

Solutions for efficient management of industrial wastewaters

– Project BEST results

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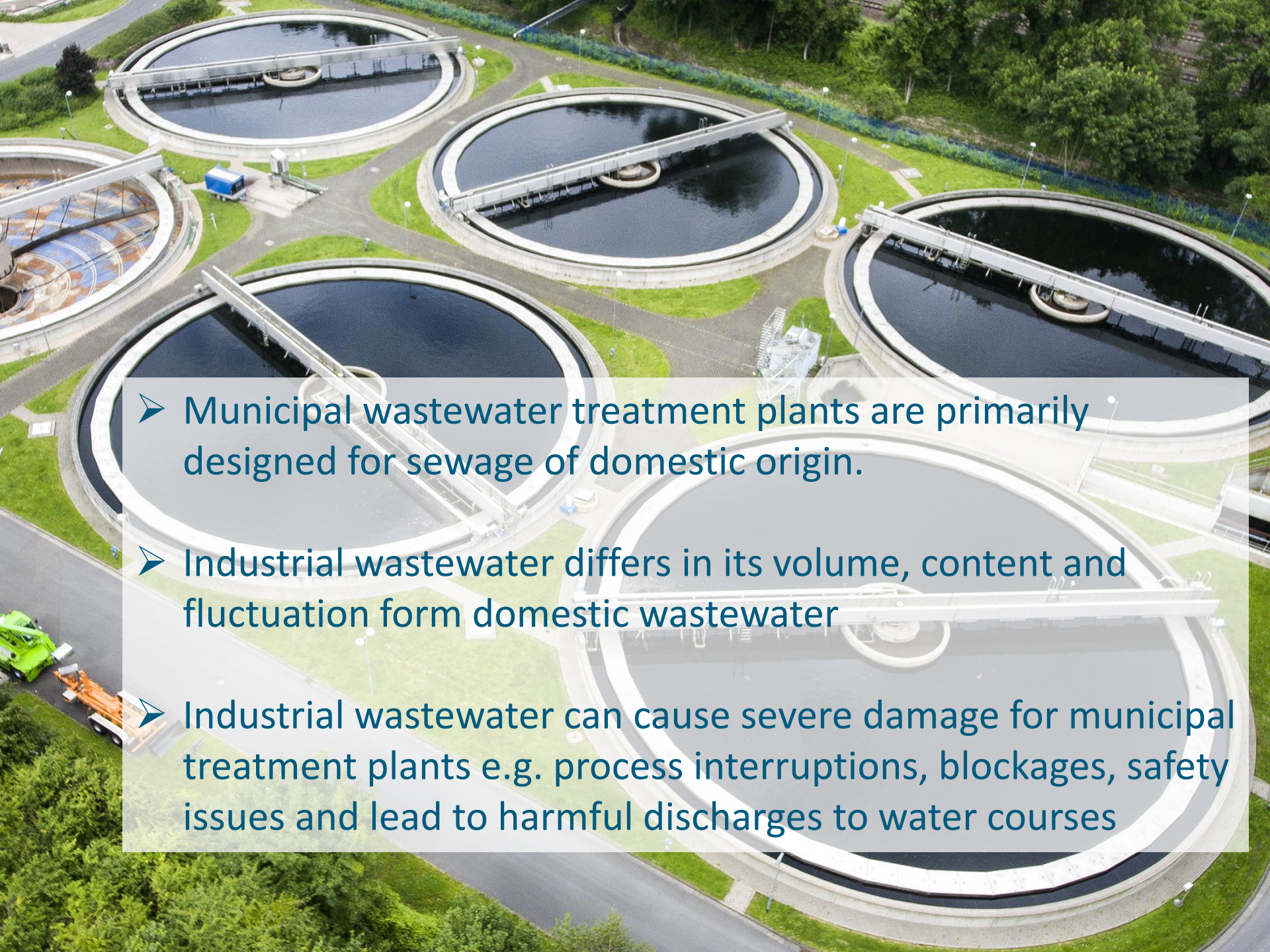
BSR WATER meeting 18.2.2021

