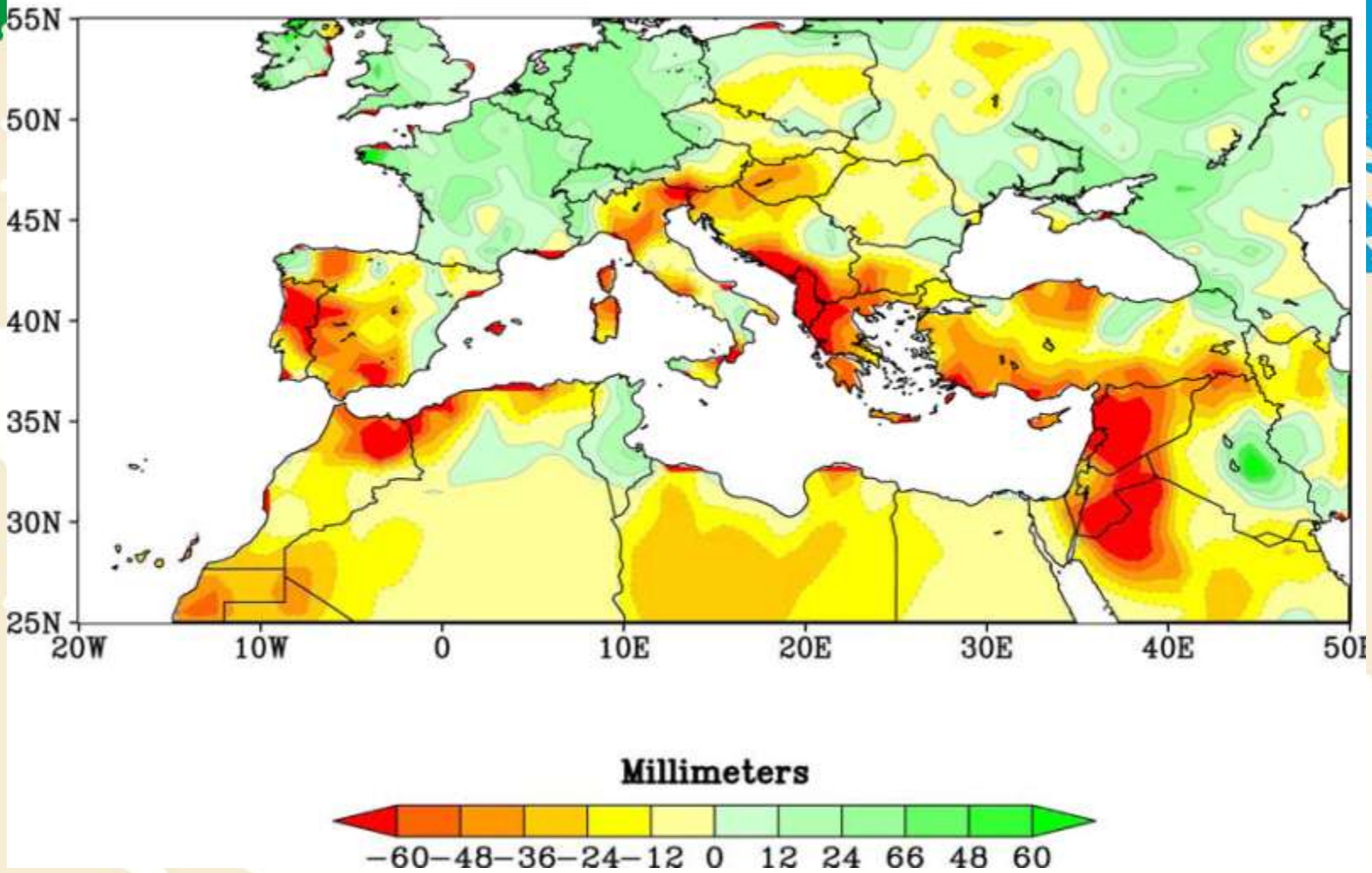
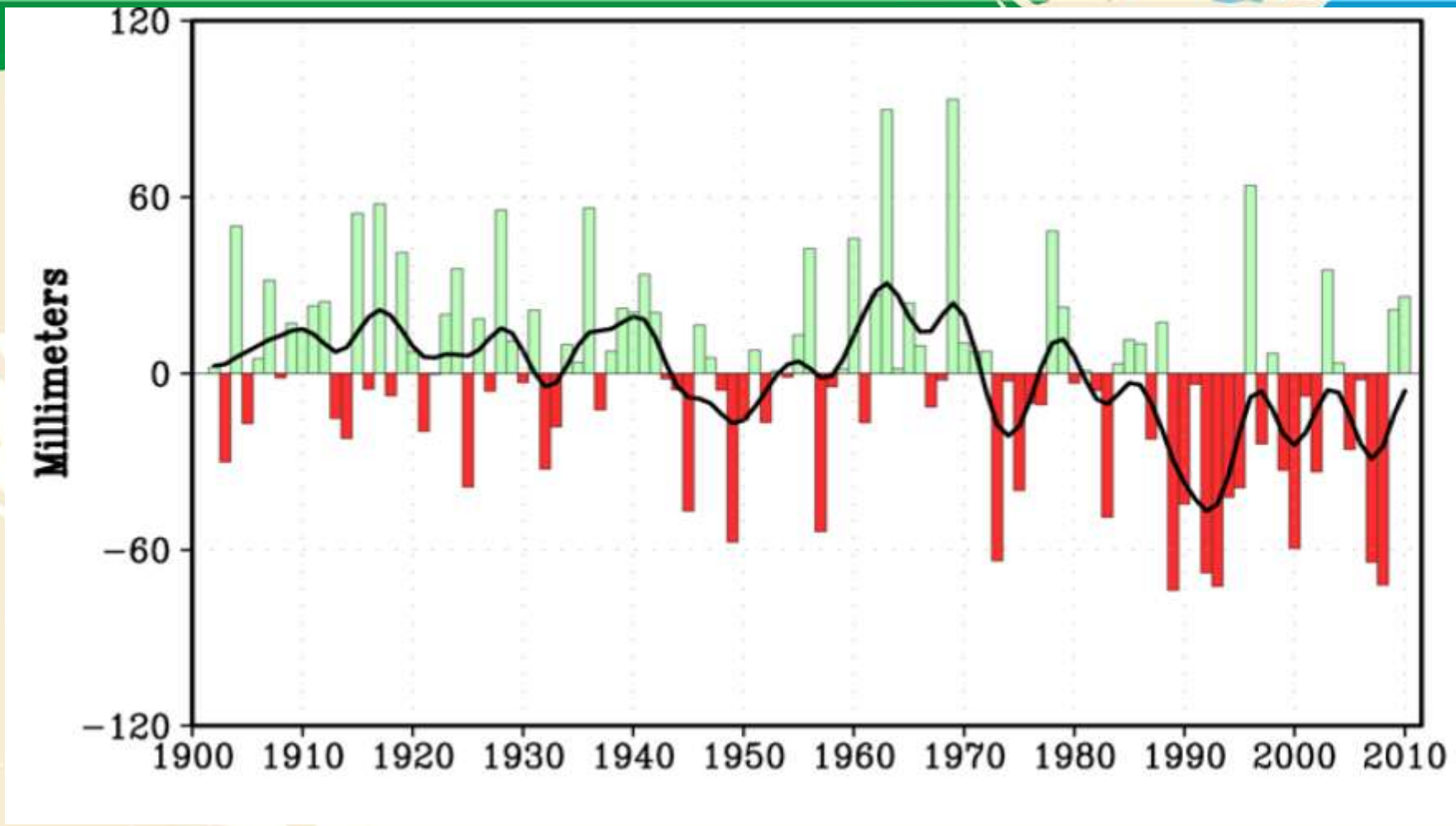
GWP/WHO Workshop on
Integrated Drought Management in Central and Eastern Europe
Bratislava, 5-6 October 2012

