

## Decision Support Tool for Water Re-used Systems

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**Abstract :** The water shortage becomes a serious problem not only in African and Middle Eastern countries, but also recently in the European Union. Scarcity of water means that not all agricultural, industrial and municipal needs will be met. When the annual availability of renewable freshwater per capita is less than 1,700 cubic meters, countries begin to experience periodic or regular water shortages. The phenomenon of water stress is the result of an imbalance between the constantly growing demand for water and its availability. The constant development of industry, population growth, and climate changes make the situation even worse. The search for alternative water sources and independent supplies is becoming a priority for many countries. Data enabling the assessment of country's condition regarding water resources, water consumption, water price, wastewater volume, forecasted climate changes e.g. temperature, precipitation, are scattered and their interpretation by common entrepreneurs may be difficult. For this purpose, a digital tool has been developed to support decisions related to the implementation of water and wastewater re-use systems, as a result of an international research project "Framework for organizational decision-making process in water reuse for smart cities" (SMART-WaterDomain) funded under the EIG-CONCERT Japan call on Smart Water Management for Sustainable Society. The developed geo-visualization tool graphically presents, among others, data about the capacity of wastewater treatment plants and the volume of water demand in the private and public sectors for Poland, Germany, and the Czech Republic. It is expected that such a platform, extended with economical water management data and climate forecasts (temperature, precipitation), will allow in the future independent investigation and assessment of water use rate and wastewater production on the local and regional scale. The tool is a great opportunity for small business owners, entrepreneurs, farmers, local authorities, and common users to analyze the impact of climate change on the availability of water in the regions of their business activities. Acknowledgments: The authors acknowledge the support of the Project Organisational Decision Making in Water Reuse for Smart Cities (SMART- WaterDomain), funded by The National Centre for Research and Development and supported by the EIG-Concert Japan.

**Keywords :** circular economy, digital tool, geo-visualization, wastewater re-use

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