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SUSTAINABLE WATERS
WaterMan

The WaterMan project

Final draft of the regional water recycling strategy for Braniewo Municipality

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LOCAL ACTION PLAN AND STRATEGY FOR PROMOTING WATER USE FOR THE MUNICIPALITY OF BRANIEWO

Final concept, 31 Dec 2025

LOCAL ACTION PLAN AND STRATEGY FOR PROMOTING WATER USE FOR THE MUNICIPALITY OF BRANIEWO

Contents

5.3.2 Smart Retention for Flood Protection and Water Reuse

Mathematical modeling confirmed that water retention is the most effective way to reduce the risk of rainfall floods.

The model compared two retention strategies:

- General retention, applied evenly throughout the city,
- Targeted retention, focused on upper catchments and critical areas for runoff control and flood protection.

Retention in source areas captures water before it reaches lower-lying parts of the system, effectively reducing peak flow and preventing local flooding.

Results:

- targeted retention at strategically selected points yields significantly greater benefits than uniform measures throughout the city
- retention creates opportunities for water reuse
- retained water can be directed to urban green infrastructure (rain gardens), or incorporated into non-potable water systems –for irrigation of parks and sports fields, street cleaning, toilet flushing, or as process water for selected industrial plants.

This approach simultaneously reduces drinking water demand and reduces sewer network congestion

5.3.5 Key conclusions – Stormwater management in Braniewo

1. Confirmed climate risk	Climate change will increase the risk of rainfall floods in Braniewo
2. Infrastructure constraints	Expanding the historic sewer network overloads central collectors during peak flows
3. Targeted retention is most effective	Retention in upstream catchments effectively reduces flood peaks, while retention in downstream sections of the network primarily serves as storage for periods of drought
4. Linkage to water reuse	Retained rainfall can support pilot projects such as rain gardens and pool water reuse
5. Evidence-based strategy	Detailed hydrological and hydraulic modeling provides a solid basis for decision-making and adaptive planning
6. Regional relevance	Braniewo's integrated approach provides a model for application to other municipalities in the Baltic Sea region

6. OBJECTIVES AND ACTIONS PROPOSED FOR IMPLEMENTATION

Main Objective : Building a climate-resilient urban water cycle

Objective 1.
Increasing public awareness of the potential use of rainwater, treated sewage, and greywater

- Action 1.1
  Strengthening the competencies and raising awareness of officials, unit employees, and designers.
- Action 1.2
  Educating children and youth to increase awareness of climate change adaptation and biodiversity
- Action 1.3
  Continuous raising of awareness among residents and dissemination of knowledge about climate change and closed-loop water management

Objective 2.
Investments in projects based on pilot experience

- Action 2.1
  Continuation of pilot activities and nature-based solutions
- Action 2.2
  Implementation of a water recycling system in newly constructed facilities
- Action 2.3
  Construction of retention reservoirs
- Action 2.4
  Improving stormwater drainage infrastructure

Objective 3
Increasing the management of rainwater at the place of precipitation

- Action 3.1
  Using potential rainwater drainage sites directly into green areas from sealed areas
- Action 3.2
  Promoting the use of tools that support the creation of home retention
- Action 3.3
  Creating good practice guidelines for City units
- Action 3.4
  Promoting the development of green and blue infrastructure through provisions in local plans, technical conditions for connection to the stormwater network, and administrative decisions.

OBJECTIVES AND ACTIONS PROPOSED FOR IMPLEMENTATION

Objective 1. Increasing public awareness of the potential uses of rainwater, treated sewage, and graywater

Action 1.1 – Strengthening the competencies and raising awareness of officials, unit employees, and designers.

In addition to informational and promotional activities focused on the Braniewo community, it is first necessary to raise awareness among officials and designers, who influence the actions taken in the city. Therefore, it is necessary to co-organize workshops and training for officials and designers, organize presentations for decision-makers, and present the results of pilot projects.

Action 1.2 – Educating children and youth to increase awareness of adaptation to climate change and biodiversity.

Educating children and youth is an important factor in shaping the behaviors not only of future generations but also, through children and youth, their parents and their surroundings.
Another method of action could be to introduce climate change education into school and preschool education. Developing a long-term approach based on a standardized school and preschool education program could be effective.

Action 1.3 - Continuous awareness raising and dissemination of knowledge among residents about climate change and circular water management

This measure aims to increase public understanding of the need to close water cycles. This measure encompasses all promotional activities undertaken by the City Hall and organizational units, such as: public appearances, incorporating the circular economy concept into developed documents, preparing promotional materials, leaflets, and other materials with information about the concept of circular water management.

OBJECTIVES AND ACTIONS PROPOSED FOR IMPLEMENTATION

Objective 2. Investments in projects based on pilot experience

Action 2.1 Continuation of pilot activities and nature-based solutions

The implementation of pilot projects demonstrated the merits of continuing similar solutions in other areas of the city. Mathematical modeling confirmed that water retention is the most effective way to reduce the risk of rainfall flooding, therefore, it is recommended to continue measures such as: • landscaping to allow water to flow into green areas • unsealing the area – increasing the number of semi-permeable surfaces • construction of rain gardens, retention beds, and flower meadows • green walls, green roofs • construction of an irrigation system.