Presentation outline

1. Background
 - Problem set-up
 - Main regulatory mechanisms
2. Project aim, facts and partners
3. Main outcome of the project

BACKGROUND



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- An aerial photograph of a wastewater treatment plant. The image shows several large, circular concrete clarifiers arranged in a circular pattern. Each clarifier has a central mechanical arm with scrapers. The water in the tanks is dark. The facility is surrounded by green grass and trees. A blue truck is parked near one of the tanks, and a green vehicle is visible in the bottom left corner.
- Municipal wastewater treatment plants are primarily designed for sewage of domestic origin.
 - Industrial wastewater differs in its volume, content and fluctuation from domestic wastewater
 - Industrial wastewater can cause severe damage for municipal treatment plants e.g. process interruptions, blockages, safety issues and lead to harmful discharges to water courses

EU legal framework

Industry

Directive on industrial emissions 2010/75/EU

Aims at reducing harmful industrial pollution:

- Introduces **environmental permits** using BAT
- Requires **environmental inspections**
- Ensures that the public has a **right to participate**

Municipal wastewater treatment

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

Requires prior regulation of industrial wastewater:

- Requirements for
- **pre-treatment**
 - **protecting the WWTP and its staff**
 - **safety of sludge disposal**
 - **WWTP discharges to nature**

