BEST
Better Efficiency for Industrial Sewage Treatment

Better Efficiency for Industrial Sewage Treatment at municipal treatment plants

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City of Helsinki

Project BEST workshop
Kaliningrad, 27 November 2019

EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND
Interreg Baltic Sea Region
WITH FINANCIAL SUPPORT OF THE RUSSIAN FEDERATION
EU STRATEGY FOR THE BALTIC SEA REGION FLAGSHIP

Municipal waste water treatment plants are often primarily designed to treat waste water of domestic origin.

Waste water with abnormal content, such as industrial waste water, can seriously harm the waste water treatment process and the water environment.

BEST aim:

To **ensure efficient co-treatment of industrial waste waters** by promoting **cooperation and best practices** between **industries, municipal waste water treatment plants and environmental authorities** in the Baltic Sea Region.

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1. How are industrial waste waters managed in municipal networks in the Baltic Sea Region? Bottlenecks and challenges?

2. Which are the best practices and solutions to solve identified bottlenecks and challenges?

3. Which kind of recommendations can we give for better management?

1) How are industrial waste waters managed in municipal networks in the Baltic Sea Region? Bottlenecks and challenges?

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EU legal framework

Industry

Directive on industrial emissions 2010/75/EU

Aims at reducing harmful industrial pollution:

Introduces **environmental permits using BAT** (Best Available Techniques) conclusions as a reference for setting permit conditions

Requires that Member States set up a system of **environmental inspections** (site visits at least every 1 to 3 years)

Ensures that the public has a right to participate (access to permit applications, permits and monitoring results)

Municipal wastewater treatment

Urban wastewater directive 91/271/EEC and 98/15/EC

Requires Member States to establish a system of prior regulation for discharges of industrial wastewater into collecting systems:

Industrial waste water shall be subject to **pre-treatment**

to **protect the health of staff** working in collecting systems and treatment plants

ensure that collecting systems and waste water treatment plants and their **operation are not damaged**

ensure that discharges from the treatment plants do not **negatively affect the environment**

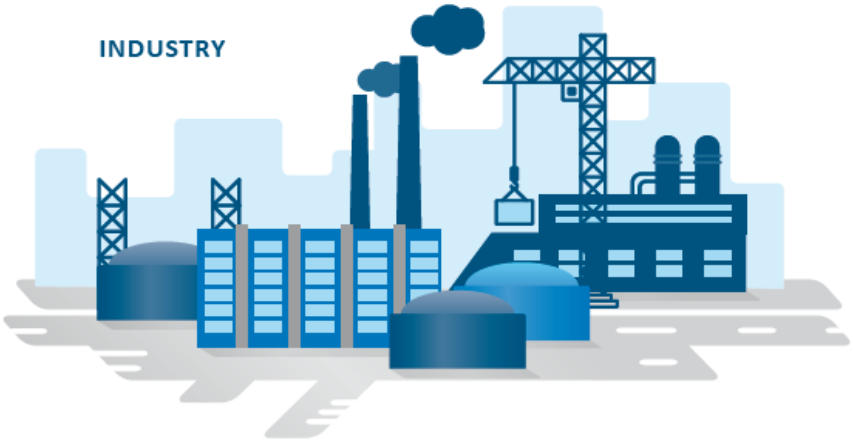
ensure that **sludge can be disposed safely**

Aquatic environment

Water framework directive 2000/60/EC

Directives on environmental quality standards 2008/105/EC and priority substances 2013/39/EC

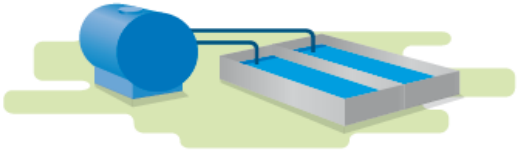
What do the directives say in practice?

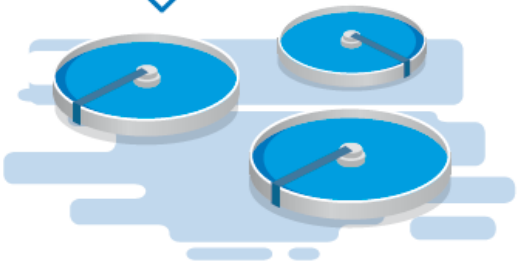


PERMITTING ENVIRONMENTAL AUTHORITHY

Environmental permit for waste water from industry: restrictions on waste water emissions discharged into a municipal waste water treatment plant

Pre-treatment of industrial waste water before feeding it into a waste water treatment plant





