



ISTITUTO DI RICERCA SULLE ACQUE

IRSA

Consiglio
Nazionale delle Ricerche

New Trends in Research

on Water Management

in Water Stressed Areas

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"Drought and water deficiency: from research to policy making"

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Introduction

- **Water stress** is a global problem with far-reaching socio-economic implications
- **Demand** is raising while **pollution** limits the use of resources and their availability is often **reduced** for unpredictable periods due to increasing climatic variability
- **Causes and effects** are not consistent from region to region, due to varying **climatic conditions, anthropogenic pressures** (and background conditions??)
- **Responses** have been often fragmented and based on engineering solutions (infrastructure or technology intensive)
- Stand-alone “hard” solutions applied by sector have sometimes resulted in high cost and low effectiveness, due to the lack of “soft” accompanying measures
- Failures in **water management** in many cases have been related to:
 - inappropriate assessment of multi-sectorial causes and effects
 - incorrect selection and/or integration of technical, management and institutional responses
- **There is a need to develop new integrated approaches to mitigate water stress...**



New Approaches

- A **culture change** in the European approach to water management, from centralist infrastructure dependency towards a distributed, bottom-up, adaptive integrated systems approach is urgently needed
- The **diagnosis** and **mitigation** of water stress can be only achieved by means of innovative multi-sectorial and multi-disciplinary integrated approaches
- **Responses** need to integrate advances in technology with culturally appropriate institutional, economic and social responses, across all sectors
- Involvement of **citizens and institutions** within a social learning process promoting new forms of water culture and nurturing long-term change and social adaptivity
- **Participatory** vulnerability assessment and **adaptive** planning can only ensure that research is rooted in real local problems, is linked to current plans and projects, and delivers practical guidelines for solutions and tools for their implementation



Understanding and Innovating

- **Diagnose & characterise** sources and causes of water stress and their interrelation
- **Assess & prioritise** technical, socio-economic, institutional, environmental options
- Understanding **threats and barriers** to the implementation of options and to the cultural change required in the management approach
- Select effective options leading to **collaborative integrated solutions** and optimal monitoring strategies to support long-term multi-sectorial sustainability
- **Develop** operational methods and tools for use by stakeholders and managers, to be achieved through the establishment of a participatory process
- **Transfer** results from representative case studies to other water stressed areas

THE ABOVE CAN BE ACHIEVED **ONLY** IF SUPPORTED BY

- direct real-case experience of **stakeholders** to advance scientific knowledge
- involvement of **citizens** through social-learning targeted at the promotion of long-term change and social adaptation



European vision and initiatives

- Objectives of the ERA
 - Strengthen scientific and technological capacities for:
 - implementing sustainable development
 - integrating environmental, economic and social policy objectives with regard to sustainable management of Europe's land and marine resources
 - Introduce a new level of EU wide collaboration around key socio-economic issues
 - Consolidate Europe's position as a global leader in this critical area of research
- Objectives of the FP6 Sub-Priority Area 1.1.6.3 and Topic II.3
 - Improve understanding to provide the basis for management and technological tools for water systems to mitigate the impacts of global change
 - Bring together GCE sub-priority outputs on climate change, hydrological processes, anthropogenic impacts, and water resource and risk management within a framework that will maximize citizens' involvement in developing acceptable, sustainable and improved mitigation and impacts solutions
- Objectives of the EU Water Initiative
 - Underpin and implement EU policies in respect to sustainable development, including EU global commitments made at the WSSD in Johannesburg in 2002



Relevance to present EU water policy

- Improve adaptive/responsive capacity of methods, tools and measures developed to cope with increased variability of climate change and to socio-economic drivers
- Reduce traditional fragmentation, promote knowledge integration of scientific disciplines with relevant socio-economic and environmental issues by bringing the science base closer to the technology and policy maker/user communities
- Re-orient water management and planning approaches from infrastructure intensive, specialist expert systems towards multidisciplinary approaches, using technologies in support of the higher involvement of citizens in water management
- Increase the effectiveness of existing and new innovative technologies in water limited environments (shortage/pollution) for resource management and planning
- Improve estimates of water demands and develop a European perspective on participatory, stakeholder-driven approaches to control water demand and saving



