

DWA Topics

Non-Potable Water Reuse

Development, Technologies and International Framework for
Agricultural, Urban and Industrial Uses

June 2019



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The German Association for Water, Wastewater and Waste (DWA) is strongly committed to the development of secure and sustainable water and waste management. As a politically and economically independent organisation it is professionally active in the field of water management, wastewater, waste and soil protection.

In Europe DWA is the association with the largest number of members within this field. Therefore it takes on a unique position in connection with professional competence regarding standardisation, professional training and information. The approximately 14,000 members represent specialists and executives from municipalities, universities, engineering offices, authorities and companies.

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Foreword

The DWA Working Group BIZ-11.4 “Water Reuse” was established in 2005 with the objective to provide interdisciplinary expertise in the field of water reuse. In 2008, the first edition of “DWA Topics: Treatment Steps for Water Reuse” was published, including at its core an assessment matrix intended to help planners with the selection of suitable treatment processes for non-potable water reuse.

This second edition of “DWA Topics: Non-Potable Water Reuse – Development, Technologies and International Framework Conditions for Agricultural, Urban and Industrial Uses” has been revised and extended by further aspects related to the development and implementation of water reuse projects going beyond a technical point of view. It is intended to provide general guidance for water utilities, consulting engineers and regulatory agencies in planning and expanding non-potable water reuse. A set of case studies from different countries reflecting a wide range of water reuse schemes has been included to emphasize the relevance of specific issues in terms of non-potable water reuse.

“DWA Topics: Non-Potable Water Reuse – Development, Technologies and International Framework Conditions for Agricultural, Urban and Industrial Uses” focuses on reuse of reclaimed water produced from municipal wastewater by centralized or decentralized treatment facilities. Municipal wastewater often contains industrial wastewater fractions; however, this report does not consider the reuse of wastewater originating exclusively from industrial sources, but options for industrial reuse of reclaimed municipal wastewater. Nevertheless, the principles of non-potable water reuse described in this report may be adapted to the use of water from other sources than municipal wastewater (e.g., run-off from streets).

The separation of domestic wastewater into different fractions (e.g., greywater and blackwater) by alternative sanitation concepts is not specifically considered within the scope of this report. Detailed information on opportunities and implementation of alternative sanitation systems as well as reuse of greywater can be found in the following publications from the DWA Set of Rules:

- DWA-A 272E (2019): Principles for the Implementation of New Alternative Sanitation Systems (NASS)
- DWA-M 277E (2019): Information on Design of Systems for the Treatment and Reuse of Greywater and Greywater Partial Flows

The DWA Set of Rules provides a wide range of detailed information with regard to the design, implementation and operation of state-of-the-art technologies. Apart from various technical publications covering diverse wastewater treatment processes, readers are especially referred to the following publications within the context of water reuse:

- DWA (2018): DWA Topics: Design of Wastewater Treatment Plants in Warm and Cold Climates
- DWA-M 590 (2017): Wasserwirtschaftliche Bewertung zur Entnahme von Wasser zur Bewässerung (Evaluation of Water Abstraction for Irrigation; draft, in German)

The report “DWA Topics: Non-Potable Water Reuse” results from the honorary work of the DWA Working Group BIZ-11.4. It is explicitly not part of the DWA Set of Rules. The assessment matrix included in the annex has been prepared from today’s point of view without claiming to be exhaustive; it is rather intended for further development. Therefore, the DWA Working Group BIZ-11.4 is grateful for any contribution.

The assessment matrix included in this report is available as Excel file on the following DWA website: www.dwa.de/water-reuse. The user will be able to edit and adapt the tables to his/her requirements. Additional comprehensive training material on non-potable water reuse can be requested via the contact provided on this DWA website.

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