



Dr. Thomas Track

WavE Transfer Forum

Increasing water availability by the reuse of treated municipal wastewater
- Solutions for current and future challenges

December 8th, 2021

- Welcome

Moderation:

- Dr. Thomas Track, *DECHEMA e.V., Frankfurt am Main*

Panelists:

- Prof. Jörg Drewes, Technical University of Munich
- Prof. Thomas Dockhorn, Technical University of Braunschweig
- Kerstin Krömer, Oldenburg Ostfriesischer Wasserverband (OOWV)
- Pedro Simón, ESAMUR - La Entidad Regional de Saneamiento y Depuración de Aguas Residuales
- Edgar Firmenich, former KfW Bankengruppe

- Introduction
 - BMBF funding measure WavE: Future-oriented Technologies and Concepts to Increase Water Availability by Water Reuse and Desalination
 - Challenges for different sectors with increasing water reuse
- Impulses on "Solutions and application perspectives for the water reuse of treated municipal wastewater"
- Discussion forum with panel and participants
- Summary and closing



DECHEMA FOCAL TOPIC

WATER MANAGEMENT

- › Optimization of water use in industrial processes
- › Reduced dependence on fresh water resources
- › Cost-efficient waste water treatment and minimization of waste streams
- › Industrial water 4.0 – digitization in industrial water management
- › Boost innovations at the interface between the process industries and water management



More information at:
www.dechema.de/watermanagement

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DECHEMA

Gesellschaft für Chemische Technik
und Biotechnologie e.V.

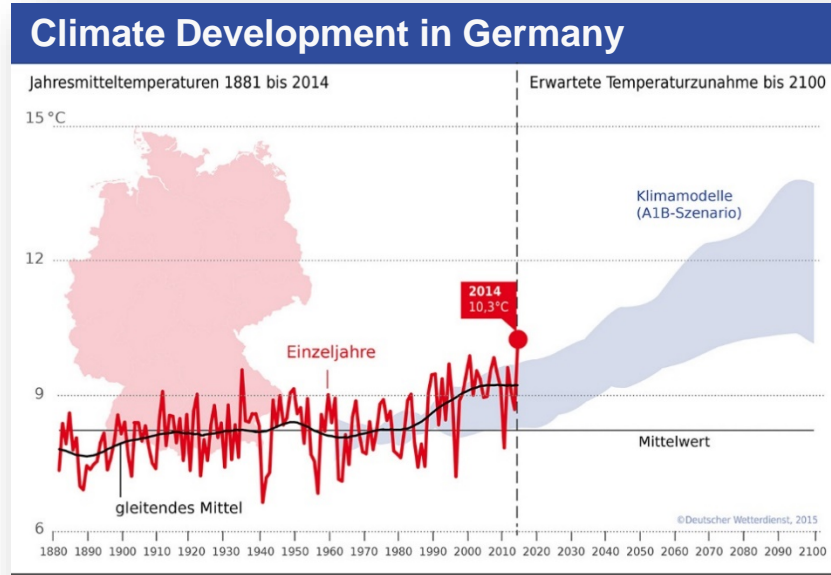
Introduction:

BMBF funding measure WavE:

Future-oriented Technologies and Concepts to Increase
Water Availability by Water Reuse and Desalination

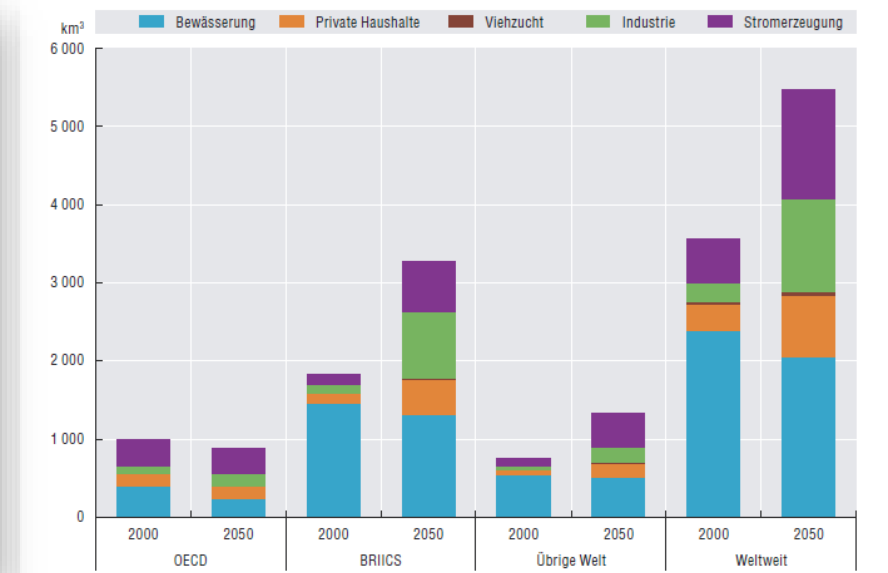
Challenges

Climate development



Source: DWD 2015

Increasing water demand



Source: OECD 2012: <http://www.oecd.org/env/indicators-modelling-outlooks/49889636.pdf>