European and international dimension

- Only the active participation of unique resources (know-how, technologies, systems, datasets, models), and diverse physical and socio-economic environments (climatic, institutional and cultural situations) can ensure that the different experiences and responses to water stress are represented in the development of a comprehensive view of water stress and of robust solutions to it
- Globally robust new approaches can be developed, integrated and accessed only by bringing together a mix of experiences and expertise both from EU wide research institutions and local expertises with specific disciplinary and sectorial interests
- A critical mass of expertise from research, SME's, the public sector and NGO's to tackle the challenge of water stress is therefore crucial to reach the objectives

ALL THESE RESOURCES ARE NOT AVAILABLE IN INDIVIDUAL MEMBER STATES

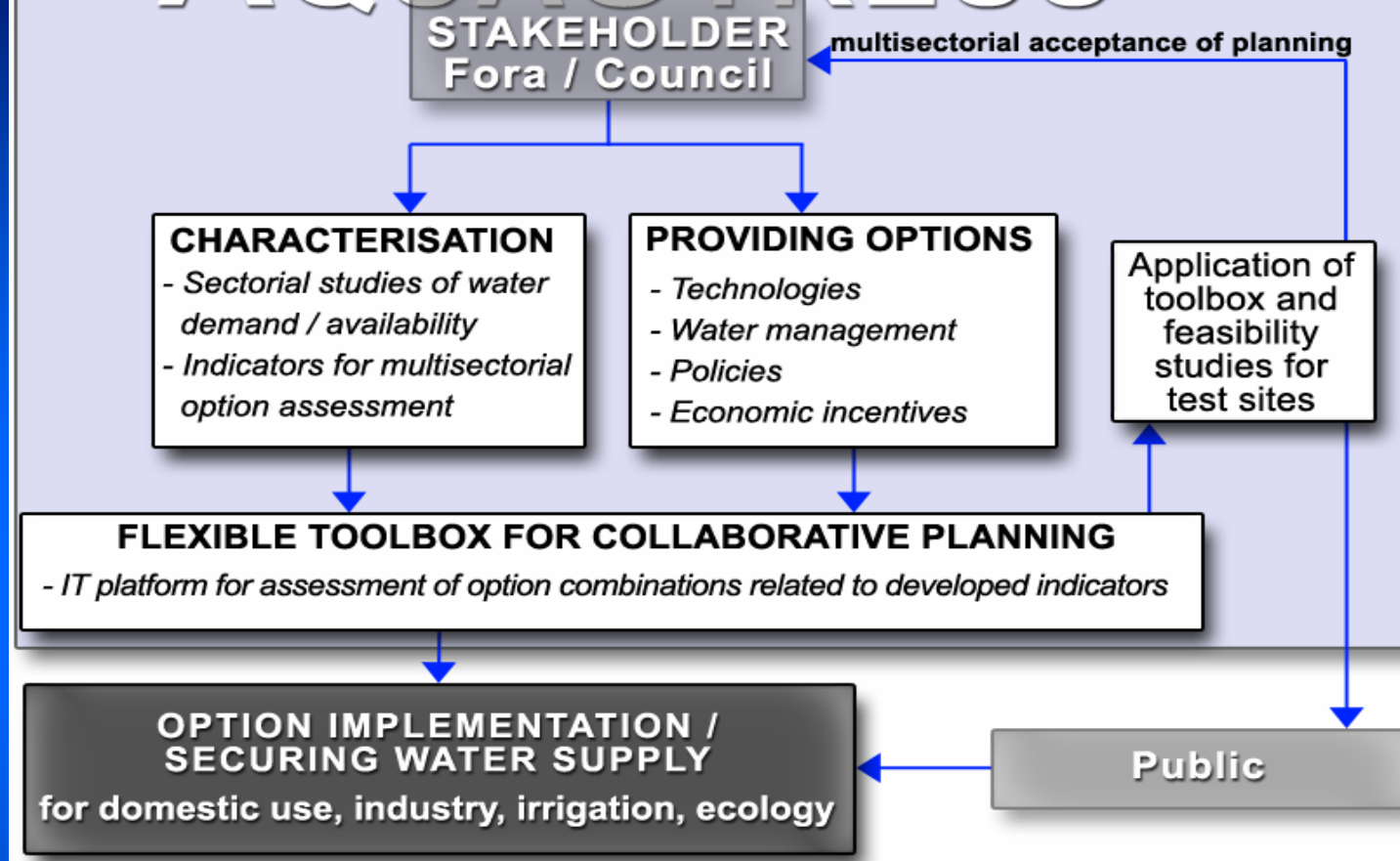


Potential socio-economic impacts

- Direct and indirect economic benefits
 - Consolidate **European leadership** in the provision of new approaches to the diagnosis and mitigation of both quantitative and qualitative aspects of water stress (objective of the Environmental Technologies Action Plan, COM(2004)38)
 - Optimise the integration of water stress mitigation technologies, expertise, methods and tools will increase the efficiency of **European industry** and the competitiveness of EU companies exporting goods & services on global markets
- Community societal objectives
 - A participatory processes based on the role of society (stakeholders, citizens, ...) will produce a fundamental culture change leading to the reformulation of our understanding of sustainability for the mitigation of water stress
 - Such culture change in water management approaches will contribute to better policymaking for sustainable economic, social and environmental development, improving water safety, and drought preparedness
 - Water stress mitigation will increase industrial security and employment



