WaterMan project

Promoting a region-specific approach to water recycling in the Baltic Sea Region

Online meeting with NATALIE project representatives, 16 May 2025

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WaterMan - promotes the reuse of water in the Baltic Sea Region. In the project public authorities and water companies develop model strategies to reuse water and recirculate retained water

Implementation: January 2023 - December 2025

Overall goal: To promote the reuse of water in the Baltic Sea Region and elaborating local model strategies for water reuse, which combine:

- Measures for the reuse of treated water
- Measures for the recirculation of retained water
- Promoting stakeholder & consumer acceptance
- Processing the results into a „BSR Water Reuse Toolbox“
- Pro-actively disseminating the developed approaches & tools to
- Municipalities / local authorities
- Local water companies

About the WaterMan project in brief

Goal & scope:

- Promotes **water recycling** in the Baltic Sea Region
- **Helps** municipalities, water companies & authorities **to get started**

Project Partners from SE, DK, DE, PL, LT & LV

- Municipalities & water companies
- Regional authorities, domain experts, network organisations

Activities, inter alia:

- 11 **pilot measures** on specific use cases
- Elaboration of **local & regional strategies** in 7 model regions
- **Information**,**dialogue** & competence development, e.g.
- **Study trips** to Murcia / ES or Flanders / BE

Water demand vs water availability

The regionalised water exploitation index (WEI+) measures total water consumption as a percentage of the renewable freshwater resources (groundwater aquifers and surface water) available for a given territory and period. It quantifies how much water is abstracted monthly or seasonally and how much water is returned before or after use to the environment via river basins

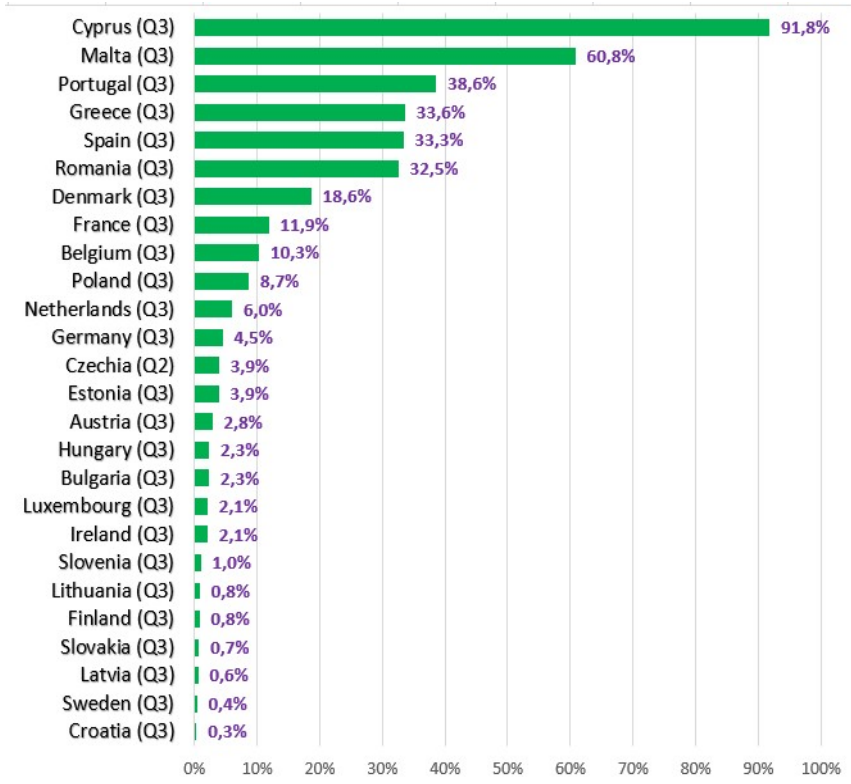
This figure gives an overview of the worst quarterly water scarcity conditions (maximum WEI+ in a consecutive 3-month period) of 2022 across countries in Europe. Seasonal WEI+ values are estimated as quarterly averages per country.

