

# BSR WATER

## Platform on Integrated Water Cooperation

PLATFORM  
**BSR** WATER

 **Interreg**  
Baltic Sea Region

  
EUROPEAN UNION  
EUROPEAN  
REGIONAL  
DEVELOPMENT  
FUND

### Fostering transnational cooperation and integration among water sector experts

The project aims to enhance cross-sectoral cooperation in smart water management by providing a possibility for transnational experience exchange, sharing of good practices and solutions.

The platform brings together experts representing diverse projects that have generated through transnational cooperation many replicable as well as unique solutions, covering broad variety of water-related issues: smart nutrient management and sludge handling, storm water management, domestic and industrial wastewater treatment, manure management and energy efficiency.

### Seven projects cooperate and exchange

The participating projects are: **IWAMA**, **BEST**, **iWater**, **VillageWaters**, **Reviving Baltic Resilience**, **Manure Standards**, **CliPLive**.

All projects and their results are presented in the following slides.

### Providing inputs to the regional policy on sustainable water management

The outcomes and practical findings of the contributing projects support the long-term development of the regional environmental policy and recommendations. Platform strengthen policy-practice link in implementation of advanced water protection measures, including smart nutrient management and sludge handling, storm water management and energy efficiency cycle at national and municipal levels. Technical outputs support local and national authorities with comprehensive knowledge required in the decision-making process.

### Experience exchange for practitioners

The interactive online water management portal [Baltic Smart Water Hub](https://www.balticwaterhub.net), enables the exchange of knowledge and expertise among international experts across the borders. The Water Hub offers over 100 examples of efficient and innovative solutions from BSR cities.

**Websites:** [www.bsrwater.eu](http://www.bsrwater.eu)  
[www.balticwaterhub.net](http://www.balticwaterhub.net)

**Contact:** [Agnieszka Ilola](mailto:agnieszka.ilola@ubc.eu), UBC Sustainable Cities Commission

**Funding:** [Interreg Baltic Sea Region Programme 2014-2020](#)

**Budget:** EUR 1.1 mln

**Duration:** 1 October 2018 – 30 September 2021



# BSR WATER outputs

## Facilitation of the regional policy

PLATFORM  
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Baltic Sea Region



### "Palette of Solutions for Nutrient Recycling in the Baltic Sea Region"

was developed within the BSR WATER platform by the University of Tartu and HELCOM and published by HELCOM as an input into the Regional Nutrient Recycling Strategy.

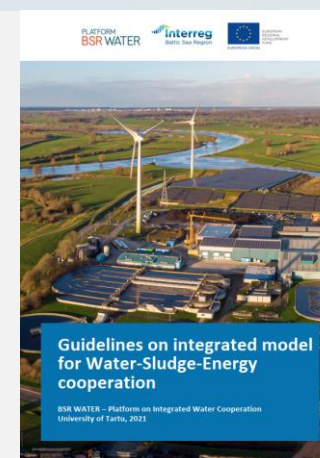
This document explores feasible solutions for nutrients recovery primarily from wastewater and sludge. The palette of solutions serves as a review of the different options and can be used as guidelines in the planning of national phosphorus recovery strategies, key technologies and potential applications by authorities, local practitioners and companies. The main focus is on the technologies already tested in larger scales.



### "Guidelines on Water-Sludge-Energy cooperation"

was prepared by the University of Tartu.

It demonstrates various ways the wastewater treatment plants can cooperate with other industries, reach energy and climate neutrality and potentially save on costs. The circular cooperation model was developed as an example outlining opportunities and highlighting possibilities for the near future.



### "Regional and national policy recommendations for implementing the integrated stormwater management in the Baltic Sea Region"

were developed the Riga City Council, on the basis of surveys and interviews with 25 cities of the Baltic Sea Region and with support from BSR WATER partners.

The publication introduces the recommendations for implementing sustainable and integrated stormwater management in the BSR on the basis of accumulated knowledge and practices of those forerunner BSR cities that have already obtained experience, understanding and practical skills within the field of natural, holistic and sustainable urban stormwater management.



# IWAMA

## Interactive Water Management

The goal of the IWAMA project was to improve wastewater management in the Baltic Sea Region by developing the capacity of the wastewater treatment operators and implementing pilot investments to increase the energy efficiency and advance the sludge handling.

### Investments in smart and efficient technology

7 innovative investments were piloted during the project's course focusing on efficiency and optimization of energy and sludge management.

### Energy and sludge audit to ensure maximum efficiency

A set of self-auditing tools for WWTPs were also created. These tools can be utilized by any operator in the region to find out optimization potentials and to compare the results with other plants in the region.

