CWC - City Water Circles
Closing Conference, 9th June 2022 in Split

Challenges and opportunities of circular water solutions

fbr, Federal Association for Rainwater Harvesting and Water Reuse

CHALLENGES FOR CITIES

- **Cities can rarely cover their water demand from own resources**
  - Drying out of surrounding regions, negative impacts on nature & agriculture
- **Climate change impacts**
  - Increase in droughts & heavy rainfalls, damage to infrastructure & environment, pollution of water bodies
  - water shortages and higher water costs
- **Population growth and urban development leading to more surface sealing, traffic and energy consumption**
  - Urban heat island, floods, heat deaths, decline in biodiversity, ...

WHAT WE HAVE TO DO?

- **Avoid surface sealing and unseal as much as possible**
  - Improve urban micro-climate, more urban greenery, less flooding
- **Retain rainwater and reuse, instead of draining it out as quickly as possible**
  - No rainwater discharge into the sewer system
  - New water resource
- **Reduce water consumption and use water economically**
  - Smart metering for consumption & leaks control, monitoring and optimization
  - Avoid water losses
- **Reuse water: wastewater is an infinite resource for new water, energy and nutrients**
  - Separate collection of greywater and blackwater for recycling in buildings

HOW TO IMPLEMENT CWC?

- Water in the city is an interdisciplinary challenge (grey, blue & green infrastructures)
- Individual disciplines should work on a common transparent and sustainable solution
- Speak out problems instead of rejecting or minimising them
- Involve stakeholders in planning from the very beginning

WHAT IS THE MOST SUITABLE TECHNOLGY ?

- **There is no universally applicable solution that is equally suitable everywhere**
  - Determination of regional/local needs and priorities
- **Rainwater management**
  - Unsealing, retention, reuse, evaporation, infiltration instead of discharge
- **Wastewater avoidance and water recycling**
  - Draw up water balances for the needs (quality and quantity)
  - Greywater recycling including energy recovery
    https://www.youtube.com/watch?v=XmOWOSikr_s
- **Select technology with highest efficiency or lowest footprint**
  - Comparison of variants (monetary & non-monetary) over a period 30 - 50 years

RAINWATER MANAGEMENT

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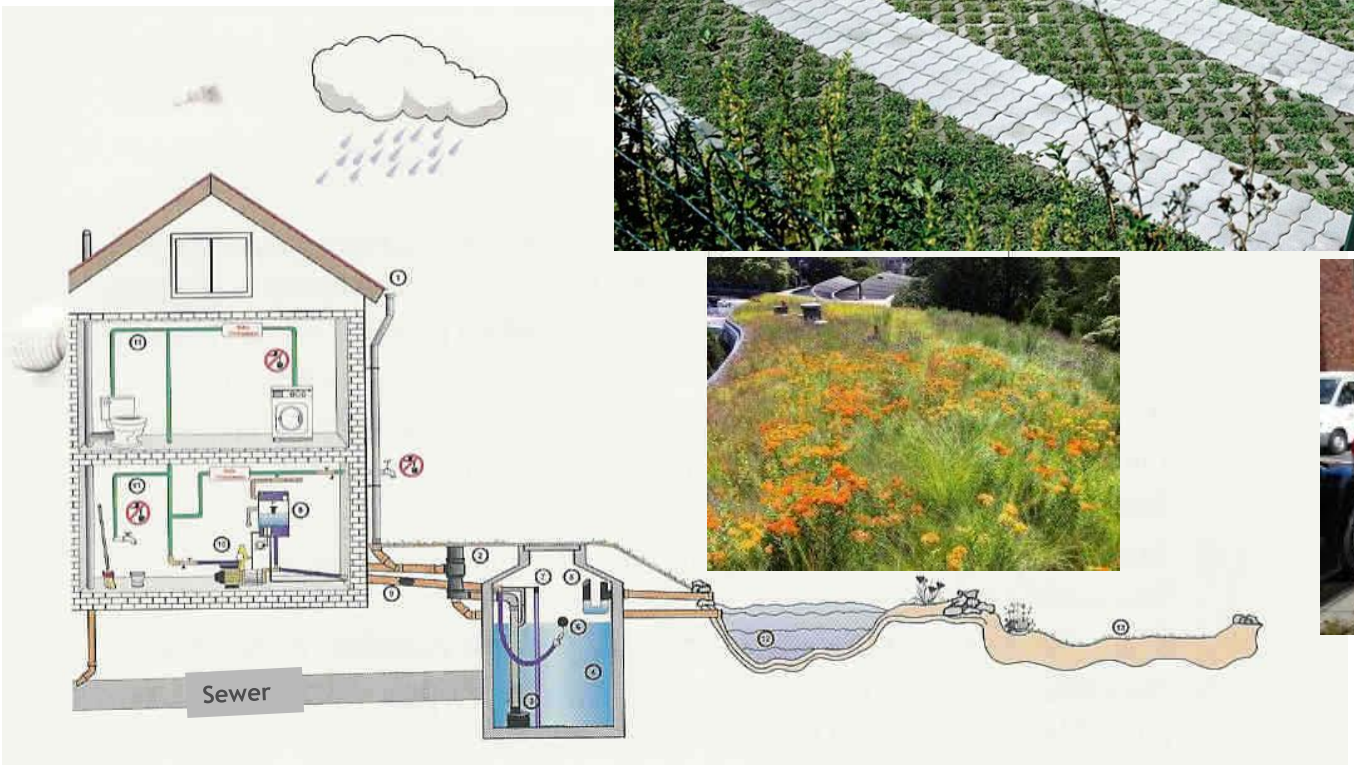
European Regional Development Fund