WEI+ values:

- **Values > 20% = water resources under stress and water scarcity conditions prevail;**
- **Values > 40% = stress is severe and freshwater use unsustainable.**

Annual quarters are: Q1 (January-March), Q2 (April-June), Q3 (July-September), Q4 (October-December).

https://www.eea.europa.eu/en/analysis/indicators/use-of-freshwater-resources-in-europe-1/worst-seasonal-water-scarcity



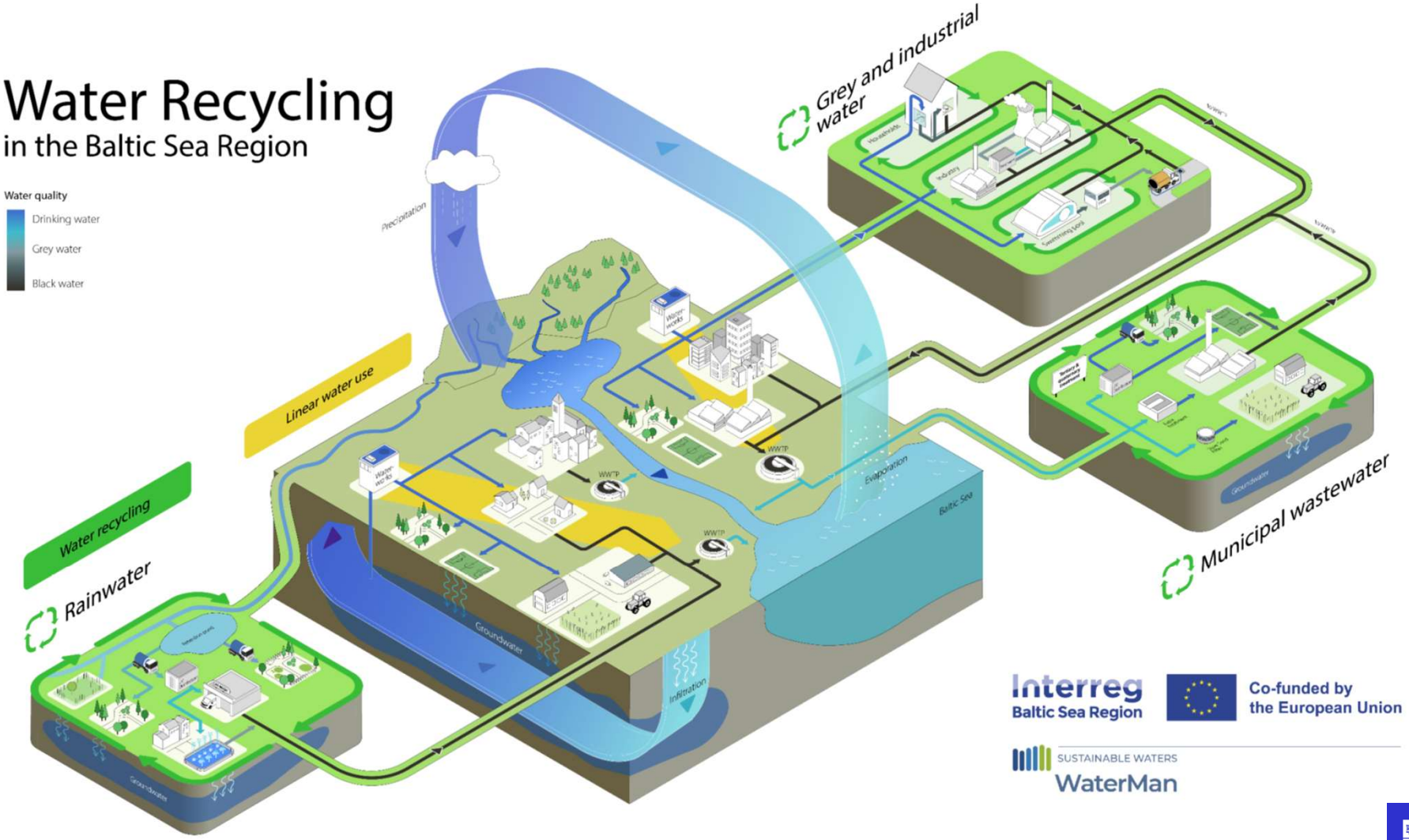
Agricultural emergencies caused by drought in LT

Agricultural emergencies caused by drought in LT and Klaipėda region (loss of crops production during the active growing season):

- **on 4 August 2006** state-level emergency declared
- **on 4 July 2018** state-level emergency declared
- **on June 2018** municipal-level emergency declared:
  - Šilutė district municipality (9 June),
  - Kretinga district municipality (28 June)
- **on 3 July 2019** state-level of emergency was declared
- **on June 2023** municipal-level emergency was declared:
  - Šilutė district municipality (9 June),
  - Kretinga district municipality (14 June)

2024 has become the warmest year in LT in the nearly 250-year history of meteorological observations. The average annual air temperature rose to 9.5 °C, 2.1 °C above the long-term average. Almost all months of the year, except January, were warmer than normal and natural disasters became more frequent and intense.

