



Comparing costs and benefits of water protection

CITYWATER Final Seminar:
Protecting our CITYWATERs: why, what and how?
Tallinn 8-9 September 2015

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Municipalities' FAQs

“Why should money to be put on water protection instead of other needs?”

“Water protection costs – but how much?”

“What municipalities could gain from water protection?”

“How to take benefits into account in decision-making?”





Cost-Benefit Analysis in CITYWATER

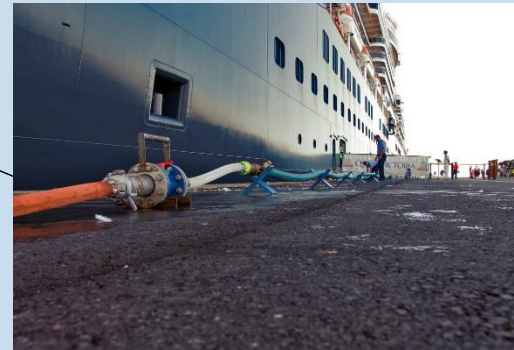
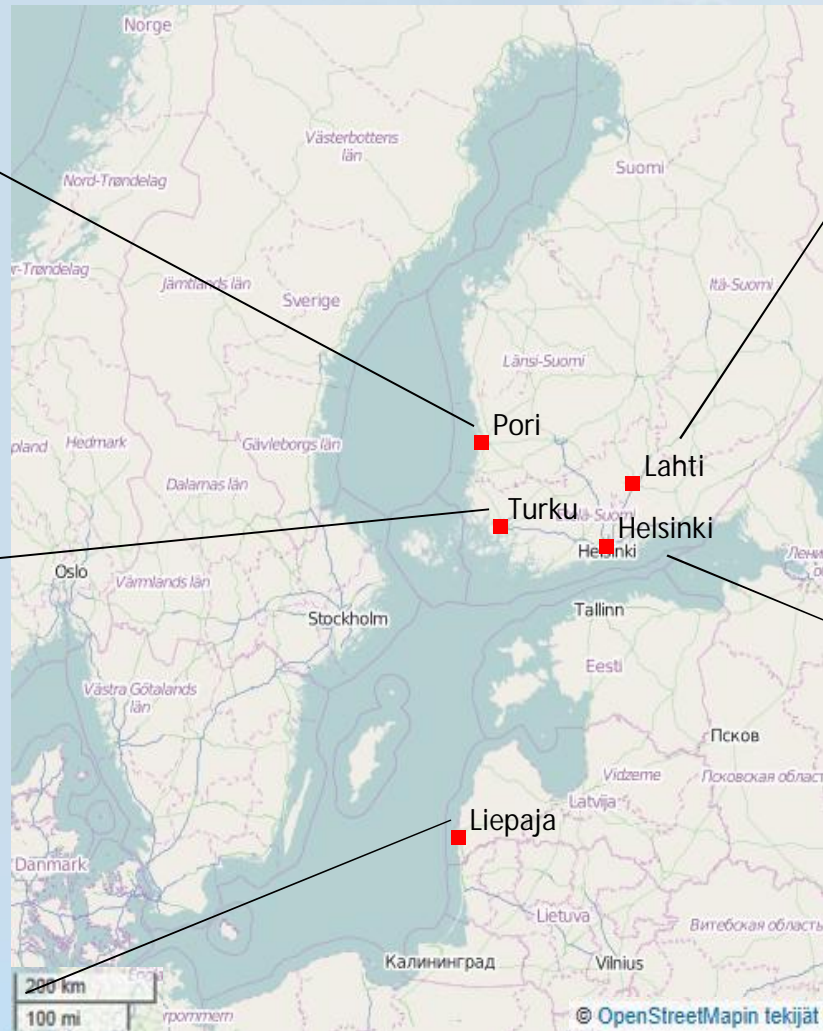
Aim: to provide information to support water protection at the local level

- Different water protection measures
 - Information on the costs, the benefits, the impacts and the implementation process of the water protection
 - Cost-benefit analysis at local level
- Measures should be diverse, exemplary and easily applicable around the Baltic Sea