### Benchmarking with peers in the region

Comparative benchmarks in smart energy and sludge management were built with reference to more than 65 plants from 9 countries. The benchmarks provide a good reference to the regional situation and technical details of the wastewater treatment processes applied in the Baltic Sea Region.

### Capacity development and lifelong learning tools for future operations

Lifelong learning is crucial in improving the capacity of operators of wastewater treatment plants. The project launched several lifelong learning tools, including concrete training materials and a WWTP Game, in order to support sustainable growth of skills and competencies of wastewater experts.

**Website:** [www.iwama.eu](http://www.iwama.eu)

**Contact:** [Agnieszka Ilola](#), [UBC Sustainable Cities Commission](#), Finland

**Funding:** [Interreg Baltic Sea Region Programme 2014-2020](#)

**Budget:** EUR 4.6 mln

**Duration:** March 2016 – April 2019



# BEST

## Better Efficiency for Industrial Sewage Treatment

*The aim of project BEST was to promote cooperation and best practices among **industries, municipal waste water treatment plants (WWTP) and local environmental authorities** to ensure efficient treatment of industrial waste waters in the Baltic Sea Region. **Four work packages were carried out:***

### **1) Assessment of the current state of industrial waste water management in the Baltic Sea Region**

The assessment takes account of country-specific features, success stories, bottlenecks, the main pollutants preventing the utilization of sludge, technical solutions and management models for improving the situation.

### **2) Toolbox of best practices**

The BEST project tested and collected tools, practices and methods for increasing cooperation and capacity among industries, WWTPs and environmental authorities.

### **3) Investments and new technical solutions:**

- Pre-treatment solutions in industrial companies and monitoring equipment at a municipal WWTP (LV, EE)
- Industrial sewage fermentation at municipal WWTP (PL)
- Testing new phosphorous filtering technologies at municipal WWTPs (PL, EE)

### **4) Guidelines and policy brief for the treatment of industrial waste water in the Baltic Sea Region**

The guidelines and policy brief give comprehensive advice for legislative, technical and institutional developments and are targeted at permitting and supervising municipal, regional and national authorities, industries and WWTPs for improved management of industrial effluents in municipal WWTPs nationally and in the Baltic Sea Region.

**Website:** [bestbalticproject.eu](http://bestbalticproject.eu)

**Toolbox:** [bestbalticproject.eu/outputs/toolbox](http://bestbalticproject.eu/outputs/toolbox)

**Funding:** [Interreg Baltic Sea Region Programme 2014-2020](#)

**Budget:** EUR 4.3 mln

**Duration:** October 2017 – September 2020

**Partners:** Municipalities, municipal WWTPs, industrial companies, universities, NGOs, expert associations from Finland (City of Helsinki lead), Estonia, Latvia, Poland and Russia





# iWater



## Integrated Stormwater Management

The iWater project improves urban planning in the cities of the Baltic Sea region through development of a comprehensive stormwater management system which is integrated into the urban development processes of the city at all levels.

### Stormwaters: from waste to resource

The project was piloted in 7 different cities, resulting in 7 innovative strategies developed to improve urban stormwater planning and management.

### Increasing urban sustainability

New stormwater planning approaches and tools were adopted and the evaluation criteria for a peer review within the field were set. Moreover, the project focused on capacity development as well as on exchanging the best stormwater management practices.

### The Toolbox

During the project, a toolbox of 16 different tools was compiled. It introduces the most commonly used approaches and concrete solutions for urban stormwater management in an easily adaptable form.

The three points-approach utilized in the toolbox covers all the actions needed in different planning levels to create a multifunctional and resilient water system.

### Green Factor Tool

In addition to the toolbox, a practical Excel-based tool for urban planning was created. The Green Factor Tool ensures sufficient green infrastructure when building new lots in a dense urban environment.

**Website:** [www.integratedstormwater.eu](http://www.integratedstormwater.eu)

**Contact:** Nika Kotoviča, [Riga City Council](#), Latvia

**Funding:** [Interreg Central Baltic Programme 2014-2020](#)

**Budget:** EUR 2.3 mln

**Duration:** December 2015 – May 2018



# VillageWaters

## Finding the most suitable solutions for wastewater management in villages

### About VillageWaters

The Interreg project VillageWaters set out to make proper cleaning of wastewater common practice across the rural areas around the Baltic Sea

The main objective was to help households avoid unnecessary investments and operating costs when shifting to improved wastewater treatment, and thus to encourage them to implement new treatment systems.

The project was conducted in pilot villages where optimal technological solutions will be built up for the households. In this project the social, economic and environmental assessments were conducted before and after the changes were made.