AQUASTRESS

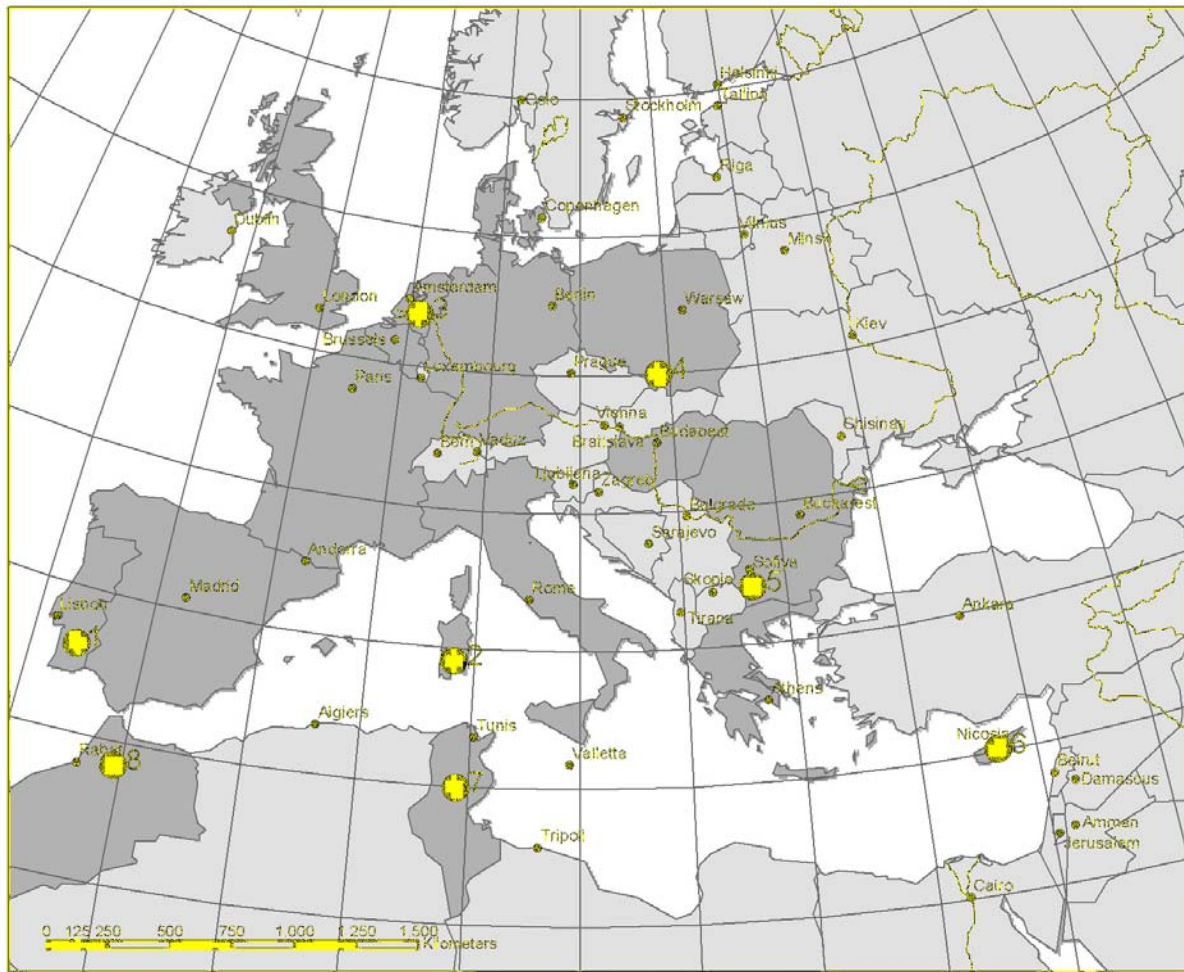


Mitigation of Water Stress through new Approaches to Integrating Management, Technical, Economic and Institutional Instruments



Grounded in a “Case Study” approach

AquaStress Test Sites

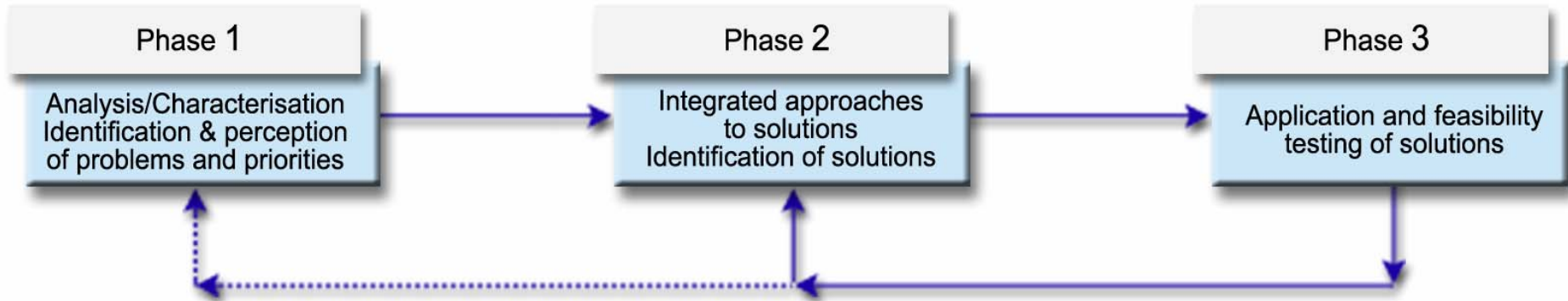


Selected Test Sites:

