

Development of rehabilitation technologies and approaches for multipressured degraded waters and the integration of their impact in river basin management

FP7 IP SQUAREHAB

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AQUAREHAB is a EU financed large scale research project (FP7) that started May 1st 2009 with 19 project partners. The AQUAREHAB consortium will work together on the project for 56 months (2013).

Within this project, different innovative rehabilitation technologies for soil, groundwater and surface water will be developed to cope with a number of priority contaminants (nitrates, pesticides, chlorinated compounds, aromatic compounds, mixed pollutions...) within heavily degraded water systems. Methods will be developed to determine the (long-term) impact of the innovative rehabilitation technologies on the reduction of the influx of these priority pollutants towards the receptor. A connection between the innovative technologies and river basin management will be worked out.

One of the major outcomes of the project will be a generic river basin management tool that integrates multiple measures with ecological and economic impact assessments of the whole water system.

SPECIFIC PROJECT AIMS:

- Development of 5 innovative rehabilitation technologies:
 - Activated riparian zone/wetlands
 - Open trench with smart biomass containing carriers
 - Capping of sediment & stimulated biobarriers
 - Multifunctional permeable reactive barriers
 - Reactive zone with injectable Fe-based particles
- Development of methods (feasibility tests), tools (numerical models) and guidelines
 - to design rehabilitation technology
 - to determine long-term impact on local fluxes of pollutants
- Development of a collaborative management tool 'REACH-ER' to evaluate ecological and economical effects of different remedial actions on river basins
- Development of an approach to link effects of rehabilitation technologies with the river basin management tool
- Dissemination of generic approaches