LOCAL MUNICIPAL WASTE WATER TREATMENT PLANT

An industrial waste water contract between municipal WWTP and industry with regard to abnormal waste water: Pre-treatment requirements based on quality, quantity and risks to work safety, the treatment process, as well as sludge utilization at a municipal WWTP

Industries requiring permits (IED):

Energy industries
Production and processing of metals
Mineral industry
Chemical industry
Waste management
Other (e.g. pulp, paper, textile, leather, food, feed, intensive animal farming, surface treatment, wood preservation)

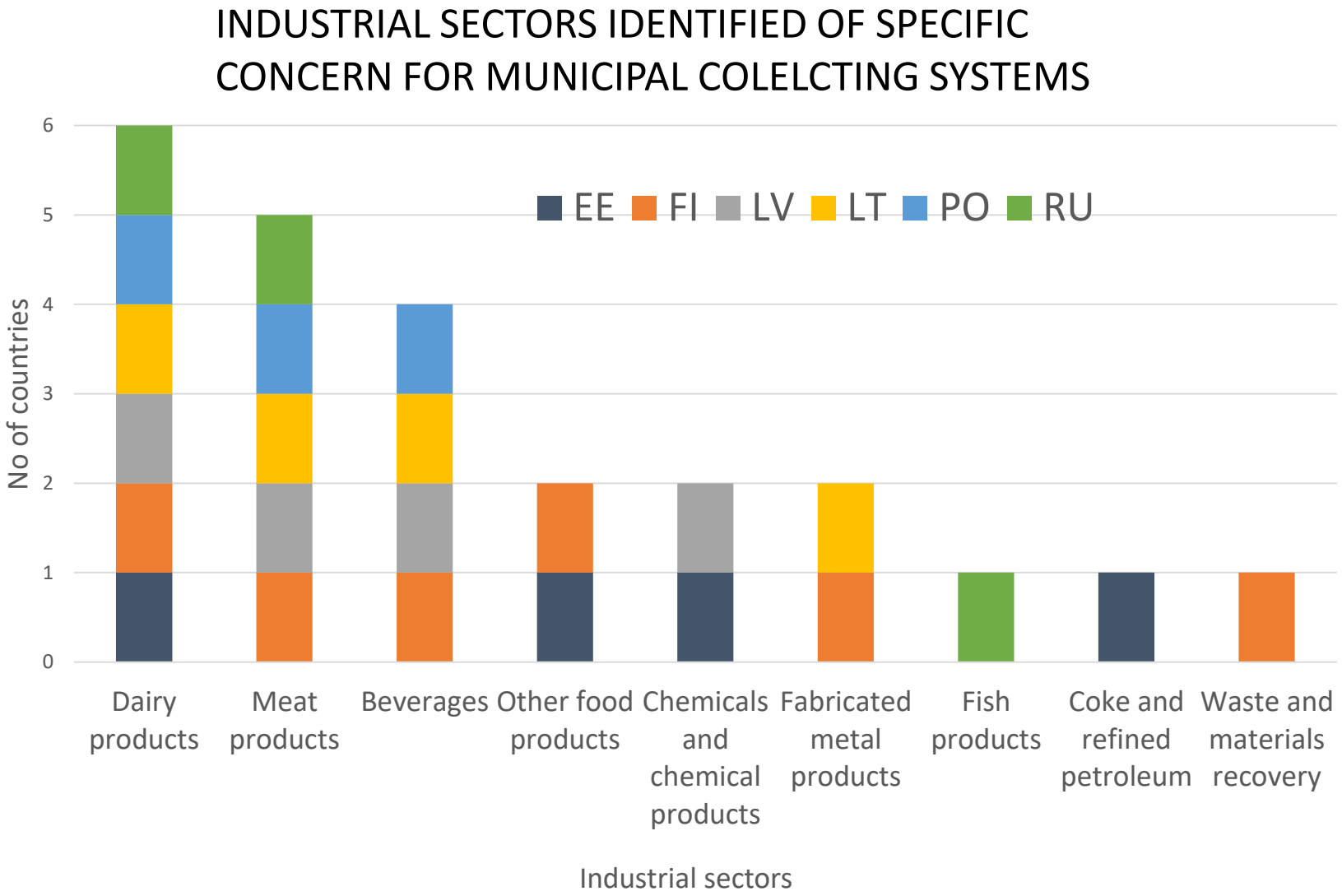


Figure from: Dejus, S., Zviedris, J., Tihomirova, K., Juhna, T. 2019 Industrial Wastewater Discharge to Municipal Sewer System in Countries of Baltic Sea Region. In: *Book of Abstracts*, 11th IWA Eastern European Young Water Professionals Conference, Prague, Czech Republic, pp.175-176, ISBN: 978-80-7592-054-6