Unsealing, retention & reuse, infiltration, urban rooftop farming



GREYWATER RECYCLING

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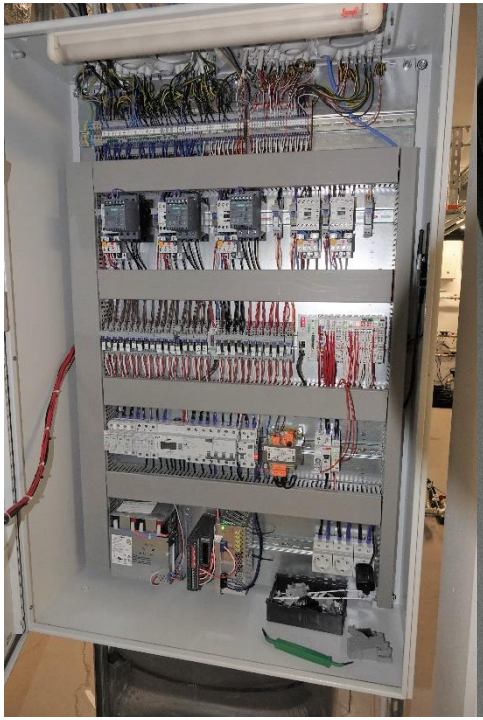
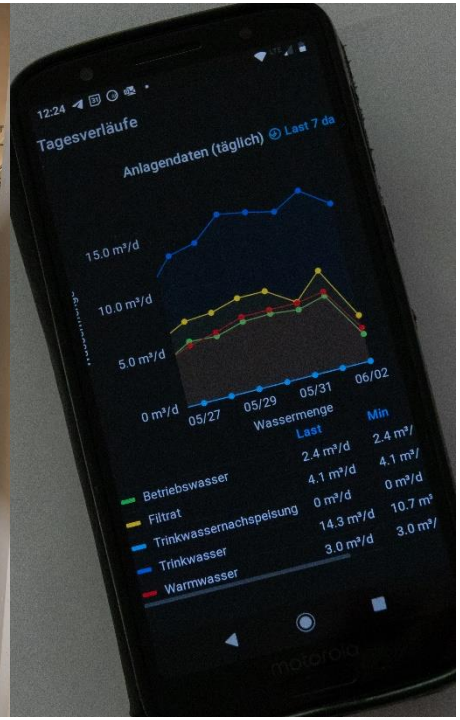
Greywater recycling, heat recovery and smart metering for a student residence