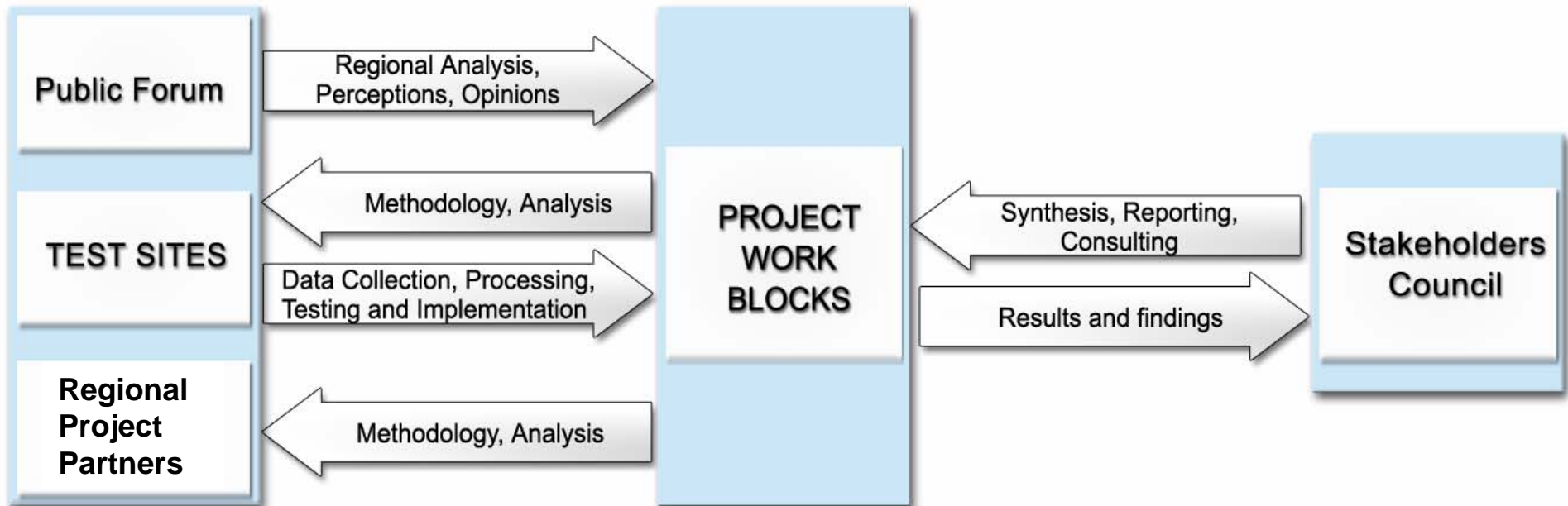
- 1 Gadiana, Portugal
- 2 Flumendosa-Mulargia, Italy
- 3 Vecht / Zwarte Water basin, The Netherlands
- 4 Przemsza, Poland
- 5 Iskar, Bulgaria
- 6 Cyprus
- 7 Merguellil valley, Tunisia
- 8 Tadla, Morocco