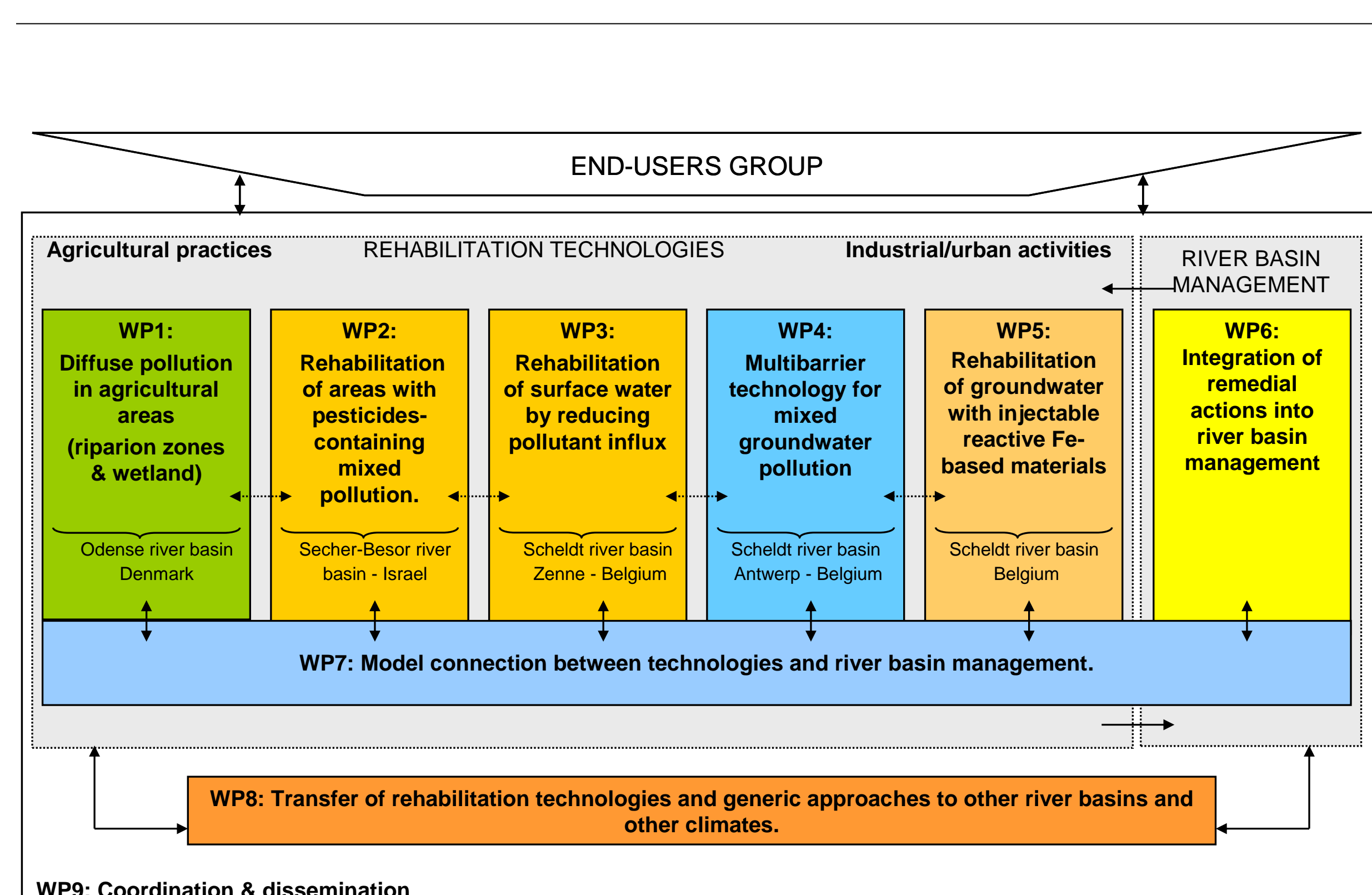


Figure 1. Schematic overview of workpackages within AQUAREHAB

INNOVATIVE REHABILITATION TECHNOLOGIES

Figure 2 gives a schematic overview of different pollutant fluxes influencing the quality status of a river basin part. The 5 innovative remediation technologies considered within AQUAREHAB to reduce contaminated fluxes are represented as cases.