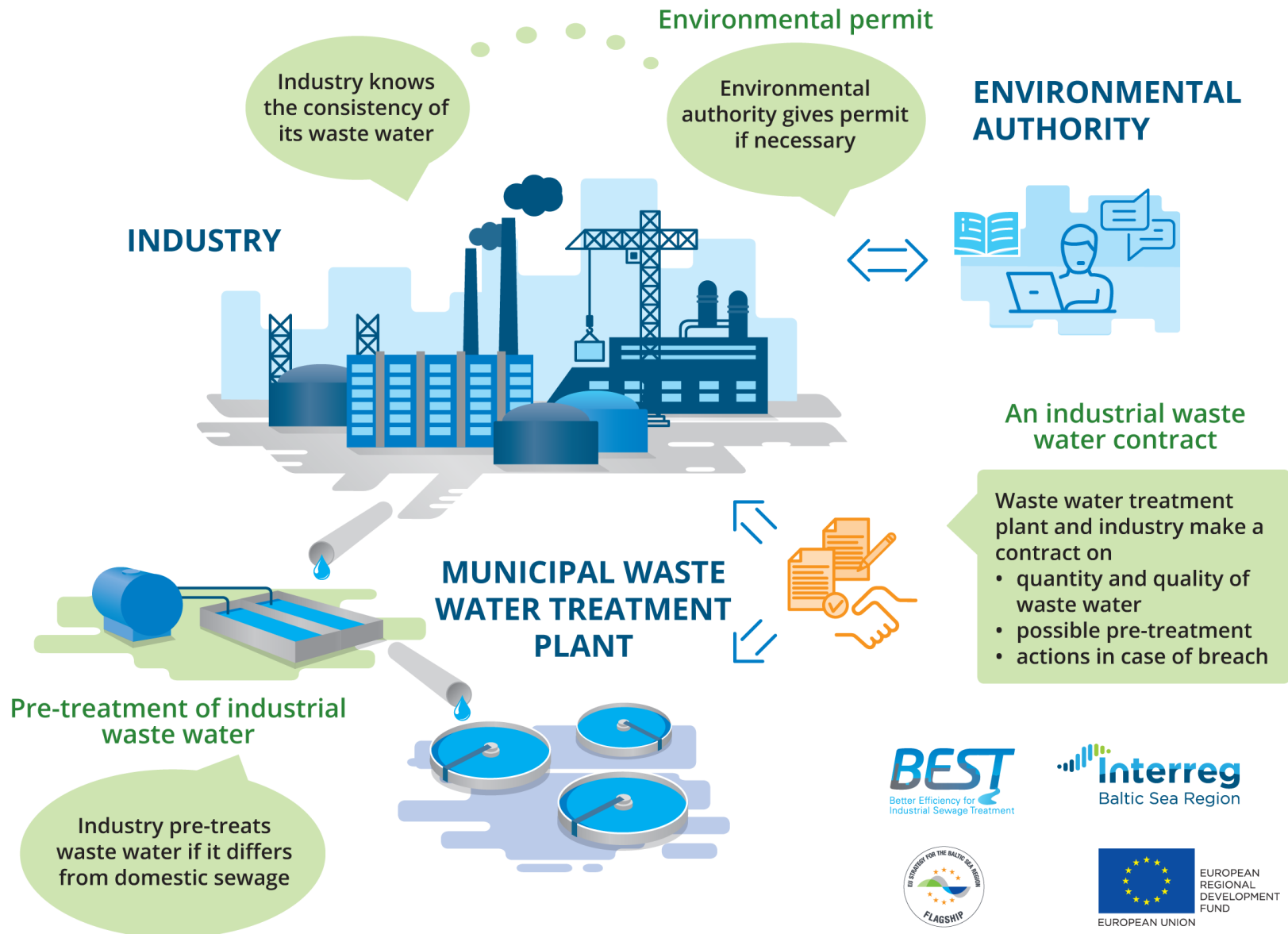
Aquatic environment

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?



PROJECT AIM, FACTS AND PARTNERS



Project aim

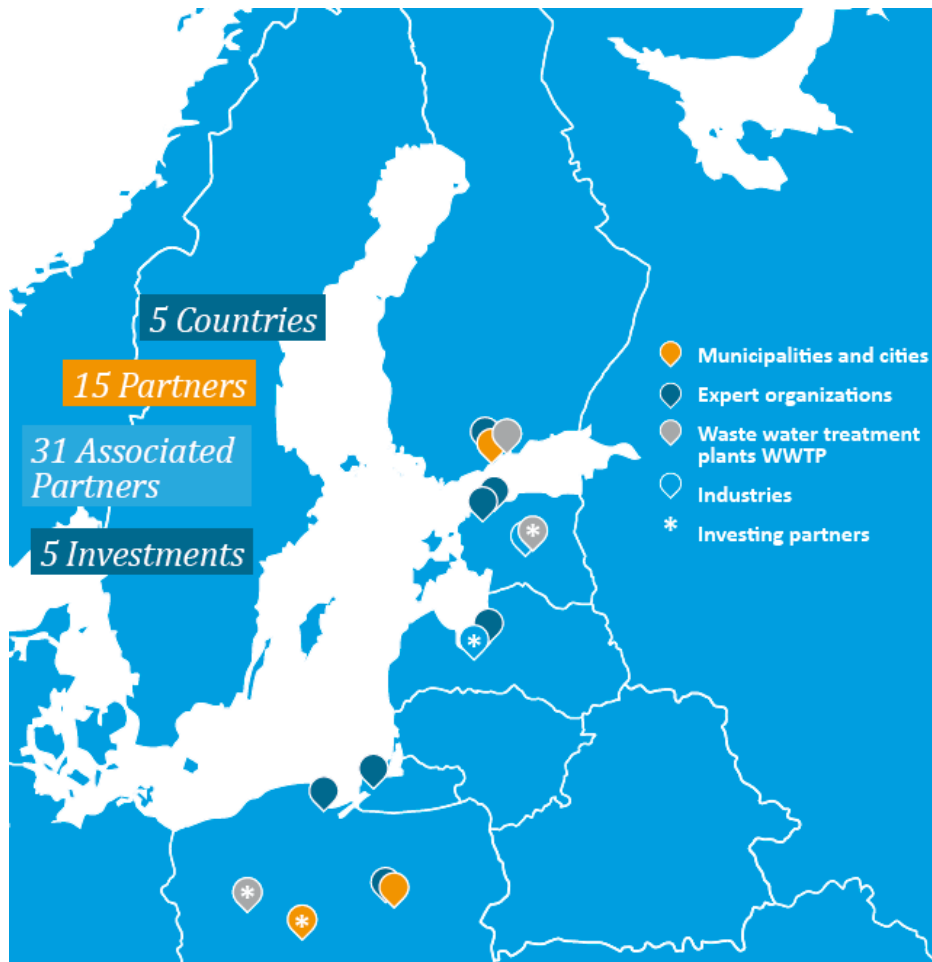
To ensure **efficient co-treatment of industrial waste waters in municipal networks** by promoting **cooperation and best practices** between **industries, municipal wastewater treatment plants and environmental authorities** in the Baltic Sea Region.
