www.gwpmed.org

Water resources in the Mediterranean: an uneven distribution in space and time

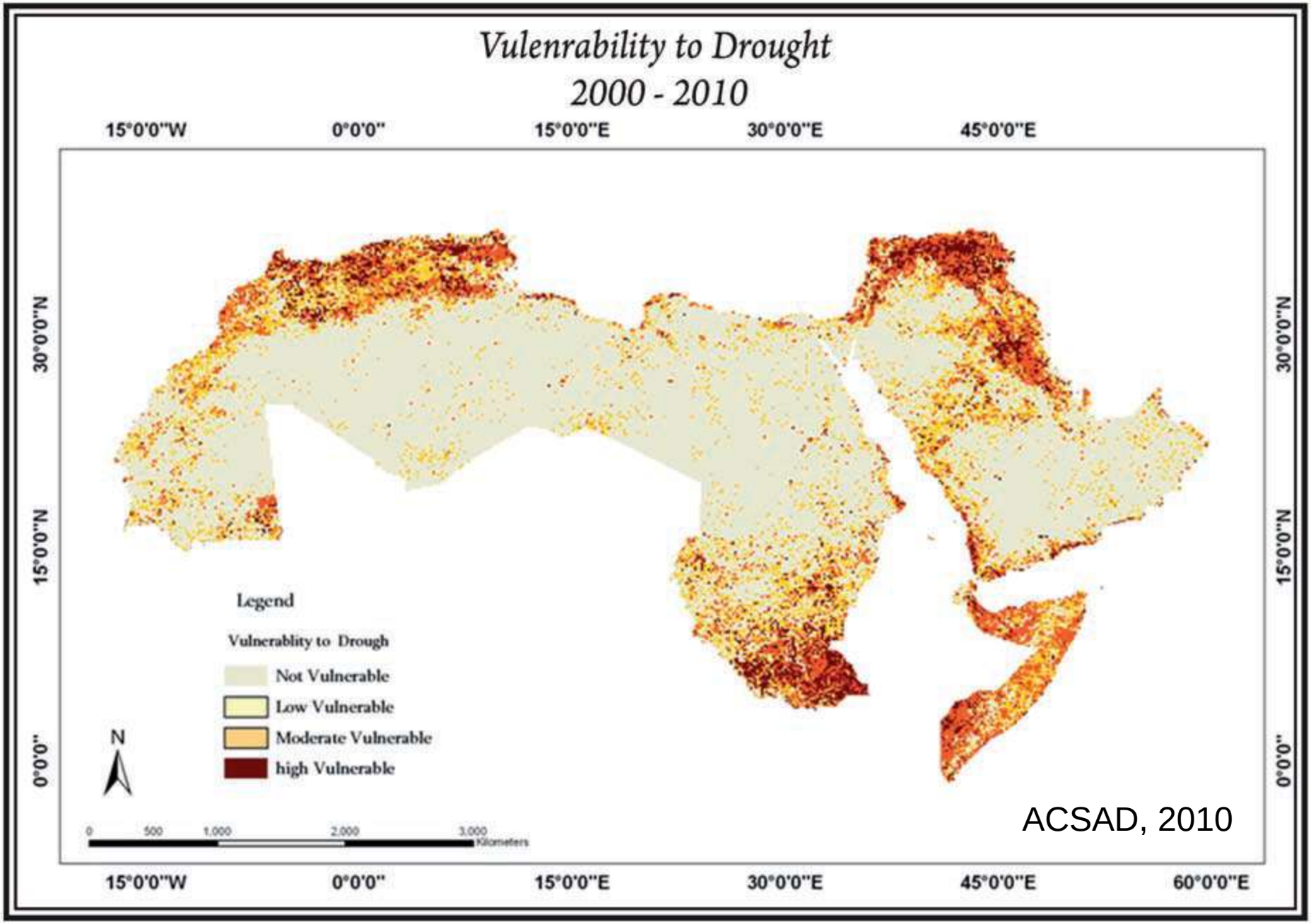


Reds and oranges highlight lands around the Mediterranean that experienced **significantly drier winters** during 1971-2010 than the comparison period of 1902-2010.
Source: NOAA, November 2011

