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European Water Policy: challenges for Hydrogeologists

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Why this workshop?

- ✓ Publication of the EU Commission's Blueprint to Safeguard Europe's Water Resources policy document introduces a new strategy to reinforce water management within the EU: tackle the obstacles!
- ✓ Groundwater evaluation requires high professional standards and hydrogeologists can offer their ability on this topic
- ✓ Policy based on WFD and GWD, but also on other linked Directives, needs to be integrated and applied in a modern perspective, based on sound technical and scientific principles and information
- ✓ "Classical" hydrogeological approach must be updated, adopting multidisciplinary methods to meet complex economical, social, environmental and policy questions
- ✓ In this framework, communicating the role and the mission of hydrogeologists to the general public, governments and stakeholders is a difficult but necessary task



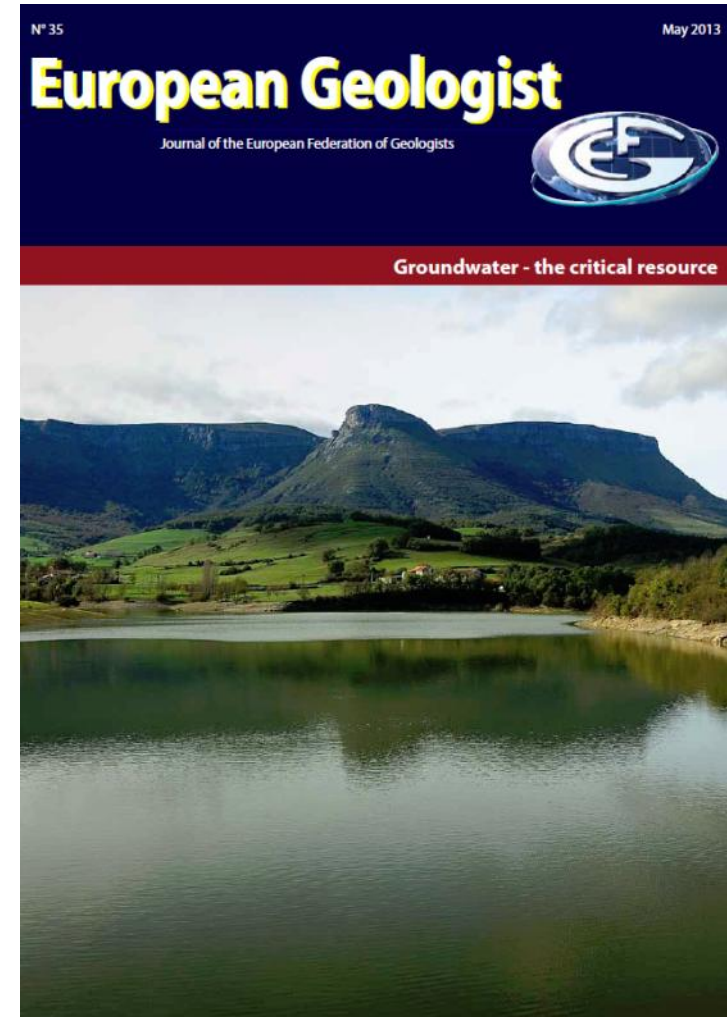
EFG Panel of Experts on Hydrogeology

Name	Country	Company/organisation
Marco Petitta	Italy	CNG, Associate professor of Hydrogeology at the Sapienza University of Roma
Dirk De Coster	Belgium	VDC Milieuadvies
Antoine Bouvier	France	Free Consultant
Christian Boissavy	France	Executive Manager
Alecos Demetriades	Greece	IGME-Institute of Geology & Mineral Exploration
Peter Szucs	Hungary	University of Miskolc, Department of Hydrogeology and Engineering Geology
Kevin Th .Cullen	Ireland	Environmental geology and hydrogeology
Carlo E. Bravi	Italy	Geologi Senza Frontiere, Idromin s.r.l.
Umberto Puppini	Italy	ESI Italia, sat srl
José Martins Carvalho	Portugal	APG
Vladimir A. Baron	Russia	All-Russian Research Institute of Hydrogeology and Engi-neering Geology (VSEGINGEO)
Snezana Komatina Petrovic	Serbia	Geophysical Institute, NIS-Naftagas
Miomir Komatina	Serbia	Geoinstitute
Peter Malik	Slovakia	Slovakian Geological Survey
Carlos Martínez	Spain	IGME
Clive Carpenter	U.K.	GWP Consultants