Questions we answered

- 1) how are industrial sewage managed in the BSR?
- 2) which are the best practices and solutions?
- 3) which guidelines can we give for better management?

We = partners

Municipalities, water utilities, industrial companies, universities, expert and waterwork associations.



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 national funding by partners

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

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MAIN PROJECT OUTCOME



1) How are industrial wastewaters managed in municipal networks in the Baltic Sea Region?

challenges...

- Assessment of the current situation concerning industrial wastewater discharge into municipal wastewater systems in the Baltic Sea Region

Work leader Riga Technical University

<https://bestbalticproject.eu/outputs/current-situation-in-industrial-wastewater-treatment-in-baltic-sea-region/>

Content of assessment

1. Industrial sectors of specific concern for wastewater management in municipal networks
2. Implementation of EU legislation nationally (Finland, Estonia, Latvia, Poland, Russia, Sweden and Germany)
 - Bottlenecks in utilization of permits, contracts, pre-treatment and sludge management

INDUSTRIAL SECTORS IDENTIFIED OF SPECIFIC CONCERN FOR MUNICIPAL COLLECTING SYSTEMS

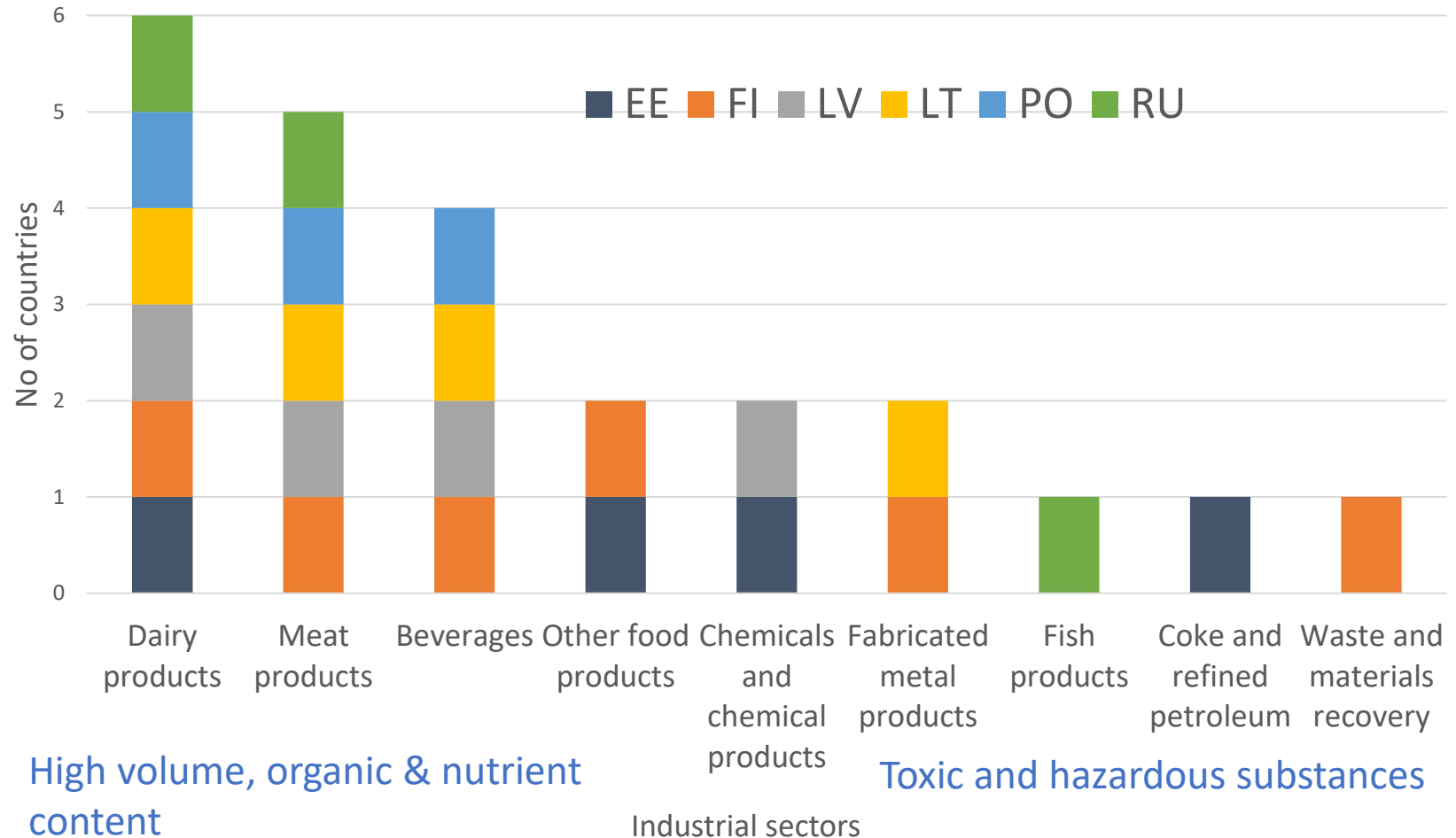


Figure from: Dejus, S., Zviedris, J., Tihomirova, K., Juhna, T. 2019 Industrial Wastewater Discharge to Municipal Sewer System in Countries of Baltic Sea Region. In: *Book of Abstracts*, 11th IWA Eastern European Young Water Professionals Conference, Prague, Czech Republic, pp.175-176, ISBN: 978-80-7592-054-6

Bottlenecks...

Political pressure & regional
economic politics

Gaps in knowledge and
resources (hazardous
substances,
pretreatment)

*Especially in the
Baltic countries*

Deficiencies in permit
requirements

Discrepancies between
permits and contracts

Outdated permits and