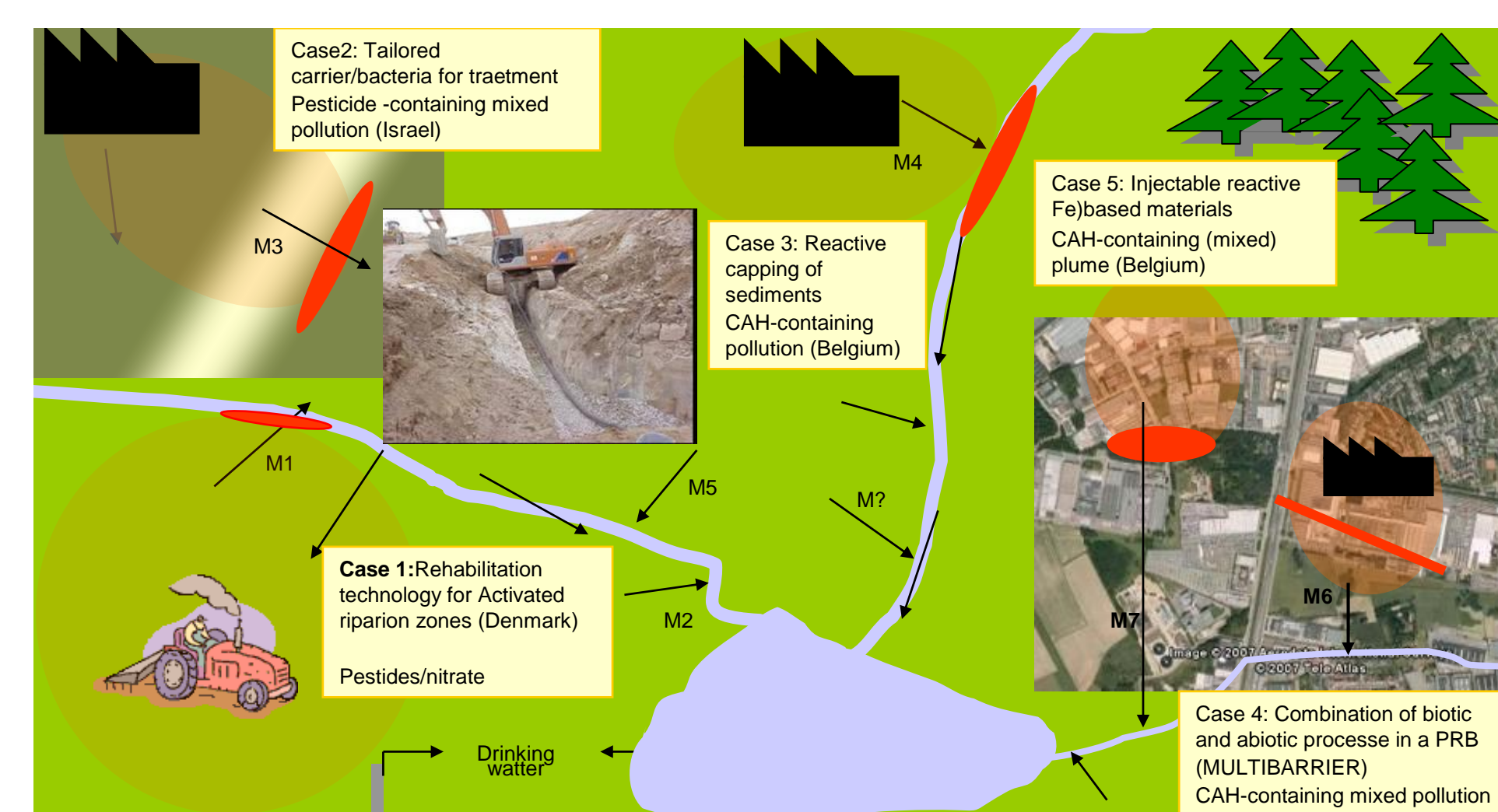


Figure 2. Five innovative remediation technologies considered within AQUAREHAB to reduce pollutant fluxes (M1, M2, ...).

INTEGRATION OF REHABILITATION TECHNOLOGIES' IMPACT IN RIVER BASIN MANAGEMENT

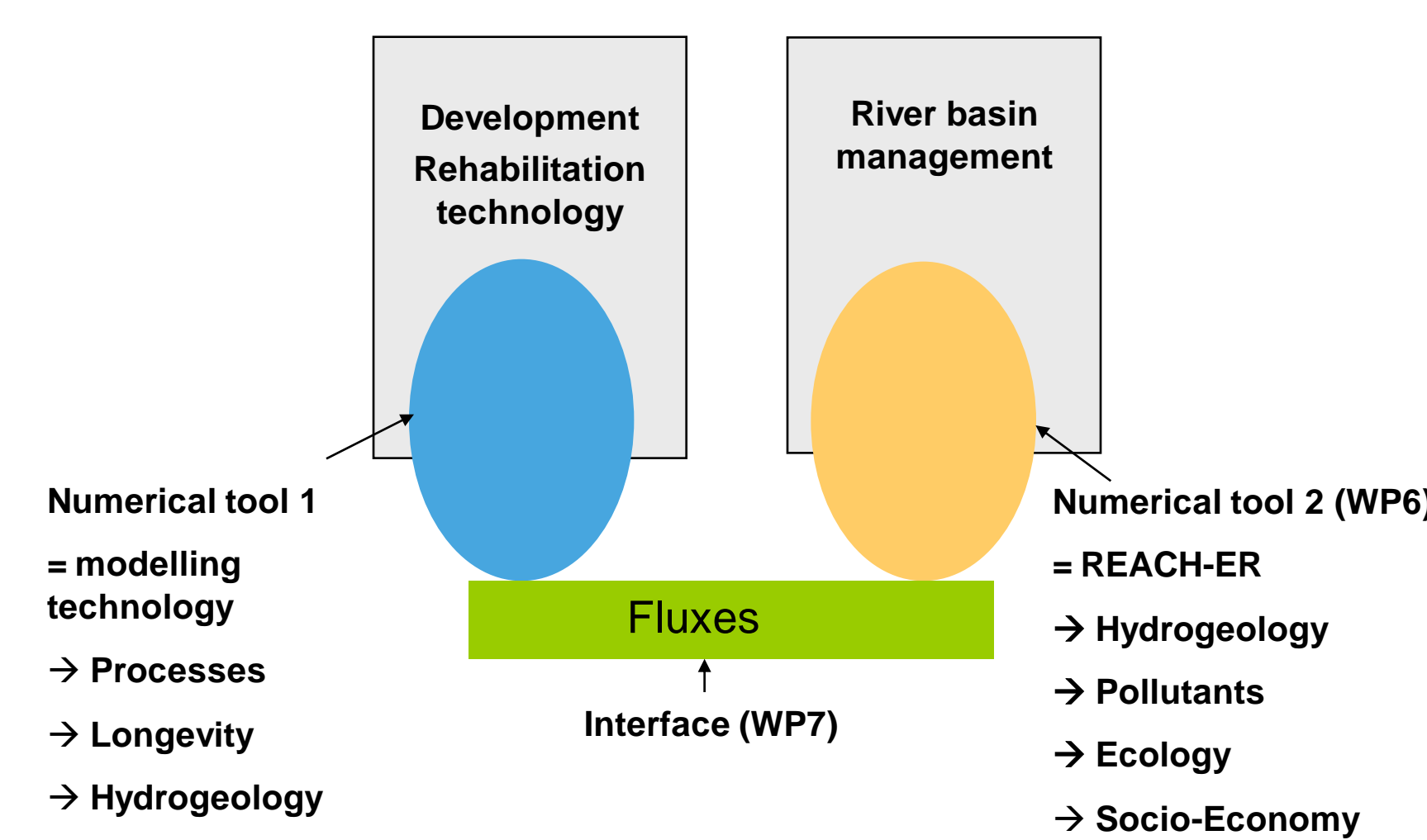


Figure 3: Approach for integration based on close collaboration between all partners, especially technology developers and modellers