Water Recycling
in the Baltic Sea Region



Interreg Baltic Sea Region

Co-funded by the European Union

SUSTAINABLE WATERS
WaterMan

Klaipeda University

Pilot measures

Berlin – Recycling treated wastewater for commercial use

The Berlin feasibility study evaluates the potential for water reuse in industrial applications at the Berlin-Ruhleben wastewater treatment plant,

And exploring how the planned additional treatment processes improve the effluent quality, thereby reducing efforts to implement water reuse

Microorganism/pathogens risk assessment and management aspects are also considered.

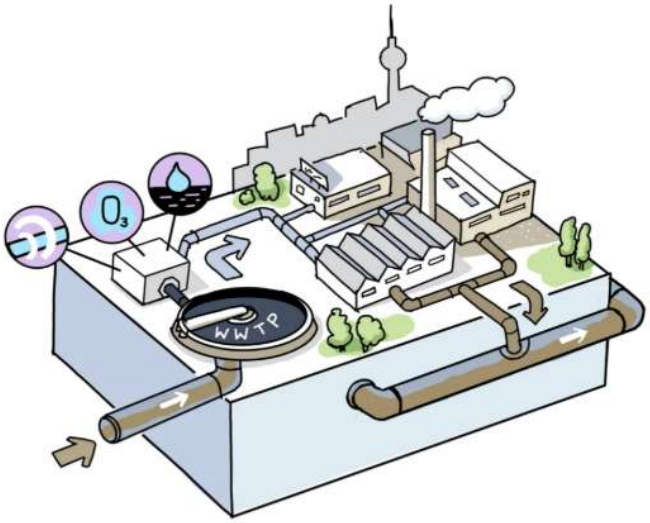
Potential commercial customers have already been identified within a radius of just three kilometres – the wastewater treatment plant is located in an industrial area.

Water source: Treated wastewater from urban wastewater treatment plant

Type of treatment: coagulation, flocculation, UV disinfection, ozonation or adsorption onto activated carbon, other fit-for-purpose treatments

Utilisation: Process water, cleaning water and cooling water for industry and commerce, optional: urban irrigation

Responsible: KWB – Berlin Centre of Competence for Water gGmbh





Pilot measures

Bornholm – Recycling treated wastewater for agricultural use

On the island of Bornholm (Denmark) treated wastewater from a WWTP is purified using a slow sand filter (SSF) to make it suitable for the irrigation of agricultural land.

An important component of this long-established filtration technology is what is referred to as a “biofilm”, a biological layer in the sand filter that contributes significantly to the reduction of microorganisms and the improvement of water quality. This layer must be removed and the filter cleaned on a regular basis.



Water source: Treated wastewater from wastewater treatment plant

Type of treatment: Slow sand filter (SSF)

Target water quality: Quality class D according to Directive (EU) 2020/741

Utilisation: Irrigation of agricultural land in the immediate vicinity of the wastewater treatment plant

Return to natural cycle: Infiltration

Responsible: BEOF – Bornholm’s Energy & Utility Co. A/S

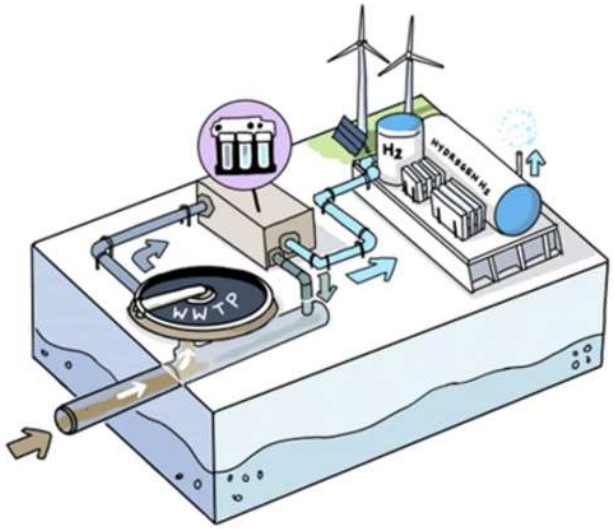
Pilot measures

Bornholm – Recycling treated wastewater for hydrogen production

This feasibility study investigating ways of purifying the treated wastewater from wastewater treatment plants so that it can be used as ultrapure water (UPW) for the production of hydrogen by electrolysis (PtX). In order to satisfy these high requirements, membrane-based technologies such as reverse osmosis (RO) are required to purify the treated wastewater effluent.