Bottlenecks

Lack of monitoring of hazardous substances

Deficiencies in permit requirements

Accidental leaks, load peaks

Insufficient pre-treatment

Discrepancies between permits and contracts

Gaps in knowledge and resources (hazardous substances, pretreatment)

Outdated permits and contracts

Political pressure

2) Which are the best practices and solutions to solve identified bottlenecks and challenges?

Capacity development

Cooperation practices between industry, municipality and water utilities

6-8 February 2018, Helsinki, Finland (project Kick off)

Phosphorous recovery and utilization of sludge

11-13 June 2018, Gdansk, Poland

Management of hazardous substances in industrial sewage

20-22 November 2018, Toila, Estonia

Management of effluents from the food and dairy sector

2-4.4.2019, Riga, Latvia

Pre-treatment possibilities for different industrial effluents

26-28 November 2019, Kaliningrad, Russia

Working methods for further capacity building and cooperation

26-28 May 2020, Warsaw, Poland

(project Final seminar)

National events during the project

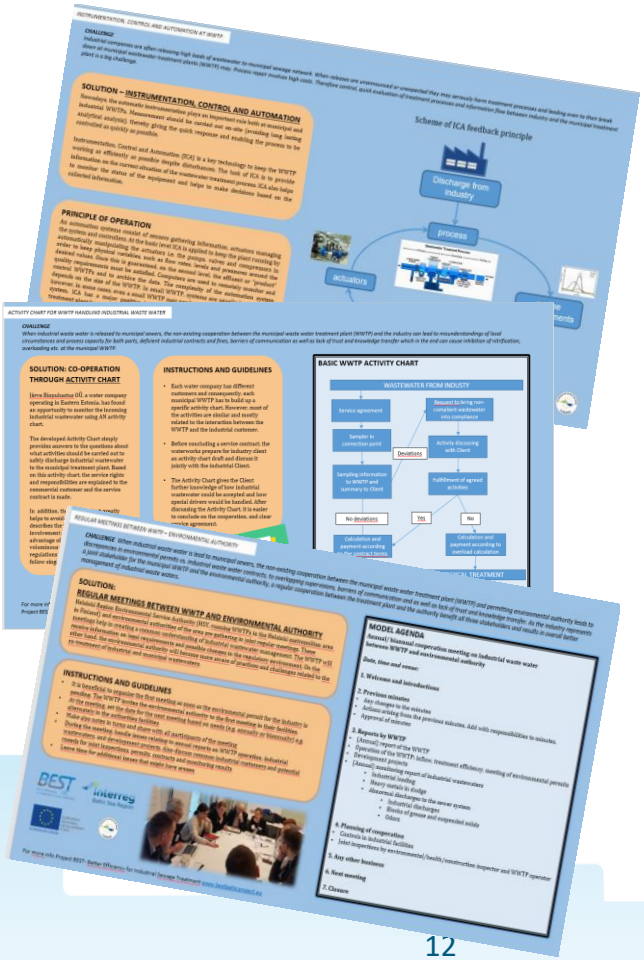
Poland, Lithuania, Estonia, Latvia, Kaliningrad, Finland

Collecting and testing new practices

- In Project BEST industries and WWTPs are testing these practices to increase and enhance cooperation

- Examples of practices for testing
  - Regular meetings between WWTP and environmental authority
  - Regular meetings between WWTP and industry
  - Excel tool for emergency situations (by Valio dairy company)
  - Adequate monitoring equipment of influent at WWTP
  - Model contracts and steps of negotiation process

- Practices and methods will be described and collected in a learning package and training concept



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Investments and pilots

- **Pre-treatment at cheese factories**
  - Balancing tank and flotation unit *(E-Piim Tootmine and Latvijas Piens, Latvia)*
- **Municipal WWTP investments**
  - Equipment to monitoring influent water (*Põltsamaa Varahalduse, Estonia*)
  - New industrial treatment line using calcium-silicate filter material enabling P recovery, *Doruchow Commune, Poland)*
  - Piloting use of industrial waste and sewage for co-fermentation *(Leszno, Poland)*
- **University piloting**
  - Industrial inhibitors of the biological wastewater treatment process (*Riga Technical University*)
  - Testing tertiary filter materials for P, heavy metals etc. (*Tallinn University of Technology*)


Pic Latvijas Piens LTD

3) Which kind of recommendations can we give for better management?