RIVER BASINS CONSIDERED (fig. 4)

- Odense River basin (Denmark)
- Sechor-Besor basin (Israel)
- Scheldt River basin (Belgium)
- Additional river basins (WP8) – to be selected

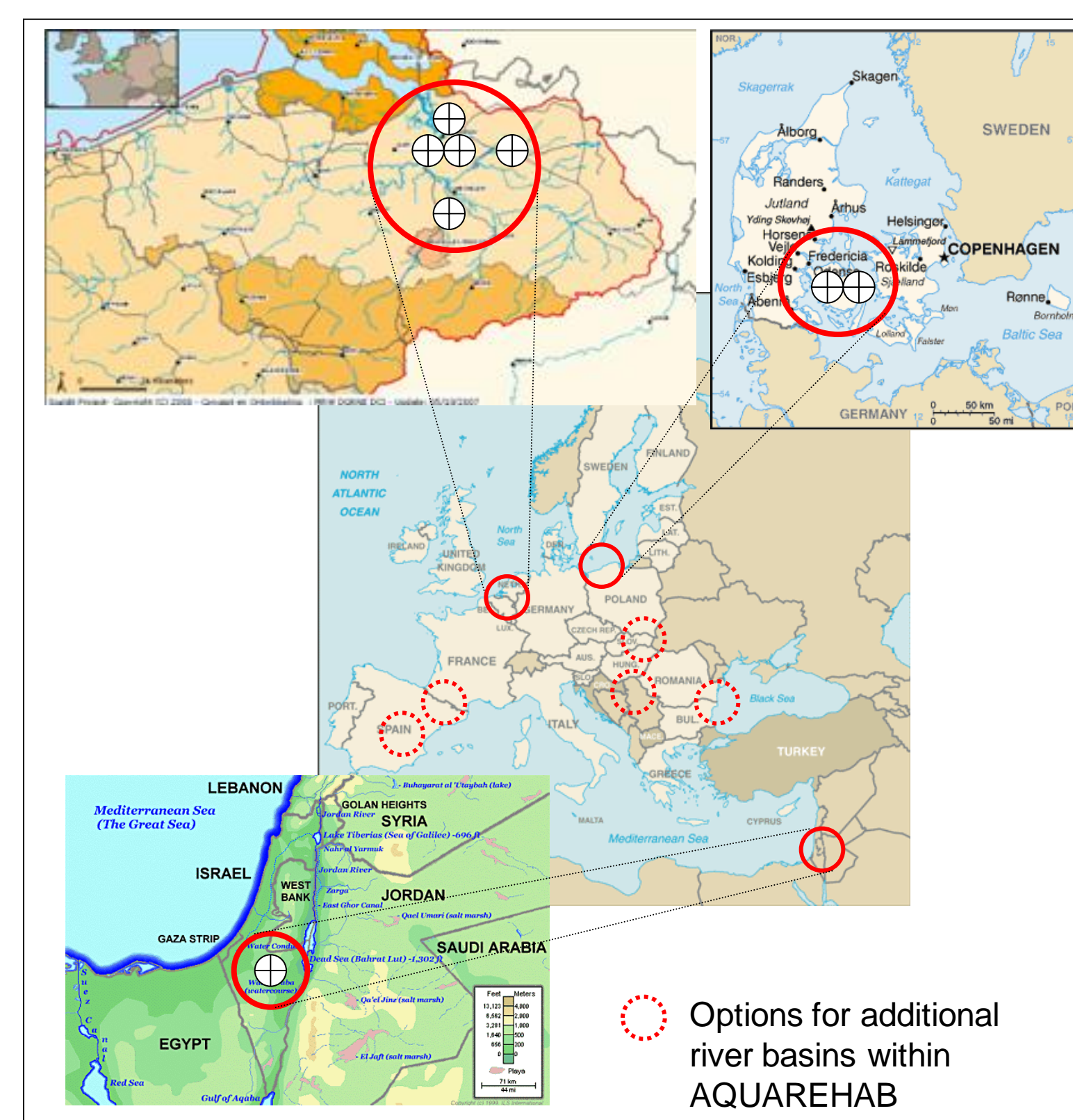


Figure 4. River basins considered within AQUAREHAB

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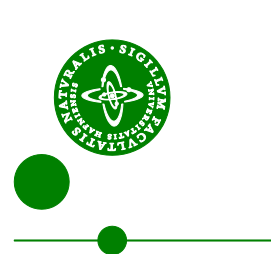
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