Contribution of EFG PE on Hydrogeology

- ✓ Participation to the CIS WG-C Groundwater
- ✓ Periodical e-meetings to discuss news and actions for professional hydrogeologists
- ✓ Special issue of the EFG European Geologists Magazine, May 2013
- ✓ Organization of this workshop



The “hidden” resource

- ✓ Groundwater *vs.* Surface water
or Groundwater *&* Surface water?
- ✓ River Basin Management Plans fundamental for
analysis, planning and measures
- ✓ difficult identification and characterization of
groundwater bodies (storage, renewal rates,
ecological status, 3D approach)
- ✓ baseflow of surface waters is guaranteed by
groundwater: the only flow on dry seasons
- ✓ groundwater study requires professional skills

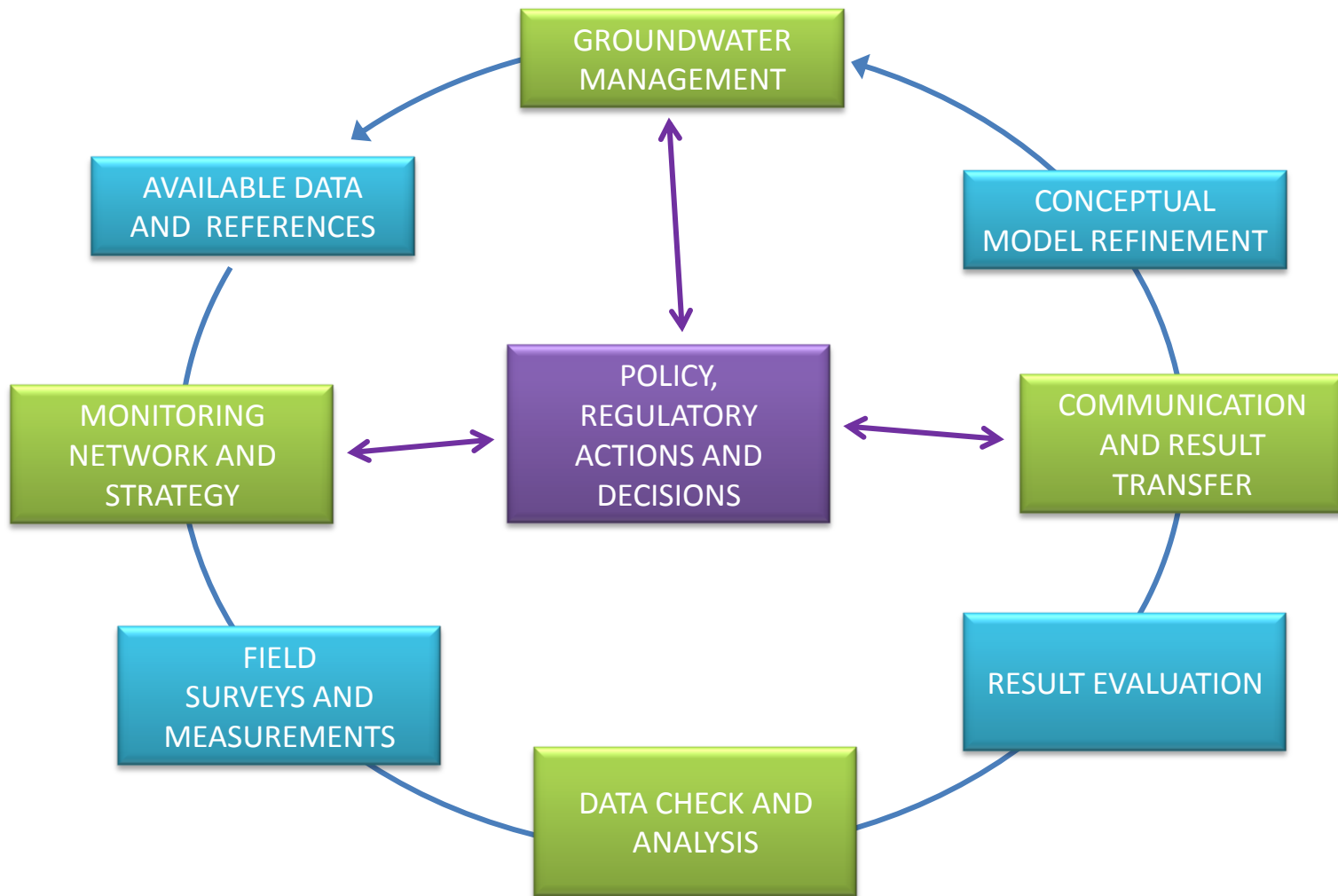


The classic role of hydrogeology

- ✓ groundwater quantity and quality evaluation
- ✓ renewable resources evaluation