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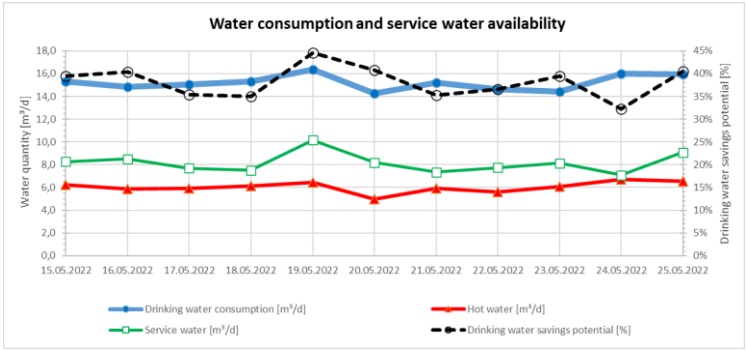
Greywater recycling, heat recovery and smart metering for a student residence

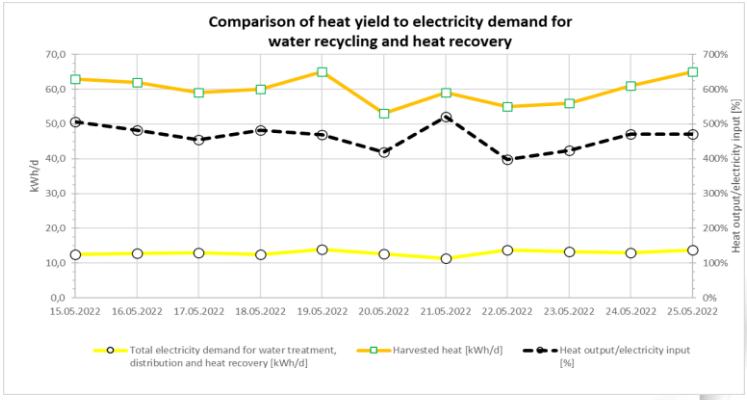
High quality „service“ water



40% drinking water savings

40% less wastewater

30% energy savings for water heating



LACK OF REGULATIONS & GUIDELINES?

For water reuse from rainwater and greywater recycling:

1) EU Directive for Bathing Water 2006/7/EC (under revision)

2) EU Regulation on minimum requirements for water reuse for irrigation, which will apply in all EU member states from 26 June 2023

3) Onsite non-potable water systems: DIN EN 16941-2:2021 (greywater) and DIN EN 16941-1:2018 (rainwater)

4) Protection against pollution of potable water installations and general requirements of devices to prevent pollution by backflow: DIN EN 1717:2011

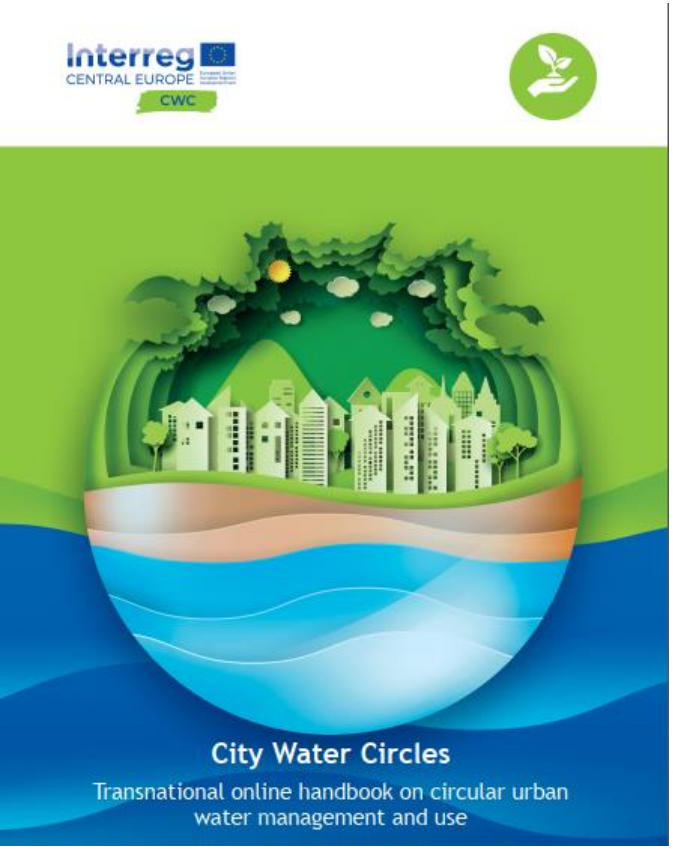
5) Berlin guidelines for service water use (1995)