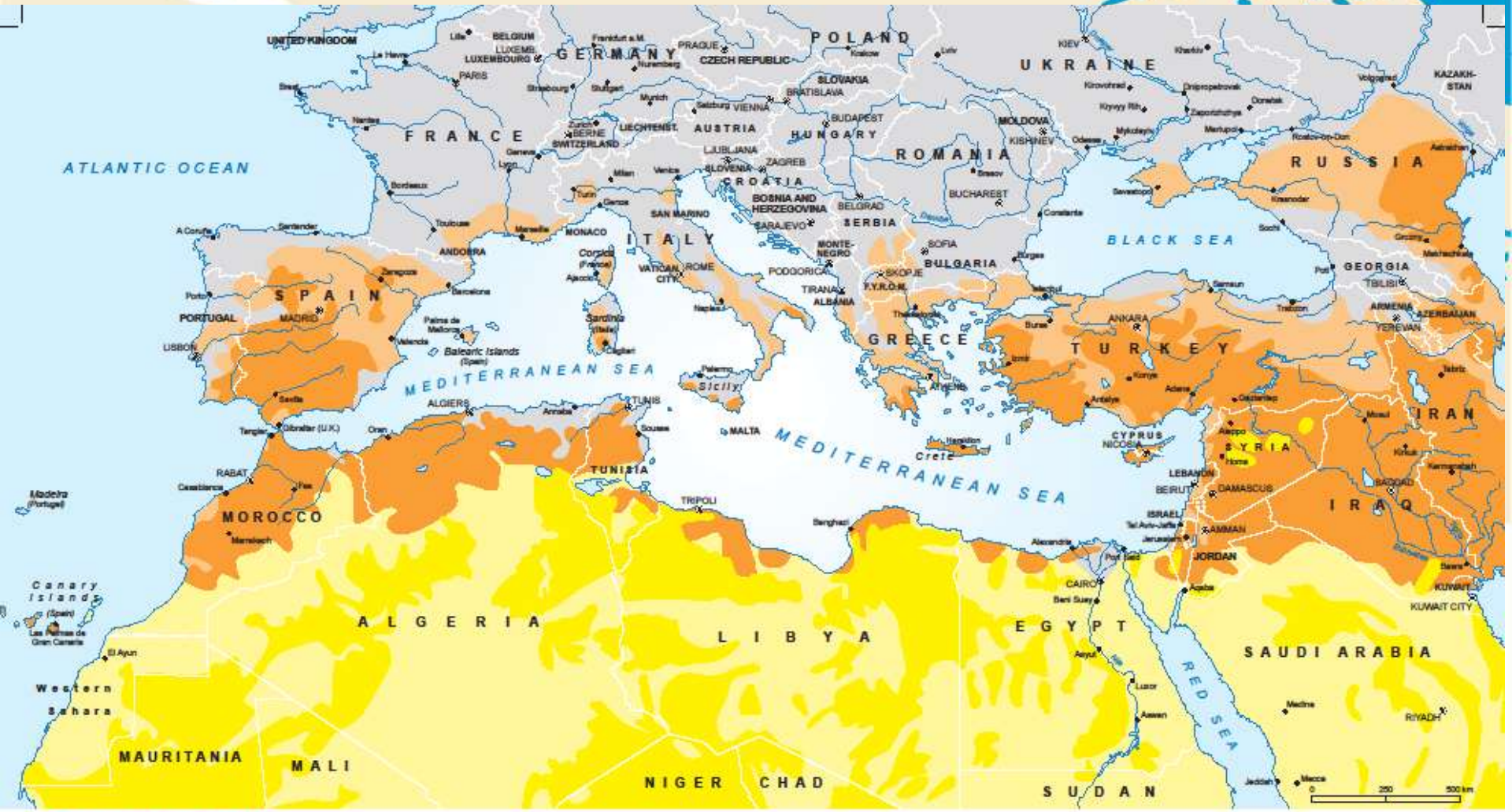


Wintertime droughts are increasingly common in the Mediterranean region, and human-caused climate change is partly responsible**. In the last 20 years, 10 of the driest 12 winters have taken place in the lands surrounding the Mediterranean Sea.**

Source: NOAA, November 2011


Vulenrability to Drought
2000 - 2010
15°0'0"W
0°0'0"
15°0'0"E
30°0'0"E
45°0'0"E
60°0'0"E
30°0'0"N
15°0'0"N
0°0'0"
Legend
Vulnerablity to Drough
Not Vulnerable
Low Vulnerable
Moderate Vulnerable
high Vulnerable
N
0
500
1,000
2,000
3,000
Kilometers
ACSAD, 2010

Desertification: Where land and water challenges meet



Desertification

- Desert
- Semi-desert
- Desertification vulnerability, serious
- Desertification vulnerability, moderate

Sources: Natural Resources Conservation Service, Plan Bleu, Times Atlas of the World