**Website:** [www.villagewaters.eu](http://www.villagewaters.eu)

**Funding:** [Interreg Baltic Sea Region Programme 2014-2020](#)

**Budget:** EUR 3.01 mln

**Duration:** March 2016 – February 2019

### Information Tool

Information Tool is a web-based service, which helps homeowners and small municipalities to find best available wastewater treatment system to their needs.

The first and simplest benefit of the Information Tool is that all the information on available WWT solutions is in one place. From applicability viewpoint the Information Tool for end-user provide selecting, filtering and searching functionalities.

Based on the collected data, the Information Tool makes it possible for the users to compare different technologies, choose the best suitable alternative and check the availability of technologies.

### Conclusions of the project

All life cycle effects should be taken into account when choosing a device, not only a price of system.

Without legal requirements, wastewater issues would not be a top priority but perceived as an additional cost.

The equipment itself should be simple, requiring as little maintenance as possible.

Inhabitants interviewed in the pilots were satisfied with their new wastewater systems.



# Reviving Baltic Resilience – RBR

The RBR project aims at increasing the application of green technologies to prevent pollutants from reaching the Baltic Sea.

The main objective of the project was to highlight a proactive approach when working with water and air-protecting projects by showcasing successful solutions allowing prevention of hazardous chemicals and fine particles from reaching the Baltic Sea.

## Tackling pollution with innovation

The main output of the project are four pilot investments, situated in each of the participating countries, which correspond to pollutants emission prevention to water and air.

These pilots developed:

- Liquid-gas dual fuel system-equipped marine diesel engine powered by dimethyl ether installed on Photon floating laboratory in Gdansk, Poland;

- Prevention of micro plastic particles emission to the Baltic Sea by marine debris specialized collection on beaches in Palanga, Lithuania;
- Sunflower-enhanced phytoremediation of oily soils in Helsingborg, Sweden;
- Advanced treatment of landfill leachate containing perfluorinated alkylated compounds using combined methods in Helsingborg, Sweden.

## Proactive & cross-border approach

The cross-border approach broadened the knowledge through exchange of experiences from three countries. In order to maximize the impact of the project, the Cross-border Green Technologies Cluster was established to ensure knowledge exchange and durability of the pilot investments for the future.

**Website:** [chem.pg.edu.pl/rbr/main-page](http://chem.pg.edu.pl/rbr/main-page)

**Contact:** Jan Hupka, Gdansk University of Technology

**Funding:** [Interreg South Baltic Programme 2014-2020](#)

**Budget:** EUR 1.5 mln

**Duration:** July 2017 – June 2021



# Manure Standards

## Advanced manure standards for sustainable nutrient management and reduced emissions

Manure Standards was a 2,5-year EUSBSR Flagship project providing farmers, advisors, authorities and policy-makers enhanced capacity to govern and to turn manure use towards improved sustainability and resource-efficiency. The project was coordinated by Natural Resources Institute Finland (Luke).

### New tools and joint guidelines

The project's main objectives were to develop joint guidelines and tools for determining manure quantity and quality, to give recommendations and tools for best methodologies in nutrient bookkeeping, and to pilot and assess the new manure tools in practical farming and policy making with subsequent plans for their implementation.

### Main recommendations

Manure is a valuable organic fertilizer which should be used as accurate as possible to make the most of the nutrients and organic matter while minimizing losses to the environment.

Accurate manure data is the basis of efficient regulation and practical manure management and use.

Manure data must be made available on farm-scale and on regional and national levels.

Manure sampling and analysis can be used on farm-scale if sampling is made properly and analysis with suitable methods.

Manure mass balance calculation provides data on manure quantity and is best suited for national level data.

The same principles apply also to other organic side streams.

**Website:** [www.luke.fi/manurestandards/en/frontpage](http://www.luke.fi/manurestandards/en/frontpage)

**Contact:** Sari Luostarinen, Natural Resources Institute Finland (Luke)

**Funding:** [Interreg Baltic Sea Region Programme 2014-2020](#)

**Budget:** EUR 2.87 mln

**Duration:** October 2017 – December 2019



# CliPLivE

## Climate Proof Living Environment

The overall objective of the project CliPLivE was to assess the integrated geological and environmental risks for the built areas in the Gulf of Finland region caused by geological peculiarities of the region. The project aimed to reduce the exposure to hazards and to promote emergency preparedness in the built areas around the Gulf of Finland.

CliPLivE also promoted transfer of experiences and know-how in the field. An important part of the project was to raise awareness of the target groups by enhancing the knowledge on environmental and geological risks, risk assessment and adaptation measures towards climate change, supporting sustainable development in the future.

### **Risk maps and practical recommendations**

During the project, several adaptation strategies were created for different cities in the participating countries in cooperation with local and regional authorities and organizations.