If successful, the island's seven existing wastewater treatment plants, or an envisioned centralised one, could provide the required amount of ultrapure water.

Brackish 7 – 8‰ salinity the Baltic Sea water is also being considered for electrolysis.



Water source: Treated wastewater from wastewater treatment plants

Type of treatment: Membrane-based technologies such as reverse osmosis (RO)

Target water quality: Ultrapure water (UPW)

Utilisation: Hydrogen production by electrolysis

Responsible: BEOF – Bornholm's Energy & Utility Co. A/S

Pilot measures

Braniewo – Rain garden for the greening of a public car park

In Braniewo, Poland, a “rain garden” is being created in the car park of the local swimming pool: part of the area will be unsealed and redesigned by planting vegetation and by creating a catch basin so that stormwater running off the streets and the roof of the indoor swimming pool will be stored here in future – instead of allowing it to drain into the sewage system.

The rain garden should be able to store at least 30 millimetres of precipitation per square metre (following the standards in Gdańsk), and reduce the need for additional irrigation by potable water.

Provide ecosystem services, reduces the effect of urban heat islands, increases biodiversity and provides treatment of stormwater through sedimentation, filtration, sorption, and uptake of biogenic compounds by the plants.



Water source: Stormwater

Type of treatment: Natural self-purification processes (sedimentation, filtration, sorption, biodegradation) enhanced by eco-engineering design

Utilisation: Irrigation of plants in the car park

Return to natural cycle: Increased infiltration and evapotranspiration

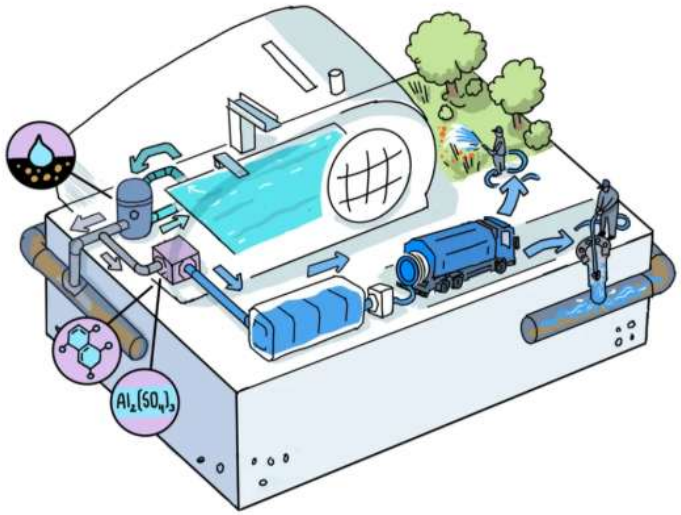
Responsible: Braniewo Municipality / Gdańsk University of Technology

Pilot measures

Braniewo – Recycling water from a public indoor swimming pool

In Braniewo, Poland, water from the local indoor swimming pool is treated in a recirculation system so that, after several stages of purification, it can be used for municipal purposes, such as cleaning the sewage system. It is the swimming pool water used for the regular rinsing of the pool's filter system. Up to 50% of the wastewater generated in the process can be reused.

The water will ultimately meet the legal requirements of quality class A or B of EU Regulation 2020/741. This recycling process allows the reuse of 15% of the tap water, which would otherwise be discharged into the sewage system during the daily operation of the swimming pool.



Water source: Wastewater from cleaning the filter system of a public indoor swimming pool

Type of treatment: Natural dechlorination, coagulation, flocculation, sedimentation

Target water quality: Quality class A/B according to Reguliation (EU) 2020/741

Utilisation: Cleaning of the sewage system, other municipal purposes

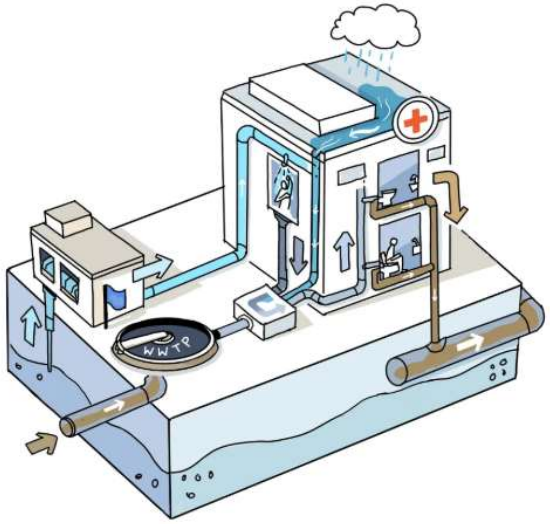
Responsible: Braniewo Municipality / Gdańsk University of Technology