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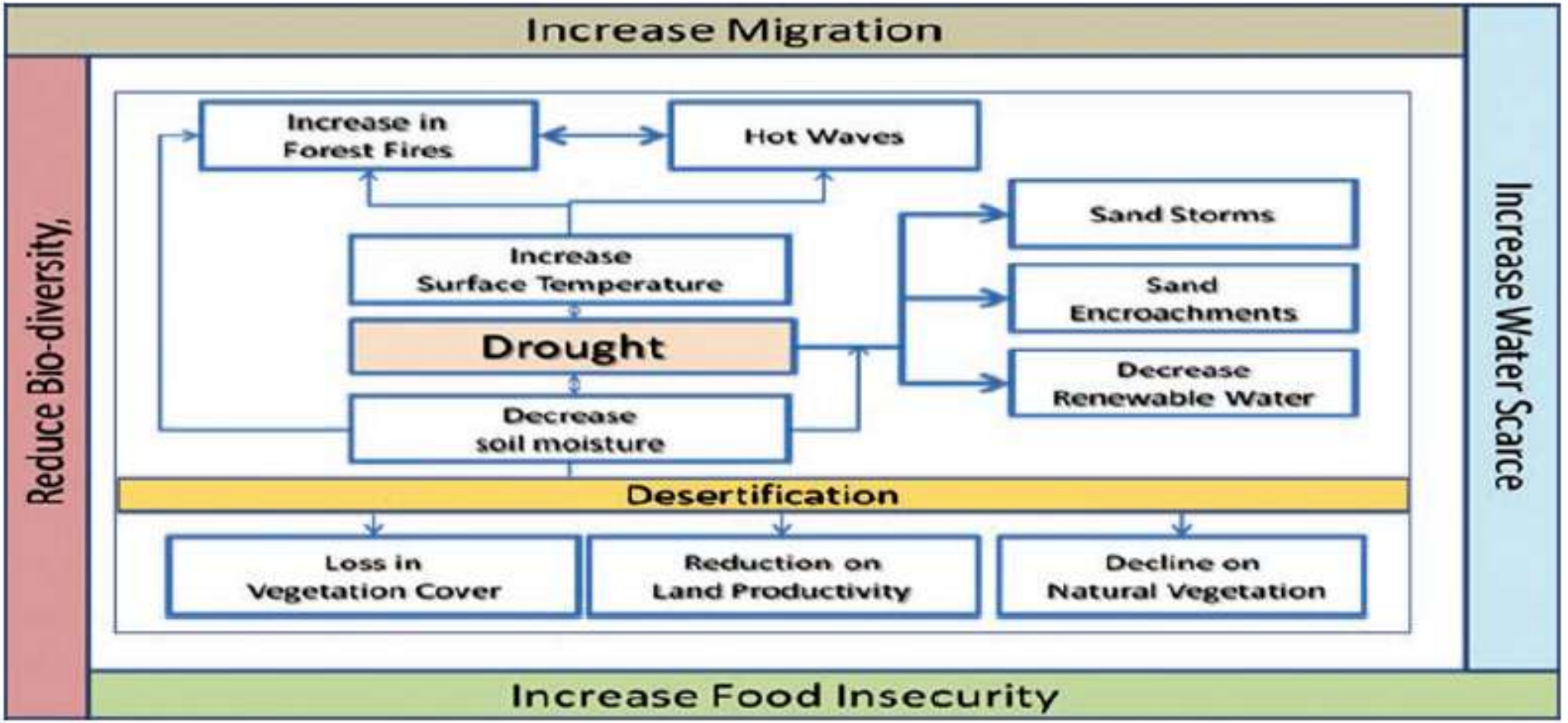
A glance into drought impacts



ACSAD, Erian, 2010

‘Integrating the Integrated’

Integrated Drought Management should be an integral component of the ‘extended’ IWRM

Drought is directly linked with Desertification. Action planning to Combat Desertification should be well tuned with IWRM Plans

And, all such plans are linked with Climate Variability and Climate Change Adaptation Plans

Responding to droughts

METHODOLOGICAL COMPONENT

Objective: define methods to assist in permanent drought planning and select the thresholds for management actions

Characteristics: Objectivity and simplicity in the presentation of the results

Drought characterization and monitoring

Methods of analysis:
A combination of indicators and indices to characterize: meteorological, agricultural, hydrological and social drought

Evaluation of drought risk

Methods of analysis:
1. Qualitative evaluation of potential risk (consultation with stakeholders)
2. Quantitative evaluation of probabilities of occurrence or damage

