



## Combined oxidation technologies and MAR - Transferability and applicability for water reuse (Phase 1)

### Context

The demand for water with reliable quality and availability is increasing worldwide, driven by population growth and ongoing industrialization with threats of water scarcity due to climate change. One possible solution to overcome these challenges is the reuse of treated wastewater.

Within the proposed project OXIMAR 1 the potential of “oxidation & managed aquifer recharge (MAR)” for the reuse of treated wastewater will be evaluated. The precursor-projects OXIRED 1+2 proved the suitability of this combination for the removal of dissolved organic matter (DOC) and trace organics in trials with ozonation and simulated subsurface passage.

OXIMAR 1 will review the potential for oxidation & MAR compared to other processes (e.g. reverse osmosis) in dependence of the reuse purpose. To facilitate the implementation of full scale applications, the hydrogeological prerequisites will also be defined. Finally, possible barriers for implementation (e.g. water authorities, cultural/religious constraints) will be evaluated.

### Aim

Identify the future demands for combined techniques, the regions with reuse needs and the potential barriers for implementation.

### Work packages

- 1) Conceptual analyses on the relevant scheme for a given reuse application
- 2) Potentials of the identified reuse schemes

These findings will support the proposal for a second phase, which shall establish a test protocol to predict the achievable water quality via oxidation & MAR, and include detailed modelling and risk assessment studies. Both the risk assessment and modelling results can be used to facilitate the discussion with the water authorities for the implementation of field and full scale applications.



*Pilot scale wetlands supplied by treated wastewater in Berlin*



*Pilot ozonation unit in Berlin*

Duration (Phase 1): 01.11.2011-30.06.2013    Project Volume (Phase 1): 146,988 €

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