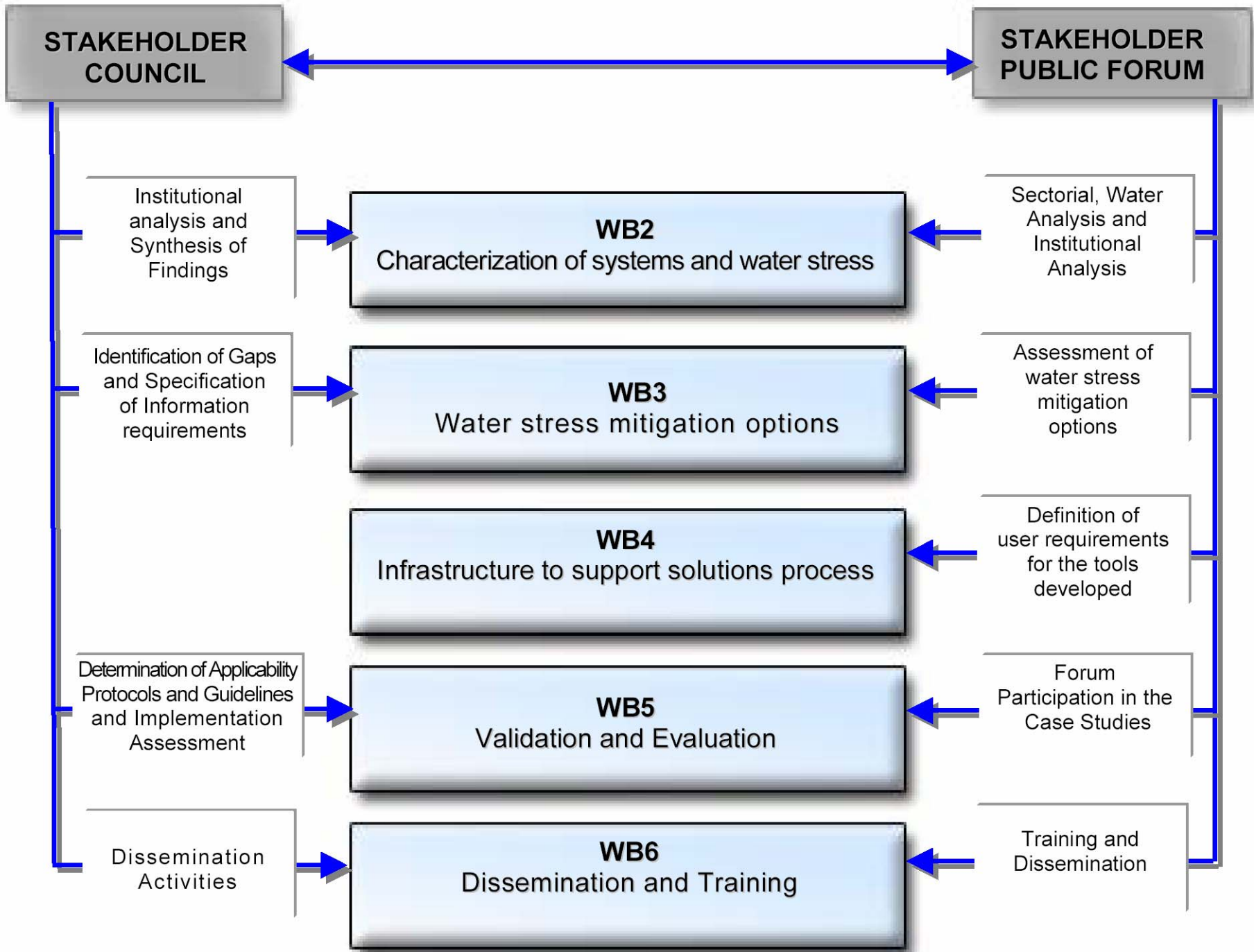


Iterative refinement of solutions



Stakeholder driven participatory decision making in water management at local and regional scales