Evaluation of vulnerability to drought

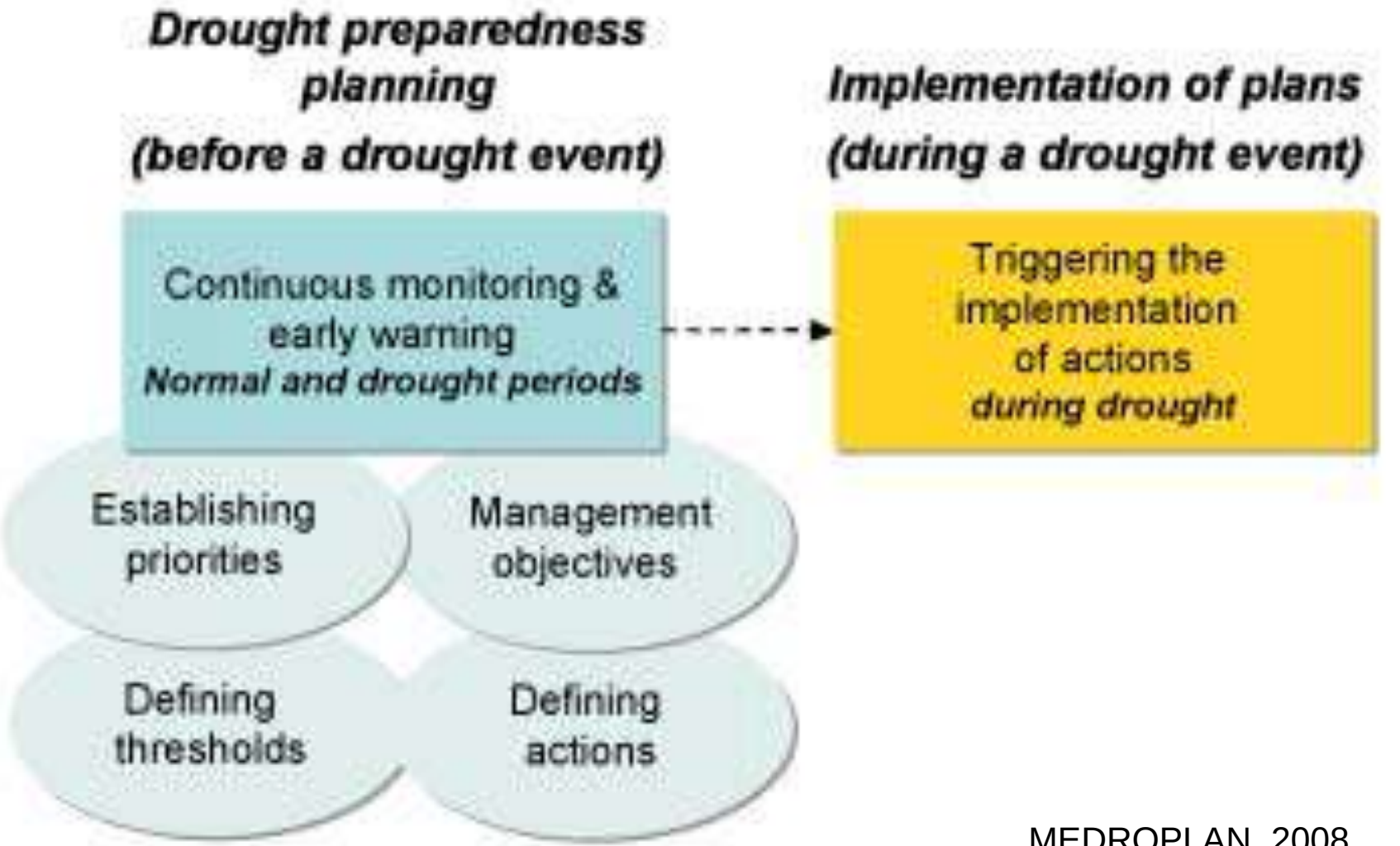
Methods of analysis:
A combination of indicators and indices to define the characteristics of a system that makes it susceptible to suffer losses from drought

OPERATIONAL COMPONENT

Objective: define the operational measures of permanent drought planning and measures during a drought event (responding to drought)

MEDROPLAN, 2008

Responding to droughts:The operational component



MEDROPLAN, 2008

Responding to droughts:Type of Long Term Activities

Category	Type of actions	Affected sectors			
	Long-term actions				
Demand reduction	Economic incentives for water saving	U	A	I	R/E
	Agronomic techniques for reducing water consumption		A		
	Dry crops in place of irrigated crops		A		
	Dual distribution network for urban use	U			
	Water recycling in industries			I	
Water supply increase	Conveyance networks for bi-directional exchanges	U	A	I	
	Reuse of treated wastewater		A	I	R
	Inter-basin and within-basin water transfers	U	A	I	R
	Construction of new reservoirs or increase of storage volume of existing reservoirs	U	A	I	
	Construction of farm ponds		A		
	Desalination of brackish or saline waters	U	A		R
	Control of seepage and evaporation losses	U	A	I	
Impacts minimization	Education activities for improving drought preparedness and/or permanent water saving	U	A	I	
	Reallocation of water resources based on water quality requirements	U	A	I	R
	Development of early warning systems	U	A	I	R
	Implementation of a Drought Management Plan	U	A	I	R
	Insurance programmes		A	I	

MEDROPLAN, 2008

Responding to droughts:Type of Short Term Activities

	Short-term actions				
Demand reduction	Public information campaign for water saving	U	A	I	R
	Restriction in some urban water uses (e.g. car washing, gardening, etc.)	U			
	Restriction of irrigation of annual crops		A		
	Pricing	U	A	I	R
	Mandatory rationing	U	A	I	R
Water supply increase	Improvement of existing water systems efficiency (leak detection programmes, new operating rules, etc.)	U	A	I	
	Use of additional sources of low quality or high exploitation cost	U	A	I	R
	Over-exploitation of aquifers or use of groundwater reserves	U	A	I	
	Increased diversion by relaxing ecological or recreational use constraints	U	A	I	R
Impacts minimization	Temporary reallocation of water resources	U	A	I	R
	Public aids to compensate income losses	U	A	I	
	Tax reduction or delay of payment deadline	U	A	I	
	Public aids for crops insurance		A		

U = urban; A = agricultural; I = industrial; R = recreational

MEDROPLAN, 2008

An example

of no-regret activities contributing to drought management at local level in the Mediterranean

2008 – ongoing, and expanding

Non- Conventional Water Resources Programme in the Mediterranean

Aims at advancing the use of NCWR and in particular of traditional RWH, improved by innovative techniques and methods, in water scarce communities in the Mediterranean, as a cost effective method for water availability, drought management and climate change adaptation at local level.