→ Global increasing water stress

Challenges

- Global water stress by usage competition
- Also an issue for Germany: quantity & quality



Increasing demand for innovative technologies and concepts for water reuse and desalination



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Education and Research

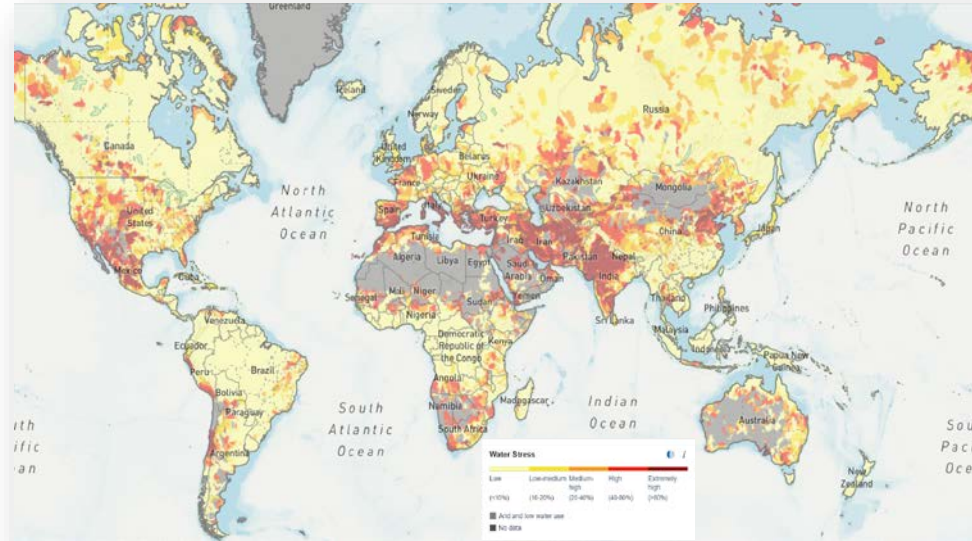
WavE

WATER. REUSE. DESALINATION.

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<https://www.wri.org/applications/aqueduct/water-risk-atlas/>

BMBF funding measure WavE

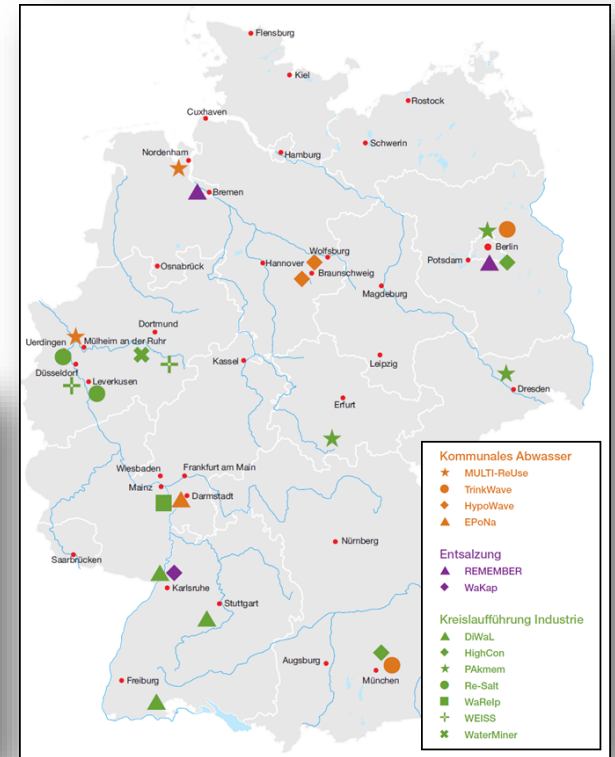
Frame

- Total funding volume 32 Mio. €
- 13 joint research projects, 82 supported partners
- 1 scientific support action
- Duration: III/2016 – II/2020

international



national



Aims

- Increase water availability
- Decrease dependency of fresh water resources
- Reduce usage conflicts
- Contribute to sustainable development