STAKEHOLDERS

Primary Stakeholders
from Test Sites

Secondary Stakeholders
at Regional and
National levels

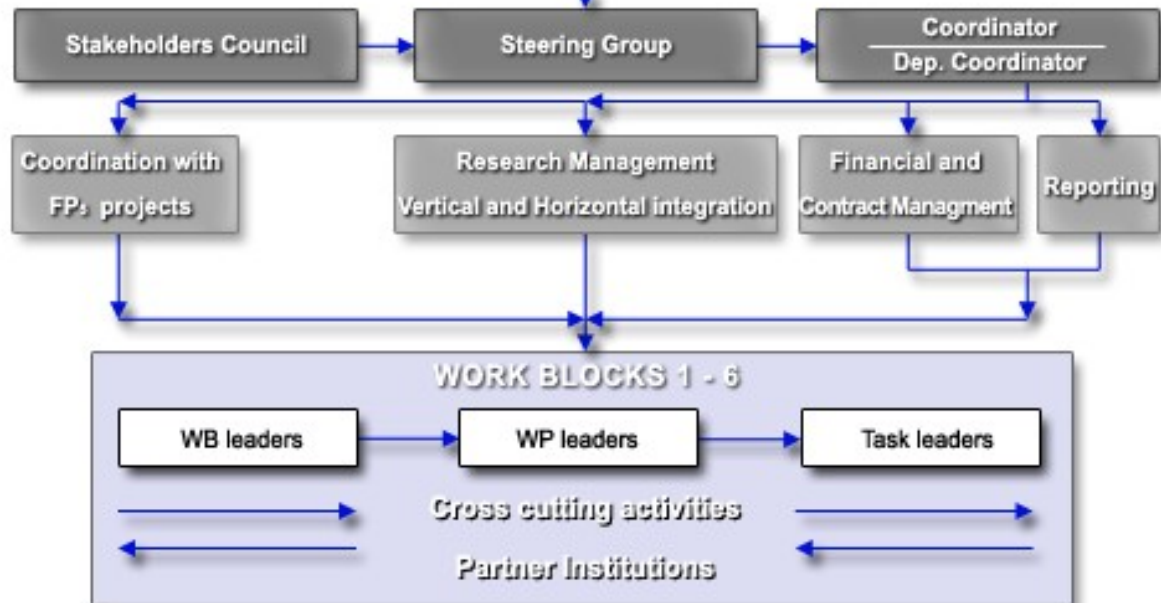
Public Stakeholders Forum

Group of stakeholders
varying according to
Project needs

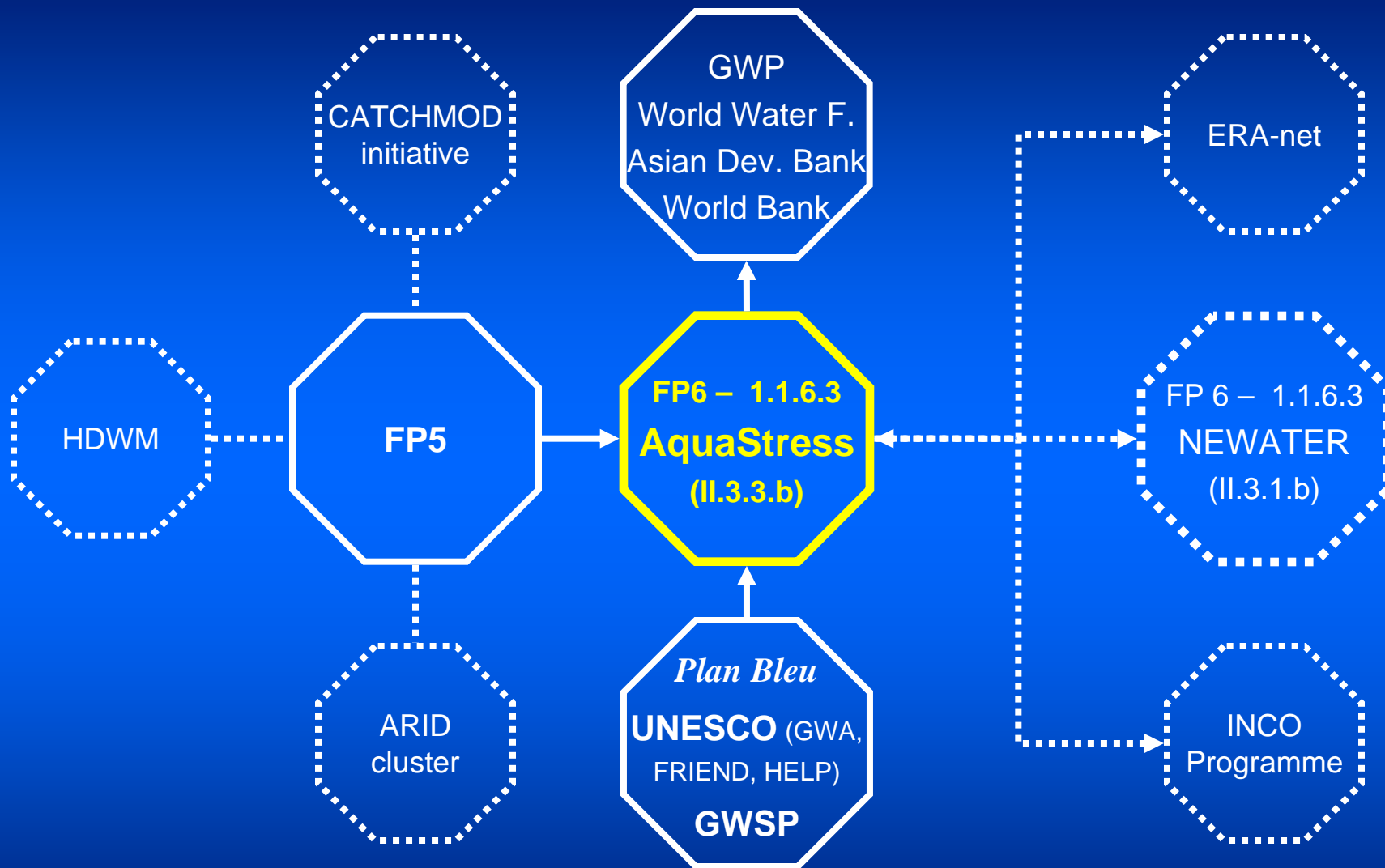
Stakeholders Council

Permanent consultants
to the Project

General Assembly of Partners



Coordination with other research activities





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Thank you for your attention!

Water Research Institute
National Research Council of Italy