Pilot measures

Kalmar – Recycling treated wastewater in public buildings

This feasibility study from the Kalmar region in Sweden is exploring how recycled wastewater can be reused in public buildings. The point of reference is a hospital in which a dual pipework system has already been installed.

The study is investigating whether this water can later be supplied by a new water treatment plant currently under construction in Kalmar. However, the use of greywater, i.e. shower water and stormwater is also being considered. In addition to the question of technical feasibility, the economic viability will also be analysed. There are also legal challenges: differentiated pricing for water of different qualities.



Water source: Treated wastewater from new treatment plant, greywater from public buildings, stormwater

Type of treatment: Necessity is being examined in the scope of the study

Target water quality: To be determined in the study

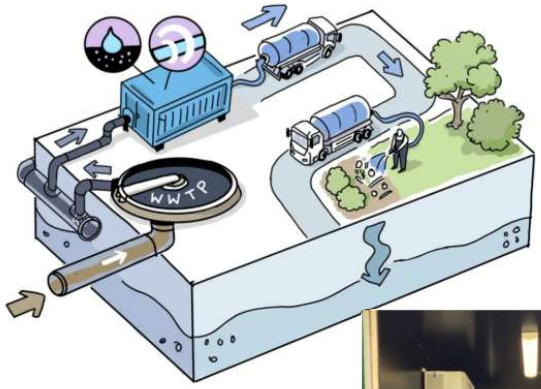
Utilisation: e.g. toilet flushing

Return to natural cycle: Discharge into sewage system

Responsible: Region Kalmar County

Pilot measures

Kalmar – Recycling treated wastewater for irrigating green spaces





In a pilot project conducted in the city of Kalmar, Sweden, treated wastewater effluent originating from a municipal WWTP is disinfected by further filtration and UV light treatment in a mobile container and then used to water green spaces. There, filtration and UV light are used to reduce the content of microorganisms. A mobile tanker then transports the water to the green areas, which are irrigated directly from the tanker using a hose system.

In terms of quality, the water meets the criteria of water class A and is also authorised under EU Regulation 2020/741 **on minimum requirements for water reuse** for the irrigation of edible plants in agriculture.

Water source: Treated wastewater from wastewater treatment plant

Type of treatment: Disinfection by filtration and treatment with UV light

Target water quality: Water class A (EU Regulation 2020/741)

Utilisation: Irrigation of green spaces

Return to natural cycle: Infiltration

Responsible: Kalmar Municipality

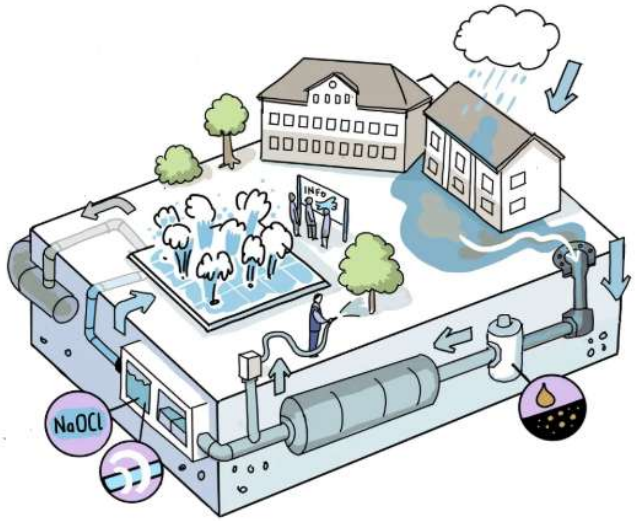


Pilot measures

Saldus – Stormwater recycling for fountain operation and greenery irrigation

A pilot project in Saldus, Latvia, aims to collect surface runoff and treat it to make it usable for various municipal purposes – including watering municipal greenery and operating a public fountain that may also be used by children as a play area. Before being collected in an underground storage tank, the stormwater is treated in multiple stages in order to purify it for these purposes.

Moreover, educational elements will be furnished at the public fountain on Kalpak Square, which is to be supplied with this water. These are intended to inform people about the consequences of climate change and the need for new water management.