- ✓ interdisciplinary approach (geosciences)
- ✓ field monitoring
- ✓ integrated water resources management
- ✓ simulation by mathematical models
- ✓ surface/groundwater interaction
- ✓ background and basic knowledge to be continuously implemented



Groundwater studies: a conceptual model



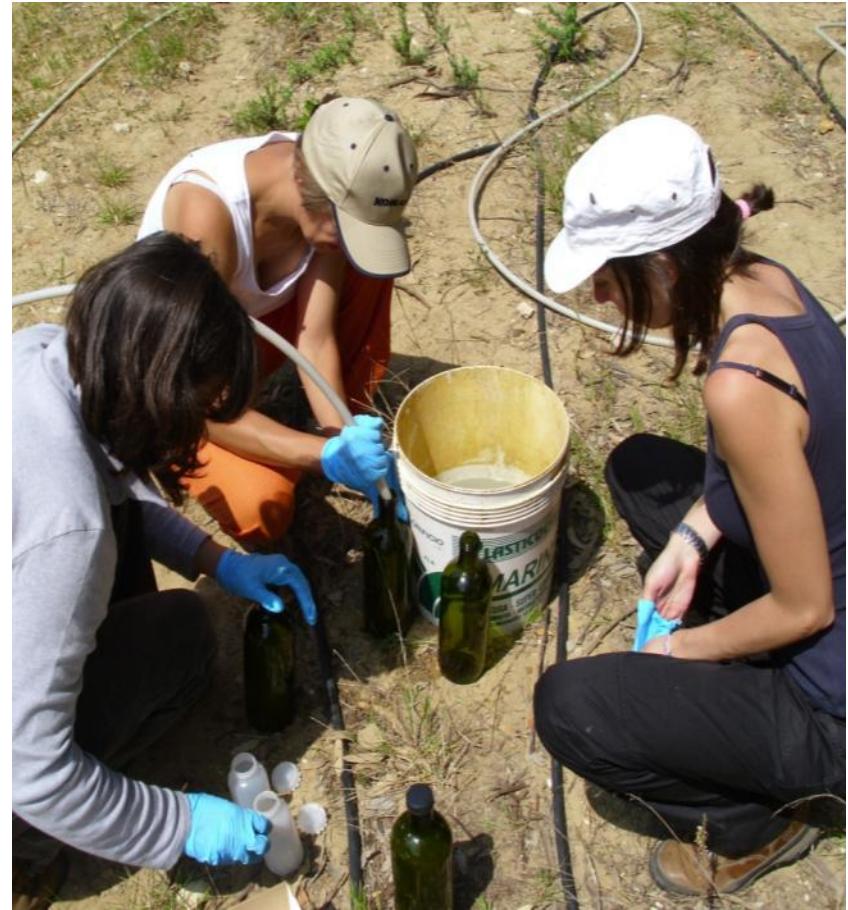
Towards a modern approach

- ✓ over-abstractions, climate changes and strategic resources
- ✓ non-point and point source pollutants: prevention measures and remediation activities
- ✓ integrated uses and re-use of water (energy)
- ✓ vulnerability as a planning tool (from investigation to decisions)
- ✓ e-flows to be accounted for (GDE: groundwater dependent ecosystems)
- ✓ multiscale approach
- ✓ multidisciplinary approach (not only engineering and economic, but chemical, biological, ecological contributions)