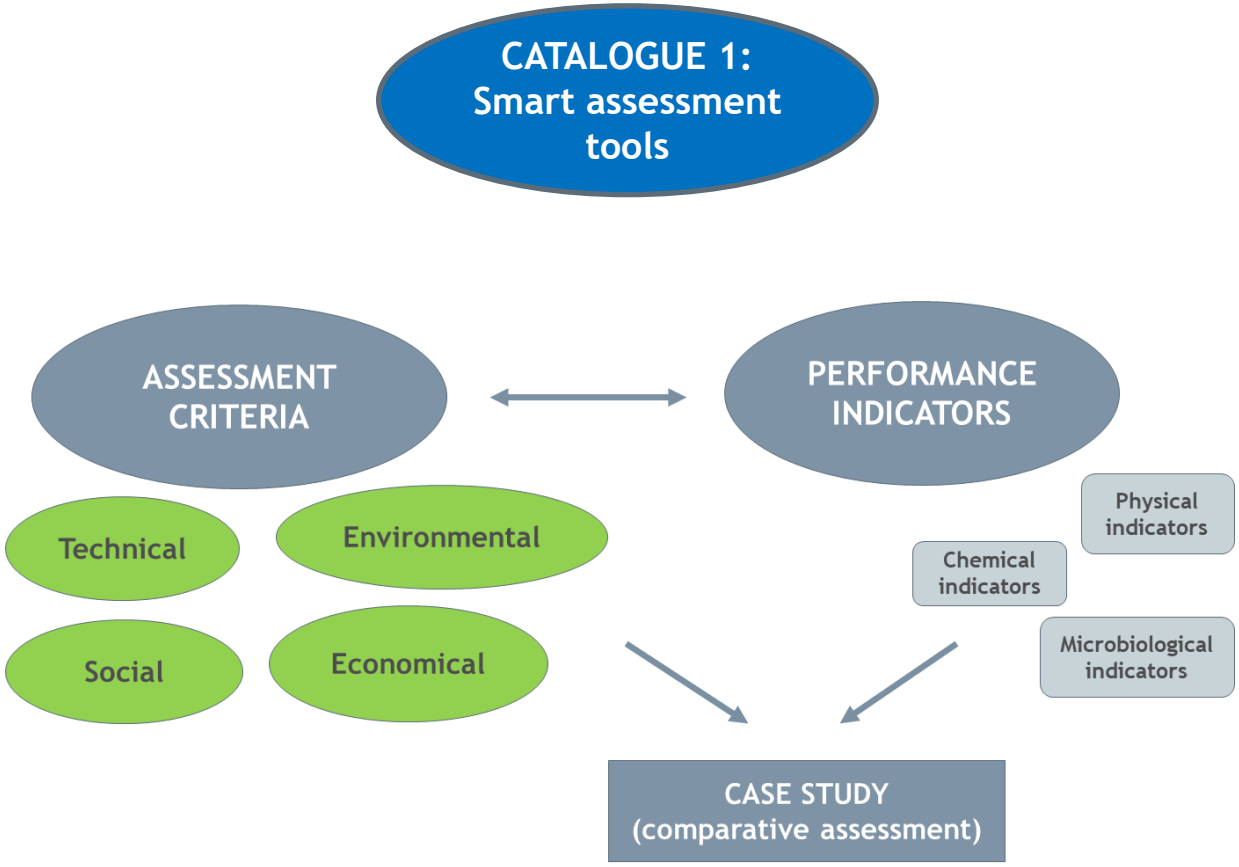
6) British Standards BS8525-1:2010 & BS 8525-2:2011 for greywater