contracts

Lack of hazardous
substances and
monitoring of them

Lack and insufficient
pre-treatment

Lack of defining
cooperation and
communication

Lack of models for
accidental leaks, load
peaks

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

- Project investments, pilots and local cooperation models
- Instructions for specific industrial sectors
- Tested other technical solutions and methods
- Training concept for capacity building

➤ TOOLBOX OF BEST PRACTICES

*Gdansk Water Foundation, Estonian Waterworks Association,
Doruchow Commune, Leszno municipality WWTP, Põltsamaa municipal WWTP,
Latvijas Piens and Epiim dairy companies*

<https://bestbalticproject.eu/outputs/toolbox/>

<https://bestbalticproject.eu/about/pilots-at-wwtps-and-industries-wp4/>

Investments, pilots and cooperation models

- **Pre-treatment at two cheese factories**
 - Balancing tank and flocculation-flotation unit (*E-Piim Tootmine, Estonia and Latvijas Piens, Latvia*)
- **Three municipal WWTP solutions**
 - Mobile sampler for monitoring influent water (*Põltsamaa Vesi, Estonia*)
 - Industrial treatment line using calcium-silicate filter material enabling P recovery, (*Doruchow Commune, Poland*)
 - Piloting use of industrial waste and sludge for co-fermentation (*Leszno, Poland*)
- **Local cooperation models:** Biannual meetings (WWTP, env. authority, industry), visits to each others plants, sharing of annual reports, identifying industrial process phases which are especially challenging or risky for WWTPs, tools for riskmanagement and emergency situations

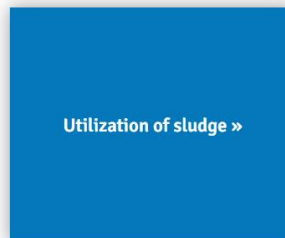
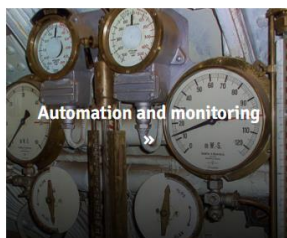


Toolbox of best practices

- Recommendable practices as descriptive toolsheets and videos

Home / Outputs / Toolbox of best practices in industrial wastewater management

Toolbox of best practices in industrial wastewater management



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

solutions!

