

Global inventory of managed aquifer recharge (MAR) schemes

What is managed aquifer recharge

Managed aquifer recharge (MAR) represents a viable instrument for sustainable management of water resources aimed at human-induced augmentation of groundwater reservoirs. Over the past decades, MAR attracted the interest of water service operators, researchers, but also of policy-makers and authorities due to its obvious ecological and economical benefits. The wide range of technical methods available makes MAR a very attractive solution for regions exposed to various climatic conditions. MAR was successfully implemented worldwide for reaching different goals: maximize natural storage, water quality management, physical aquifer treatment, management of water distribution systems and ecological benefits.

About the global MAR inventory

Since many of these existing MAR schemes offer excellent best-practice examples that can be very useful for planning and implementation of new projects, the purpose of the present study is to promote MAR applications worldwide through a dedicated webGIS platform. About 1200 case studies from over 50 countries from Europe, Asia, Africa, North and South America, and Oceania were collected, analyzed and compiled in the first global inventory of MAR schemes. The resulting MAR inventory does not claim 100 percent coverage of all MAR applications worldwide. Nevertheless, several deviations and similarities can be observed in terms of motivation for MAR implementation (driven mostly by different climatic and socio-economic conditions and measured in number of sites available per region and quality of the data reported), but also in terms of type of influent water source, method selected and, the most important, the project objectives and final use of reclaimed water.

Web-based dissemination

To increase its availability and facilitate continuous update, the global MAR inventory is made available free of charge on a web-based GIS platform that can be accessed at the following address: <https://ggis.un-igrac.org/ggis-viewer/viewer/globalmar/public/default>. In the first stage (November 2015), the inventory contains only the site name, coordinates, MAR type and the reference. In the next stages (over the next several months), the web-based platform will include further layers such as the year when the MAR scheme went into operation, the source of infiltration water, the final use of reclaimed water, as well as the main objectives of the project.

Contact

The global MAR inventory is the result of a team of researchers from several European institutions. All case studies (except from Europe) were collected by a team at Technische Universität Dresden within the framework of the BMBF-funded project INOWAS ("Innovative web-based decision support system for water sustainability under a clanging climate"). The European case studies were collected and analysed by a consortium of researchers from Germany, Netherland and Spain within the framework of the EU-funded project DEMEAU ("Demonstration of promising technologies to address emerging pollutants in water and waste water"). The visualisation of the MAR inventory on the GIS-based portal is provided by the International Groundwater Resource Assessment Centre (IGRAC) while the whole project is supervised by the IAH-MAR Commission of the International Association of Hydrogeologists.

Any remarks or suggestions regarding the MAR inventory can be sent to the following addresses:

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Disclaimer: the data included in the present MAR inventory was collected from third-party references and is presented "as it is". The responsibility for data accuracy belongs to the original authors, as stated in the list of references. Any possible errors and suggestions, including the addition of further case studies, can be sent to the addresses mentioned above.