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Towards a less stringent groundwater body objective? Feedback from a French heavily industrial and urban study area

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Groundwater Directive 2006/118/EC (Daughter to Water Framework Directive 2000/60/EC) establishes specific measures in order to prevent and control groundwater pollution. It specifically requires to assess plumes originating from punctual sources such as those due to industrial activities, in order to check if they do not spread and degrade the chemical state of the groundwater bodies. In 2012-2013, BRGM (French Geological Survey) supported by the AERMC (Water Agency on the Mediterranean Rhone River basin) carried out a study to assess the impact of industrial activities on the quality of groundwater bodies in the Rhône river basin. It enables to identify 10 groundwater bodies which were at risk of not reaching the groundwater environmental quality target set by the French application of the Groundwater Framework Directive. Some of these groundwater bodies impacted by persistent and widely spread contaminants such as chlorinated solvents are very unlikely to recover groundwater quality standard by 2027. In this context, AERMC and the BRGM initiated an innovative project in order to define a methodological framework to justify for an exemption of the current groundwater quality objectives and the possibility to propose a less stringent groundwater objective.

The methodology was developed for a French groundwater body severely impacted by anthropogenic contaminants (chlorinated solvents and pesticides) where urban and industrial pressures are significant. The study included four phases:

- 1) *Detailed description of the quantitative and qualitative hydrogeology of the study area*; This step enabled to a) make the inventory of substances concerned by GWFD and for which an exemption case can be developed, b) describe the understanding of the hydrogeological functioning of the zone (flow direction, interface groundwater and surface waters), c) identify the substances for which a significant impact on groundwater quality was observed, d) identify and describe sources zones and finally e) give recommendation on groundwater monitoring.
- 2) *Inventory of remedial actions (including costs) and definition of scenario*; This steps aimed at a) making an inventory of current remedial actions, b) suggesting other potential remedial actions for development of scenario and c) development of scenario aiming at analyzing the situation from various perspectives and on which assessment methods were applied.
- 3) *Application of assessment tools for the justifications for exemption*; Notably, two main methods were applied here: a) Assessment of actors payment capacity and b)

cost-benefits analyse (including a full inventory of benefits originating from the current and a good status groundwater body).

- 4) Definition of a less stringent groundwater quality objectives; this steps is planned in near-future.

This project gives great methodological feedback on technical, regulatory and governance aspects. Regarding technical aspects, among others, data availability and study boundaries were discussed. As for regulation, the stand points differences between contaminated land management and French declination of the groundwater directive requirements were tackled. At last but not least, the governance of the project involved many types of stakeholders with whom a common vision was attempted to be developed throughout the running of the project.