The Programme objectives, launched in 2008 and on-going, are:

- To promote the use of NCWR as a sustainable way of providing community access to water in water scarce areas;
- To position RWH as a helpful tool for climate change adaptation at local level;
- To educate students and teachers on RWH and increase awareness about sustainable water use;
- To train local technicians on the application of modern RWH and NCWR systems and materials;
- To promote multi-stakeholder partnership for local NCWR initiatives;

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Non- Conventional Water Resources Programme in the Mediterranean

- ***A multi-stakeholder implementing partnership***

- ***Partners:***
  - Global Water Partnership – Mediterranean (GWP-Med)
  - Coca-Cola (“Mission Water” Environment Program, Coca-Cola System Greece; The Coca-Cola Foundation)
  - Local Authorities, in each application area in Greek islands
  - Ministry for Gozo, Malta

- ***Location :***
  - Cyclades and Dodecanese Islands, Greece (2008 - on going)
  - Gozo Island, Malta (2012-2013)
  - Cyprus (under development for 2013-2014)
  - Other Mediterranean islands e.g. Sardinia (planning beyond 2013)

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Non- Conventional Water Resources Programme in the Mediterranean

Type of Activities

- RWH/NCWR systems (demonstration) applications

- Educational Activities for students and educators

- Regional Policy Dialogue on the subject as well as capacity building activities for targeted stakeholders (local and central authorities, NGOs, technicians, etc.)

- Awareness Raising

Examples of Applications in Cyclades islands, Greece

Tinos

Syros

Iraklia

Koufonisia

Ios

Santorini

Naxos

Non- Conventional Water Resources Programme in the Mediterranean

- ***Key Outputs up to 2012***
  - NCWR application in more than in 20 insular water scarce communities (more than 40,000 beneficiaries off the main lands)
  - 50 site-specific RWH/NCWR systems yielding ~10 mi. liters of water (collected and reused)
  - ~2500 students & ~350 teachers (by 2011)
  - Training for 120 technicians; Capacity building for local and regional councils in Malta;
  - Regional Policy Dialogue : NCWRM Conference, September 2011, Athens;
- ***Added Value***
  - Cost-effectiveness; Partners' commitment; Involvement and ownership by local communities; Replication Potential

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An example

of activities on policy assistance to governments and capacity building, contributing to drought management at regional level in the Mediterranean