Action 2.2 Implementation of a water recycling system in newly constructed facilities.

The pilot project at the swimming pool demonstrated how much water is wasted and how much water can be recovered using modern technologies. It is advisable to implement technologies that allow for better water management in new or remodeled projects.

Action 2.3 Construction of retention reservoirs

Small-scale retention and nature-based solutions don't solve all problems or prepare for all the effects of climate change, such as torrential rains. The city lacks retention reservoirs, so building them in key locations is crucial. The possibility of using the old city moat bed and adapting it for retention purposes should be analyzed and explored.

Action 2.4 Improving stormwater drainage infrastructure

An inventory of the storm sewer system revealed that it was functioning properly but required ongoing expansion and modernization. Parts of the sewer system date back to pre-war times, and there are sections with unknown routes that have not been inventoried. Sections with lower capacity, where flooding occurs frequently, urgently require reconstruction, particularly in the lower part of the city.

OBJECTIVES AND ACTIONS PROPOSED FOR IMPLEMENTATION

Objective 3 Increasing the management of rainwater at the place of precipitation

Action 3.1 Using potential rainwater drainage sites directly into green areas from sealed areas

The action should focus on creating an effective mechanism for identifying and implementing solutions in which rainwater, e.g. from a sidewalk or roof, can be drained into the area without the need to concentrate the runoff and therefore without the need for costly design concepts or obtaining water permits.

Action 3.2 Promoting the use of tools that support the creation of home retention

By promoting pilot projects and raising awareness of the necessity and effectiveness of small-scale water retention, measures should be implemented to encourage residents to apply similar solutions on their own plots, e.g. by providing advice on the construction of rain gardens or by providing budgetary funding for such activities.

Action 3.3 Creating good practice guidelines for City units

Preparation of best practice guidelines for individual City departments and units based on international projects observed as part of the Waterman project and other similar projects. Specific practical guidelines, both organizational and technical, which may be annexed to technical specifications for the execution and acceptance of works

Action 3.4 Promoting the development of green and blue infrastructure through provisions in local plans, technical conditions for connection to the stormwater network, and administrative decisions

Increased emphasis on formal arrangements and issuing conditions to investors for connection to the drainage and retention system and in the preparation of projects implemented by the City, as well as in the preparation of the General Plan, tender documents, etc.

6. OBJECTIVES AND ACTIONS PROPOSED FOR IMPLEMENTATION

Building a climate-resilient urban water cycle

Objective 1. Increasing public awareness of the potential uses of rainwater, treated sewage, and graywater

Objective 2. Investments in projects based on pilot experience

Objective 3 Increasing the management of rainwater at the place of precipitation

The indicated goals and directions of action will be re-verified and adjusted as work begins on a broader document, the Municipal Climate Change Adaptation Plan (MPA).

The Municipal Climate Change Adaptation Plan is a strategic document containing the characteristics of a given area, analysis of climate data, assessment of vulnerability, potential and sensitivity, and proposals for actions aimed at both mitigating the effects of climate change and adapting to them.

The future MPA document will contain at least: an analytical part, a concept for the management of rainwater and meltwater resulting from atmospheric precipitation within the city, a set of spatial data, a programmatic part, an indication of the method of implementing the plan, conclusions and recommendations.

7 FORECASTED FUTURE ACTIVITIES

In accordance with the actions defined in the City Strategy until 2030 and the conclusions from the implementation of the Waterman project, the most important investments necessary in the near future have been selected:

1. Development of urban standards for landscaping and maintenance of green spaces.
2. Protection of wetlands in the city from non-natural development.
3. Development of a water retention program for the city.
4. Development of a municipal climate change adaptation program.
5. Construction of a water and sewage network and storm drainage system in the block between Bażyńskiego Street and ul. Długa Street
6. Modernization of the city's storm sewer system
7. Modernization of the sewage treatment plant
8. Development of small-scale water retention – subsidies for residents for infrastructure purchases
9. Construction of neighborhood green spaces/pocket parks with seating areas and natural playground elements
10. Creation of recreation and relaxation zones within the Botanical and Zoological Park on Botaniczna Street – potential for green retention solutions
11. Revitalization of the city moat: Stage III – renovation of the medieval walls to make them accessible for residents' recreational needs and tourism – potential for green retention solutions
12. Revitalization of the city moat: Stage IV – modernization of the amphitheater within the city moat– potential for green retention solutions

9 CONSULTATIONS

On June 10, 2025, a consultation meeting was held to discuss the implementation of activities within the WaterMan project and the development of the Strategy. The event aimed not only to summarize activities to date but, above all, to open a social dialogue with residents, experts, and project partners. The participants discussed the challenges facing the city and the opportunities offered by modern water management solutions..

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The „BSR Water Recycling Toolbox" was elaborated as part of the WaterMan project, which is co-financed by the European Union (European Regional Development Fund) and implemented within the Interreg Baltic Sea Region Programme. More information:

eurobalt.org/WaterRecyclingToolbox
interreg-baltic.eu/project/waterman

WaterMan promotes a Baltic Sea Region-specific approach to water recycling, which makes use of the alternation of too much and too little water that has become typical for humid areas in the EU to strengthen the resilience of local water supply. Building on this approach, the project supports municipalities and water companies in adapting their water supply strategies.