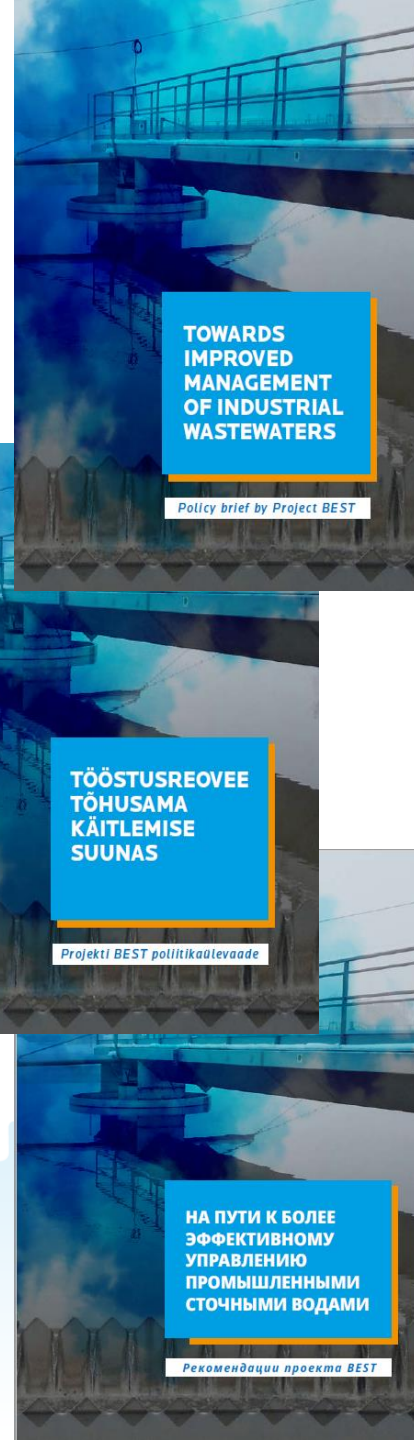
- Guidelines for management of industrial wastewater
- Policy brief – Towards improved management of industrial wastewaters

Work leader John Nurminen Foundation


<https://bestbalticproject.eu/outputs/guidelines-for-management-of-industrial-wastewaters/>

Guidelines and Policy brief

- The guidelines give comprehensive advice for
 - legislative and institutional developments
 - co-treatment and pre-treatment
 - industrial wastewater permits and contracts
 - cooperation and communication
- The policy brief is based on the guidelines but gives recommendations from the stakeholder point of view with targeted actions for
 - Industrial operators
 - Environmental authorities
 - Wastewater treatment plants
 - Policymakers



MAIN 3 FINDINGS

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1. **The most alarming discovery of the project was the insufficient permitting of even large industrial companies in the Baltic countries. In worst cases there are no limit values or requirements for pre-treatment for hazardous substances, which endangers wastewater treatment operation and the natural environment. Here policymakers need to take their responsibility and review the legislation and permitting practices... *and it is looking promising at the moment in Estonia!***
 2. **On the positive side is, that even rather cheap technical solutions or cooperation practices locally may significantly improve the situation. Here again wastewater treatment plants and industries themselves need to take the responsibility and increase cooperation and knowledge transfer.**
 3. **In Finland, Sweden and Germany the environmental authority was seen as a partner and permitting and cooperation worked well.**



Dziękuję, спасибо, äitäh, paldies, kiitos!

Videos!

BEST investments & pilots:

<https://bestbalticproject.eu/investment-and-pilot-videos/>

Pre-treatment examples:

- Jewelry (Kalevala koru)
- Fish production (Kalatukku Ericsson)
- Dairy (Valio)
- Pharmaceuticals (Orion)

<https://bestbalticproject.eu/efficient-and-responsible-pretreatment-of-industrial-wastewaters-good-examples-in-videos/>

<https://bestbalticproject.eu/>