Strategy

- Innovative technologies and management concepts:
 - Development and demonstration
 - References and preparation for the transfer into practice



Topic Areas

- Water reuse by utilizing treated municipal wastewater
- Reuse of industrial water
- Desalination of ground and surface water



WavE Cross Cutting Topics

- Risk management in water reuse
- Salts and Residuals
- Technologies and Processes



WavE - Perspectives for the application

Water reuse by utilizing treated municipal wastewater

Technologies and management concepts

flexible process chains: different water qualities and quantities from treated municipal wastewater for variable applications

Multibarrier treatment processes: Water reuse based on sequential aquifer recharge

Solutions for agriculture

Hydroponic systems: process engineering solutions for the use of treated municipal wastewater

Integrated system solution: generation of irrigation water via wastewater ponds



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Bundesministerium
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und Forschung

KONTAKT | ENGLISH

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Willkommen beim Innovationsatlas Wasser!
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Wasserressource (0) Produkttyp (0) Anwendungssektor (0) Suchbegriff

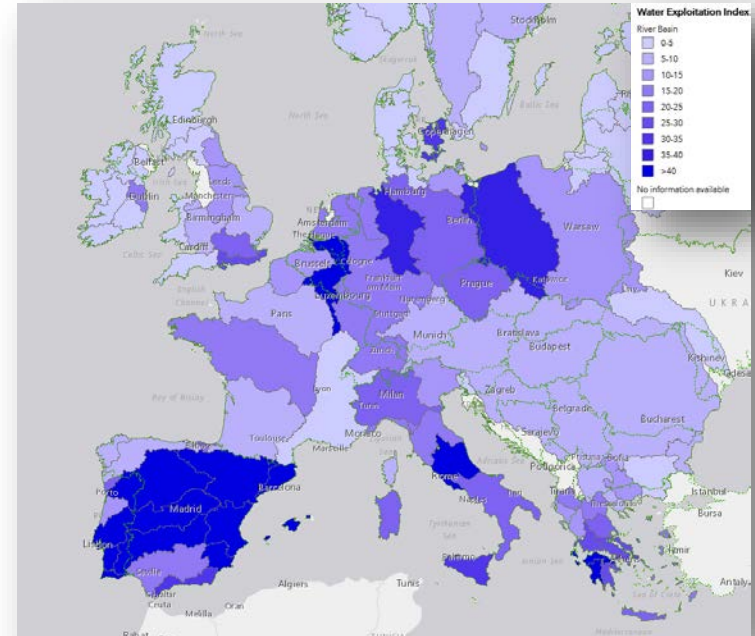
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www.innovationsatlas-wasser.de

Challenges for different sectors with increasing water reuse

Water Reuse in Europe

- > 40,000 million m³ /a wastewater treated in EU
< 3% (964 million m³) of this is reused
→ potential for further uptake is huge
(EC factsheet)
- 17% of EU territory affected by water scarcity
(EC 2007, COM/2007/0414 final)
- 13 Mediterranean river basins with
Water Exploitation Index (WIE) >20%
and >40% in specific areas (EEA 2019)
- High variability of water resources and
demand across countries/regions



<https://www.eea.europa.eu/data-and-maps/explore-interactive-maps/water-exploitation-index-for-river-2>

Fundamental barriers and challenges to a wider implementation of Water Reuse

- Low acceptance of water reuse solutions
- Limited awareness of the benefits of water reuse
- Prove of economic attractiveness of water reuse solutions
- Successful demonstration of solutions
- Lack of regulations

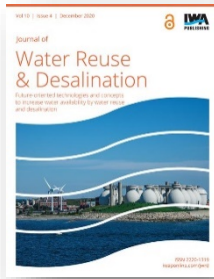


Impulses on "Solutions and application perspectives for the water reuse of treated municipal wastewater"

Panelists:

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Discussion Forum: Solutions & application perspectives for the water reuse of treated municipal wastewater



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Volume 10, Issue 4, Dec 2020
<https://iwaponline.com/jwrd/issue/10/4>



Innovationsatlas Wasser / Atlas of Water Innovation
<https://www.innovationsatlas-wasser.de/de/>



Homepage on Water Reuse
www.bmbf-wave.de
<https://bmbf-wave.de/wave/en/>

BMBF-Research on Water Reuse

GEFÖRDERT VOM



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Wave

WATER. REUSE. DESALINATION.

Future-oriented Technologies and Concepts to Increase Water Availability by Water Reuse and Desalination

2016 - 2020



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Education and Research

Wave

Water Technologies: Reuse

Water Technologies: Reuse

2021 - 2024



Thank you for your attention



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