SUCCESS FACTORS

- Projects need a fertile field, right seed and committed people
- Win-win situations should be worked out for grey, blue and green infrastructures
- Carry out a comparison of variants with stakeholder participation
- Project implementation with competent actors
- Monitoring for optimisation and dissemination of results
- Caretaker for maintenance and operation

CWC - ONLINE HANDBOOK





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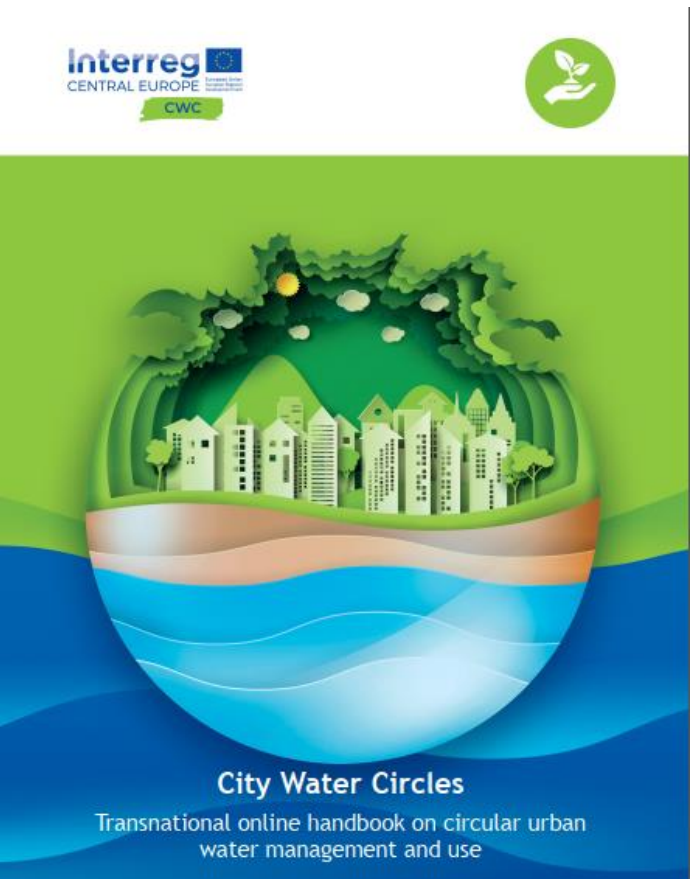

CATALOGUE 2: Engineering & NBS tools

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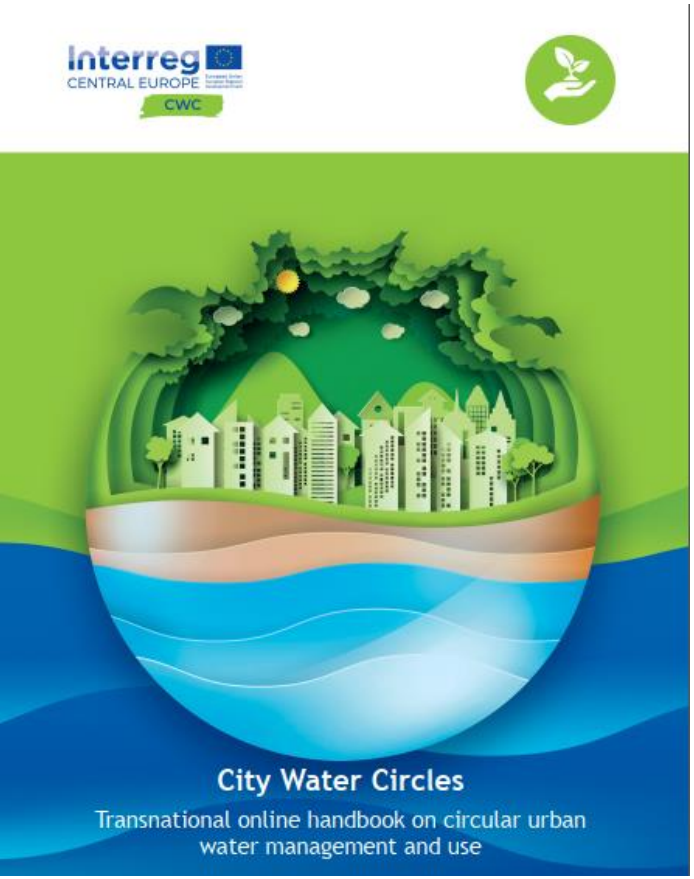