for 2013-2014

The SWIM-SM Programme

Supported by the EU

Support Mechanism
6.7 Mi Euro, 2011-2014
SWIM-SM

Demonstration Projects
15 Mi Euro

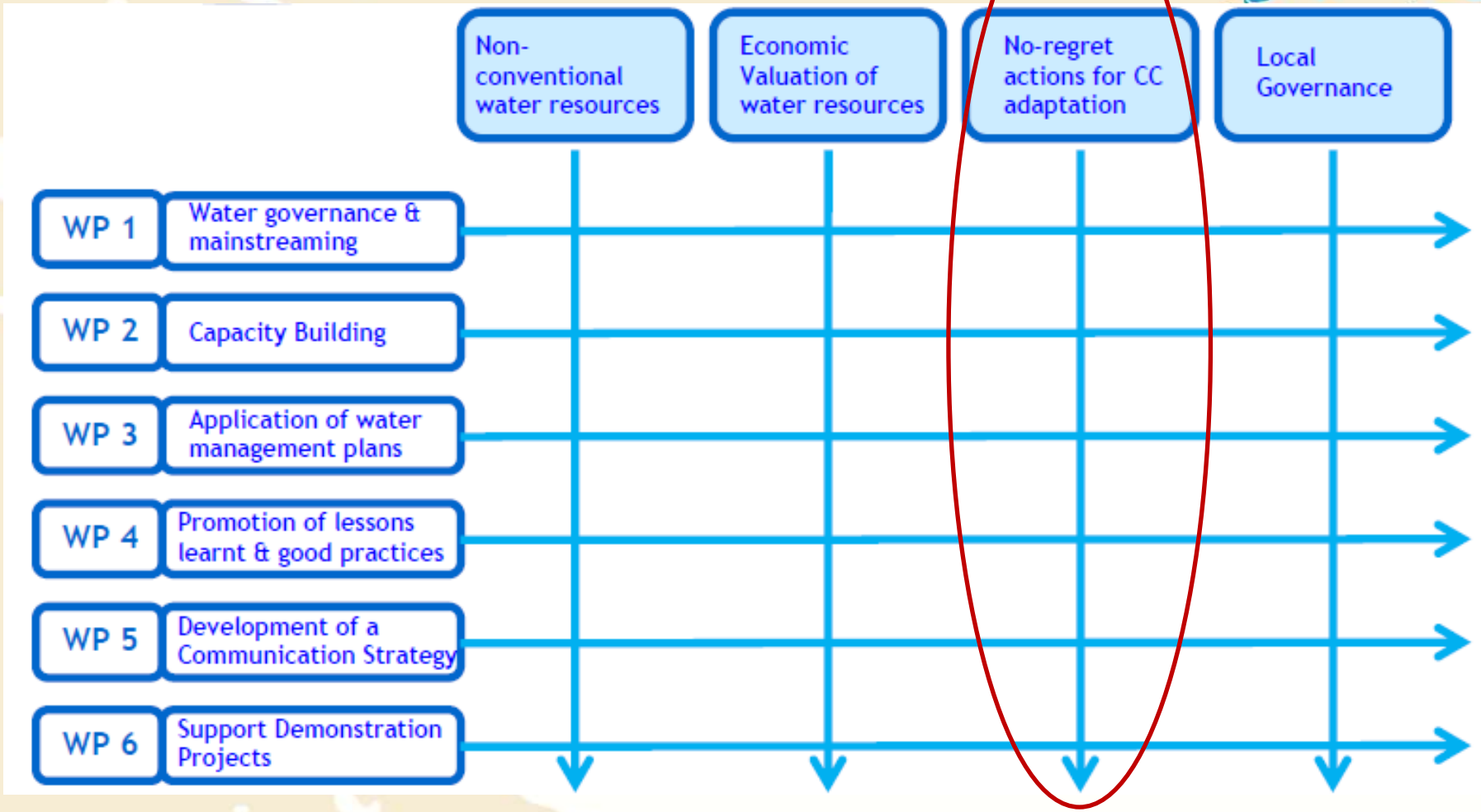
Overall objective:

To promote actively the extensive **dissemination** of sustainable water management policies and practices in the region given the context of increasing water **scarcity**, combined pressure on water resources from a wide range of users and **desertification** processes, in connection with **climate change**.

GWP-Med is a key consortium partner and Technical Director of SWIM Programme

The SWIM-SM Programme

Supported by the EU



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Sustainable Water Integrated Management (SWIM)
Climate Change Adaption Thematic Pillar

SWIM activities in 2013-2014 in the field aim at contributing:

- To assess drought frequency of occurrence, delineate the affected areas and identify the population and economic sectors affected the most;
- To enhance the understanding and awareness of droughts in SWIM countries of focus as an increasing hazard and its potential environmental and socio-economic impacts.
- To develop specific drought policies and contingency plans with the aim of enhancing preparedness for increasing and extending drought's episodes.
- To develop the capacities of SWIM countries of focus to mitigate droughts impacts, on the environment, economy and society; reduce vulnerability and improve communities' resilience in through study tours.

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Sustainable Water Integrated Management (SWIM)
Climate Change Adaption Thematic Pillar

Type of activities scheduled:

- Regional Assessment of past drought episodes and their management in Selected SWIM-SM PCs (2013)
- Review of drought management policies and plans in the region and mapping of available institutional and technical capacities (2013)

- A Regional Consultative Meeting to Review Drought Management Policies and plans (2014)
- Develop Capacity of Water & Environment Stakeholders for Better Management of Drought Episodes (2014)

’Integrating the Integrated’

GWP-Med within the GEF MedPartnership Programme and in cooperation with PAP MAP/ UNEP and UNESCO is preparing an Integrated Methodological Framework where IWRM, ICZM and Coastal Aquifer management plans are integrated. A pilot application in the transboundary Buna/Bojana River area (Albania/Montenegro) is on-going

Within this, Drought (and Flood) Management should be addressed.

This can become part of the GWP/WMO Programme on Integrated Droughts Management Planning, to be used as a management tool at local level, in different areas.

An important last point:

The upcoming GWP/WMO Programme on Droughts should link concretely with the WACDEP Programme, particularly in Regions where WACDEP work planning is in advanced development, as well as the overall GWP agenda on Water Security and Climate Resilience (Droughts, Floods, Deltas/Coastal Management Programmes)

As an example, several of the North Africa/Med activities of WACDEP e.g. in Tunisia and North Wastern Sahara Aquifer, have a drought focus!

GWP-Med is assisting the Tunisian Government to revise its Drought Vulnerability Mapping and elaborate a Drought Management Plan.

Thank you

Contact GWP-Med in:
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