Guidelines for improved co-management of industrial wastewater

Target stakeholders of guidelines

1) Permitting and supervising authorities (national, regional, local)
2) Municipal waste water treatment plants handling industrial waste waters
3) Industries in municipal networks

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So, who is then BEST?

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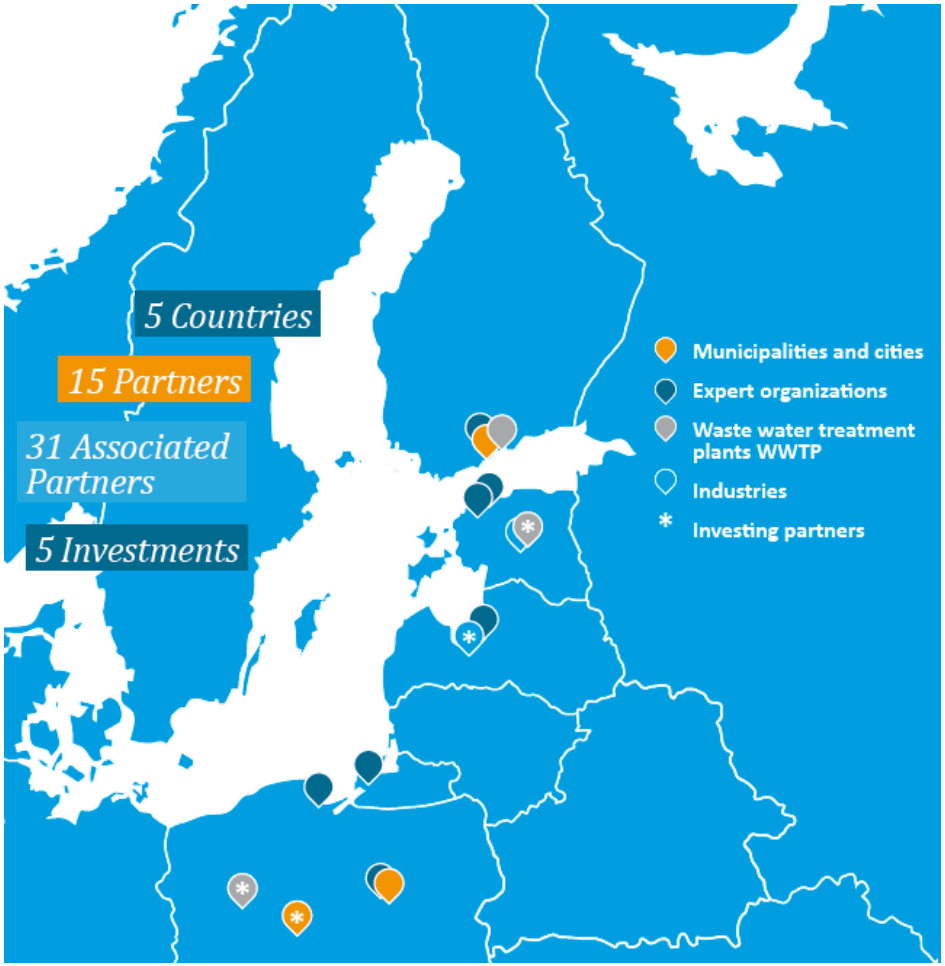
Partners

Municipalities, universities, expert and waterwork organisations, industrial companies, WWTPs



City of Helsinki, Leading partner	Finland
John Nurminen Foundation	Finland
Helsinki Region Environmental Services Authority HSY	Finland
E-Piim Company	Estonia
Tallinn University of Technology	Estonia
Põltsamaa Varahalduse limited company WWTP	Estonia
Estonian Waterworks Association EVEL	Estonia
Riga Technical University	Latvia
Latvijas Piens LTD	Latvia
REC Poland	Poland
Gdansk Water Foundation	Poland
City of Warsaw	Poland
Leszno Water Utility WWTP	Poland
Doruchow commune	Poland
ECAT-Kaliningrad	Russia

Duration and funding

Duration: 1.10.2017 – 30.9.2020

Budget: 3,4 million €

Co-funding:
European Union Interreg Baltic Sea Region (75/85 %),
Russian Federation financial support
Own funding by partners

The project has been granted an EU Strategy for the Baltic Sea Region Flagship status (Policy Area Nutri)

спасибо!

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