The project resulted in a unified methodology for geological and environmental risk assessment. Maps of geological and environmental risks for current situation and under different climate change scenarios were compiled and practical recommendations on measures for geological and environmental risk reduction were developed. On top of that a common web resource providing risk information for target groups was created.

**Website:** [cliplive.infoeco.ru](http://cliplive.infoeco.ru)

**Contact:** [State Company "Mineral"](#)

**Funding:** [South-East Finland – Russia ENPI CBC 2007 – 2013 Programme](#)

**Budget:** EUR 0.6 mln

**Duration:** February 2012 – November 2014



# Baltic Smart Water Hub

## – portal for water experts

- Good practices
- Technical solutions
- Tools
- Innovations
- Expertise exchange

**WATER AREAS: FRESH, STORM,  
SEA AND WASTE WATER**

The online portal, developed in the BSR WATER platform, offers opportunities for sharing the achievements, exchanging on the effective management models, promoting local excellence – all around the topic of the smart water sector.

All projects involved in BSR WATER contributed with their examples of smart operation – these examples are offered further in this exhibition, while the whole Hub collection exceeds 100 cases from all countries in the region. Read, explore and engage!



# Mobile pilot plant for evaluation of novel wastewater treatment technologies in Gdansk, Poland



**Technical Solution**  
WASTE WATER

Mobile pilot plant installed on Wschód WWTP in the IWAMA project was designed to enable long-term testing of different wastewater treatment (WWT) technologies.

The innovative technology concept combines low energy consumption and cost-effective processes to achieve effective WWT and maximal recovery of chemical energy for increased biogas production. In IWAMA, the nitrification-anammox process was primarily tested for recovering a high fraction of organic carbon and removing nitrogen to achieve the energy positive WWTP. The pilot continues its work in the FanpLESStic-sea! project testing microplastics removal.



# Pre-treatment at dairy company Latvijas Piens, Latvia



**Technical Solution**  
WASTE WATER

The cheese production company Latvijas Piens discharges its wastewater to Jelgavas Udens municipal wastewater treatment plant. To enhance treatment results and target high concentrations of COD and nutrients, the pre-treatment was needed.

The investment in the flocculation-flotation pre-treatment installation was done in the framework of the BEST project. Now the sludge from the company's wastewater will be utilized by an external company in biogas production.



# Green Area Factor, GAF tool, developed in Finland



**Tool**

STORM WATER



Ensuring sustainable stormwater management and introduction of green infrastructure is directly connected and dependable on the careful urban planning.

The Green Area Factor tool developed for increasing greenery of lots in a dense urban environment, helps cities in climate adaptation. The goal of the GAF approach is to mitigate the effects of construction by maintaining a sufficient level of green infrastructure while enhancing the quality and variety of the remaining vegetation.



# Renovation and reconstruction of the Leitgiriai WWTP, Lithuania



**Good practice**  
WASTE WATER

**Reconstruction of the small wastewater treatment plant (163 PE), realised in the VillageWaters project, enabled better and more efficient wastewater treatment and improved the quality of the effluent discharged into the Leite river.**

**An important part of the reconstruction process included involving local residents into the planning process. Active communication and provided space for a dialogue helped to increase the sense of community and raised the environmental knowledge of the citizens.**



# Modification of the marine engine to decrease emissions from the diesel, Gdansk, Poland



**Technical Solution**  
SEA WATER

Preventing hazardous and unwanted particles from reaching the Baltic Sea at the source can take different forms. One of the pilots of the RBR project researched the modification of the engines – based on the pilot on a floating laboratory located in Gdansk.

The pilot enabled a testing facility for selected fuel system configurations to make marine diesel engine more environmentally friendly. The test results consider the functionality and durability of the engine, changes in the dynamics of its work and reduction of the emission of toxic compounds.



# Reducing the nutrients input into the sea from agriculture: Sampling instructions



Tool

WASTE WATER



When determining the chemical composition of any sample from natural waters, wastewater treatment or other organic biomass, the result is dependent on the quality of the sample. Taking a representative sample requires know-how of best practices which may vary between different matrices.

In the Manure Standards project, instructions for taking manure samples were made. The instructions are applicable also to other matrices whether they are liquid, sludge-like or solid. They can be used on any wastewater treatment plant or other facility processing e.g. sewage sludge.



# Risk maps for Climate Proof Living Environment, South-East Finland – North-West Russia



**Tool**

SEA AND STORM WATER

Many urban effects are increasing under the climate change: extreme storm events, heat islands, drought periods, erosion. The emergency preparedness is therefore important, and it can be realised with the complex risk maps.

The risk maps prepared in the CliPLivE project for the cross-border area, including Saint Petersburg, Helsinki, Kymenlaakso and Uusimaa, provide a risk matrix designed to reduce the exposure to hazards and potential climate change-related threats.