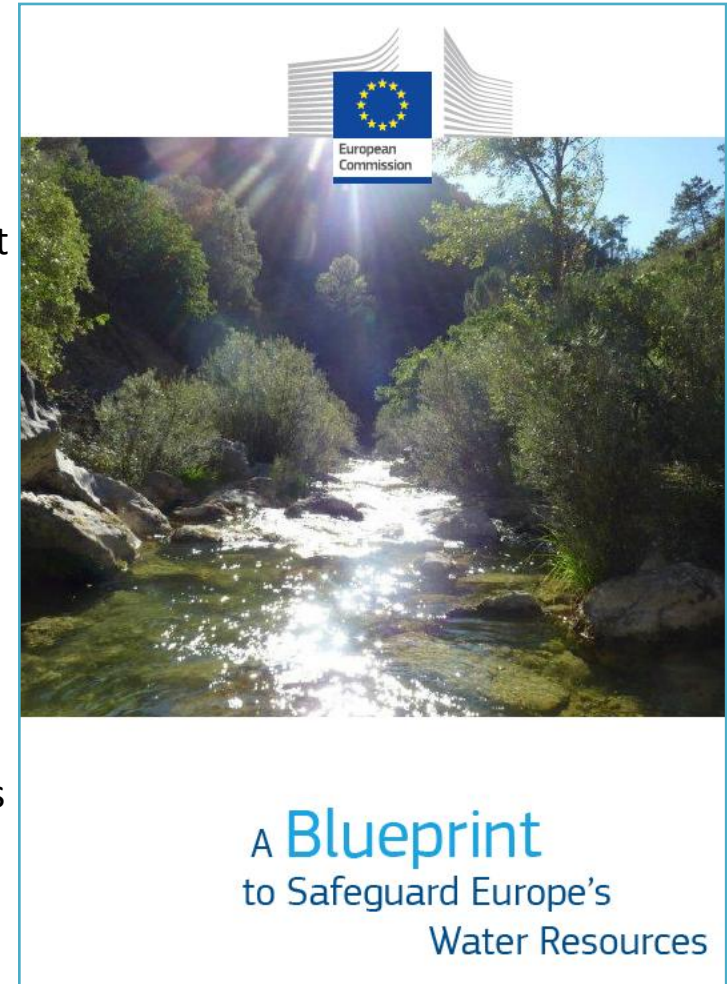
Hydrogeological tools to be adopted

- ✓ quantity and quality monitoring: sampling standard procedures and network strategy (multilevel sampling for vertical heterogeneity)
- ✓ mathematical models: simulation and prevision of impact of human activity, but also a management tool
- ✓ validation of the conceptual model by independent data (as geochemical, geophysical, etc): confidence to be evaluated



New challenges: the policy point of view

- ✓ **Blueprint: tackle the obstacles!**
- ✓ addressing water pollution: occurrence and fate
- ✓ increasing water efficiency and resilience
- ✓ improving governance of water resources management
- ✓ natural water retention measures
- ✓ evaluation of ecological flow
- ✓ reduction of over-abstraction
- ✓ monitoring of pollutants
- ✓ water accounts at basin scale
- ✓ drinking water protection zones in RBMPs
- ✓ standard methodology and procedures
- ✓ ensure high and equal level of protection
- ✓ comparability of the assessment of GW chemical status
- ✓ trend and trend reversal assessment
- ✓ base decision-making on sufficient, correct, robust and transparent information, correct interpretation and comparability of reported results