Water source: Underground storage of stormwater

Type of treatment: Oil and sand separator, disinfection by treatment with UV light, chlorination

Target water quality: Water class A/B (EU Regulation 2020/741)

Utilisation: Public fountain, watering municipal greenery

Return to natural cycle: Discharge into the sewage system

Responsible: Saldus Municipality

Pilot measures
Västervik – Utilisation of stormwater with the aid of “multi-dams”

In the Gamleby district of the municipality of Västervik in Sweden, is a large multi-purpose pond that collects surface runoff from a catchment area of 80 hectares. This prevents flooding and provides water for various uses in the surrounding area, including the irrigation of football fields, plantations in the city centre and the production of artificial snow for cross-country ski trails.

The construction of further next-generation multi-purpose ponds is in planning. Water treatment is being considered for these ponds to enable, for example, small businesses to clean machines or company cars, housing companies to irrigate plantations and cemeteries to have water for irrigation.



Water source: Stormwater storage in “multi-dams”

Type of treatment: Natural purification process in the pond ecosystem



Target water quality: Water class D (EU Regulation 2020/741)

Utilisation: Irrigation of football fields and other green spaces, production of artificial snow for cross-country ski trails, water for cleaning in small business applications

Return to natural cycle: Infiltration and discharge into the natural system and stormwater system

Responsible: Västervik Municipality

Pilot measures

Gargždai – Natural stormwater treatment for use in municipal services

The pilot project conducted in the Klaipėda District Municipality in Lithuania aims to create a retention pond that collects and naturally purifies stormwater from a 110-hectare residential area in the town of Gargždai. As the water flows from higher to lower levels, different sedimentation processes occur: large sediments settle in an upstream basin, then the finer sediments settle further down in a main pond.

This water is intended for use for street cleaning and for watering urban green spaces – potentially saving 300 cubic metres of drinking water per year. Further concepts for the utilisation of treated stormwater will be developed in cooperation with representatives of Klaipėda Region municipalities, water companies and other parties interested in new water management ideas. The pond will also create natural habitats, increase biodiversity and provide recreational opportunities.

Water source: Stormwater retention in an artificial pond

Type of treatment: Natural purification through sedimentation and biodegradation in the pond ecosystem

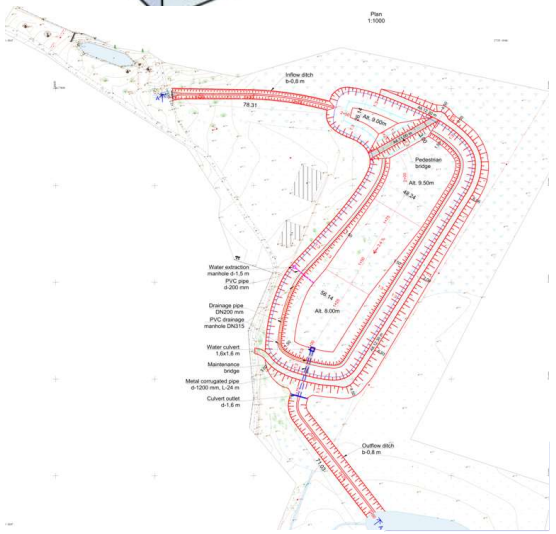
Target water quality: Water class D (EU Regulation 2020/741)

Utilisation: Street cleaning, irrigation of urban green spaces

Return to natural cycle: Infiltration and discharge into the sewage system

Responsible: Klaipėda District Municipality, Klaipėda University





Local & regional strategies in 7 project model regions

to promote water recycling and to make the local water supply more resilient

Scope of Local Model Strategy

- Climate scenario
- Analysis of water demand vs. water availability
- Overview of potential water sources, incl. groundwater, surface water
- Stakeholder analysis
- Surveys / appraisals on local consumer acceptance
- Mapping of related strategic documents, incl. national adoption of EU Water Reuse Regulation
- List of concrete local / regional, other use cases for water reuse
- Horizontal actions - awareness raising / behavioral change, etc.

Klaipėda University is responsible for the development of the strategy in the Klaipėda region, which includes 7 municipalities

Online resources to obtain further information & inspirations

- WaterMan **project website**

https://interreg-baltic.eu/project/waterman/

- Water Recycling **Toolbox & Helpdesk** (concrete inspirations & advice!)

https://www.eurobalt.org/waterrecyclingtoolbox/