CATALOGUE 3: Smart governance tools

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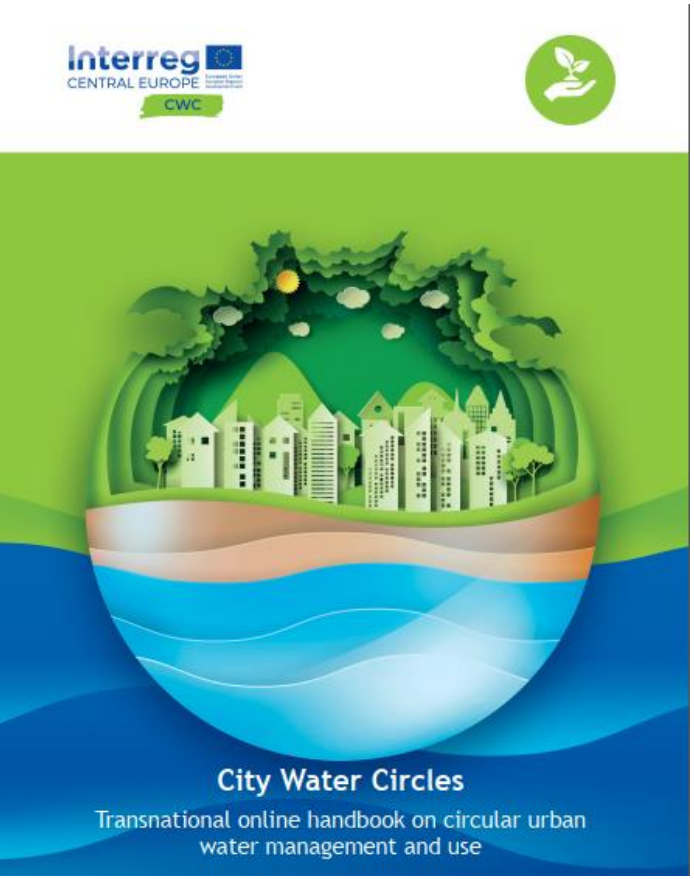
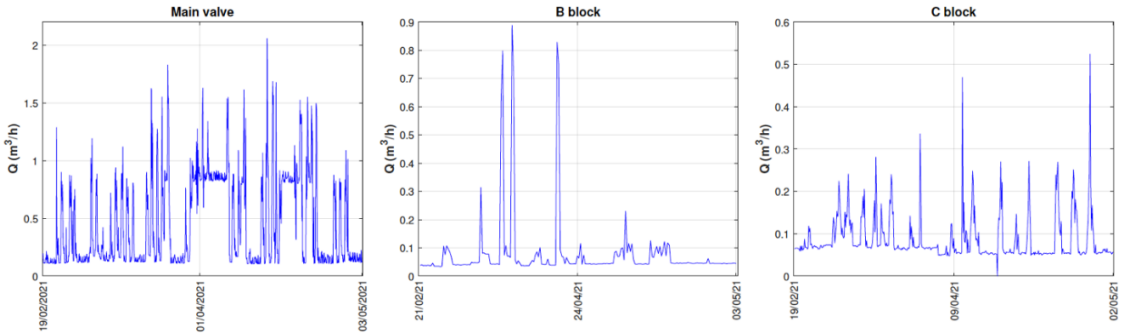


CATALOGUE 4:
Water efficicency smart tools



Water consumption data pattern

„It is not enough to know,
we must also apply;
it is not enough to will,
we must also do.“

Johann Wolfgang von Goethe
(Wilhelm Meister‘s Journeyman Years)

Thank you.

Nolde - innovative Wasserkonzepte GmbH

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