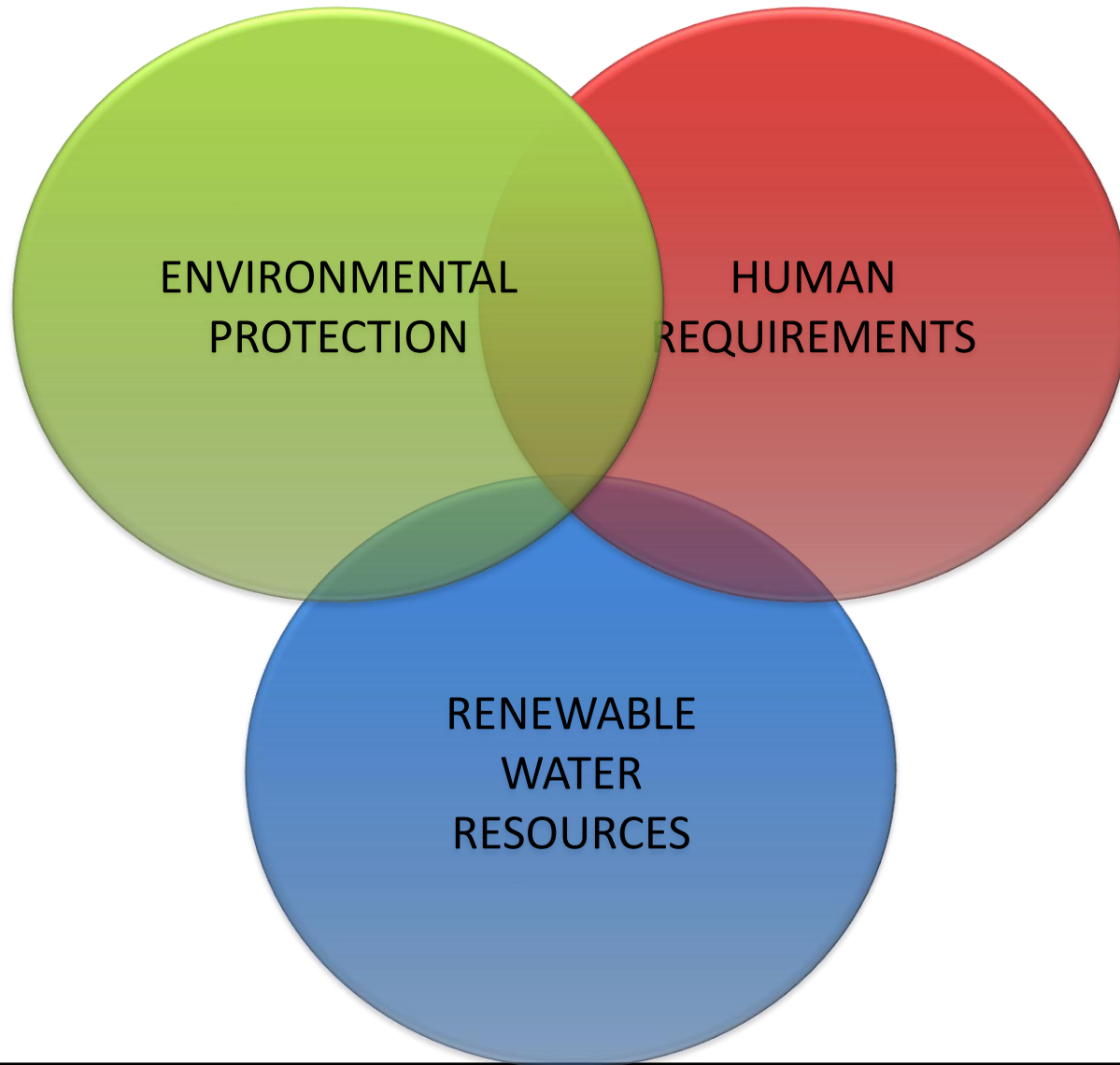


New challenges: the technical point of view

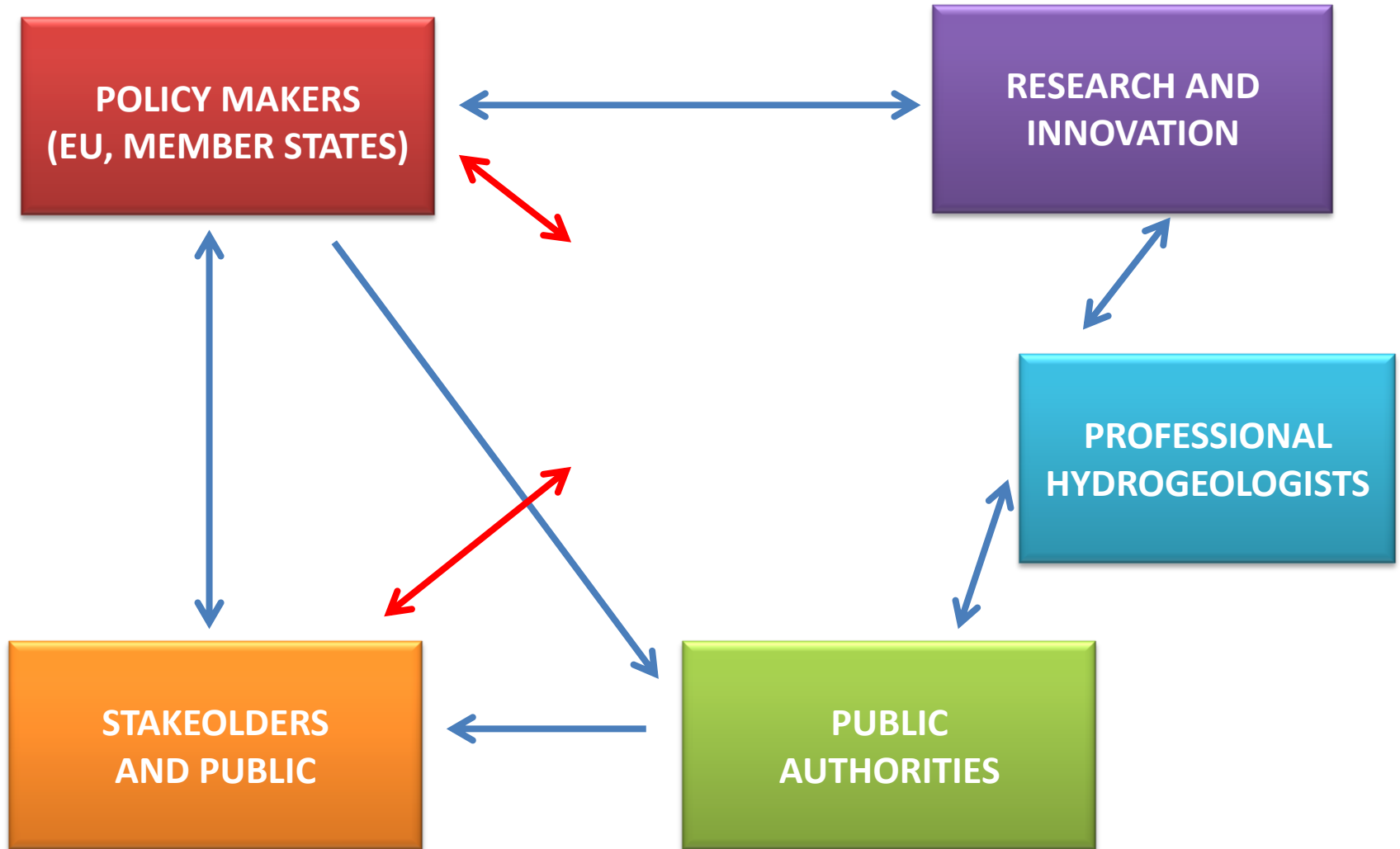
- ✓ drought occurrences/land use planning
- ✓ climate change and induced impacts
- ✓ solutions for socially unstable conditions/locations (NYMB problem)
- ✓ contribution for developing countries
- ✓ economical and social evaluations (risk-based approach and/or vulnerability approach)
- ✓ energy from water
- ✓ emerging contaminants
- ✓ ecological flows: role of groundwater
- ✓ standard methodology and procedures
- ✓ quality standards, threshold values and natural background levels
- ✓ multilevel monitoring and investigations (point and non point source of pollution)
- ✓ **EFG can provide professional training**



Looking for sustainability



Interaction of different subjects



Perspectives and further steps

Problems/Requirements for policy actions	Contributions/Solutions from hydrogeologists
Evaluation of e-flow	SW/GW interaction monitoring
Chemical status	Role of point-source and emerging contaminants
Characterization of GW bodies	Multilevel monitoring
Monitoring strategy and network	Upscaling and downscaling approach
High and equal level of protection	Vulnerability preliminary evaluation
Impact of human actions/climate change	Mathematical and conceptual models
Trends and natural background	Water-rock interaction, water ages

To be continued