Five case studies from Baltic Sea Challenge network



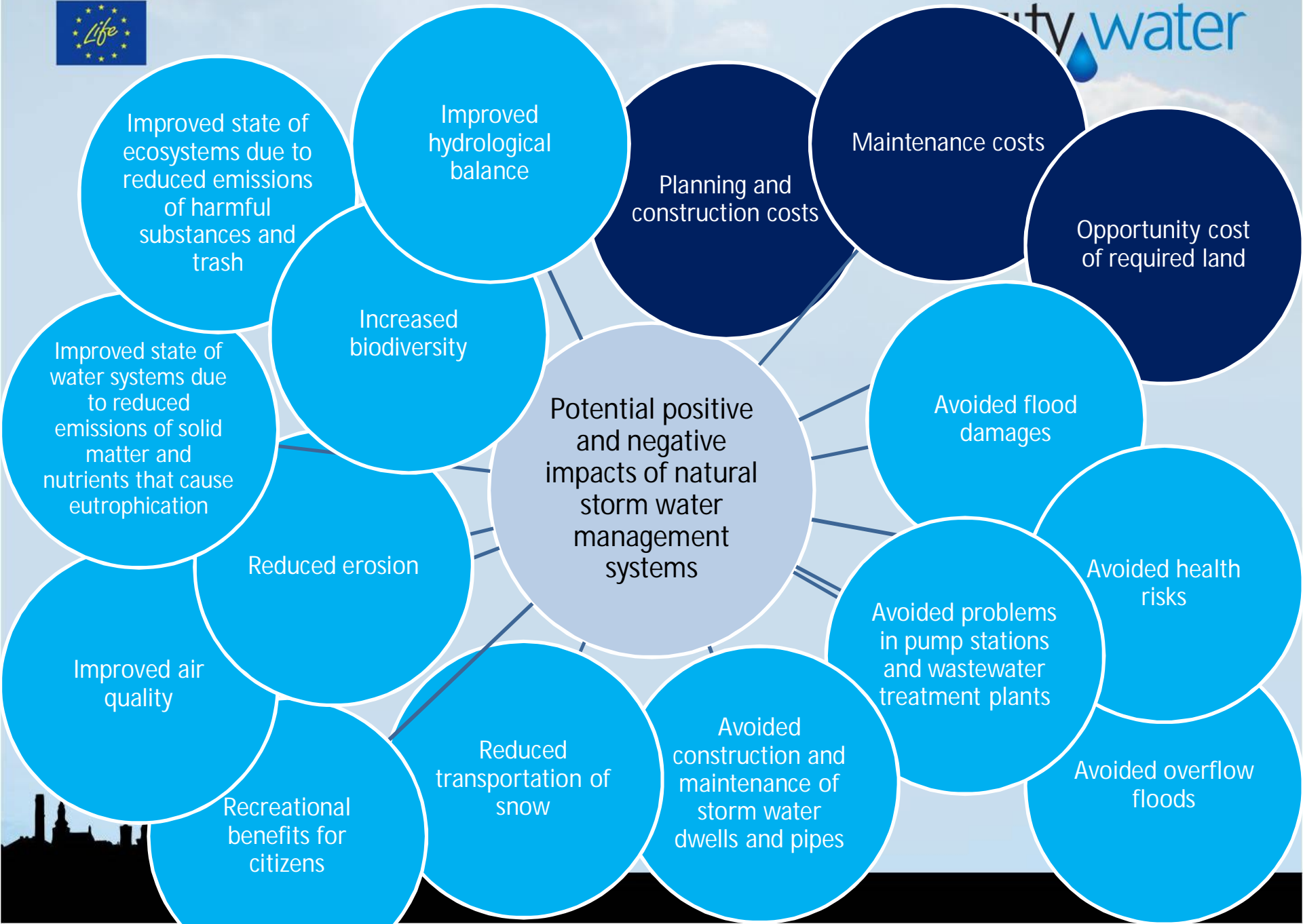
Pictures by:
Suomen Ilmakuva Oy & Pori Water (Pori)
Eliisa Punttila (Turku)
Vilmars Bogovics, Liepaja Water (Liepaja)
Eila Palojärvi; City of Lahti (Lahti)
Mikael Kaplar / Studio POiNT (Helsinki)



Cost-benefit analysis

- CBA is developed to be a tool that provides information to support decision-making in order to allocate resources efficiently
- In the CBA all relevant impacts of the whole time span of the project or policy are taken into account by measuring them in monetary terms and summing them up
- The result of the CBA is the net present value: it tells is the project socially worthwhile and potential of increment in social welfare







Average nutrient reductions (kg/y)

Technical measures

Natural measures



Luotsinmäki WWTP

127,500 kg N/y
31,000 kg P/y



Wetland in Lahti

61 kg N/y
2 kg P/y



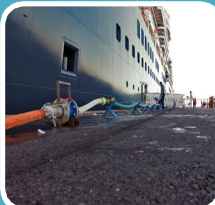
Liepaja WWTP

18,000 kg N/y
1,000 kg P/y



Buffer zone I in Turku

175-306 kg N/y
35-70 kg P/y



Port of Helsinki

21,000 kg N/y
3,000 kg P/y



Buffer zone II in Turku

60 kg N/y
4 kg P/y



Annual benefits from nutrient reductions

Technical measures



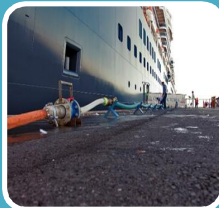
Luotsinmäki WWTP

2.6 M€ – 25.6 M€



Liepaja WWTP

0.1 M€ – 1.5 M€



Port of Helsinki

0.3M€ – 3.6 M€

Natural measures



Wetland in Lahti

400 € – 5,400 €



Buffer zone I in Turku

3,000 € – 59,000 €



Buffer zone II in Turku

400 € – 5,000 €



Net present values in two scenarios

Technical measures



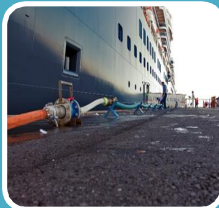
Luotsinmäki WWTP

-40.3 M€; 120.7 M€



Liepaja WWTP

2.1 M€; 18.6 M€



Port of Helsinki

-7.5 M€; 76.1 M€

Natural measures



Wetland in Lahti

83,000 €; 130,000 €



Buffer zone I in Turku

41,000 €; 510,000 €



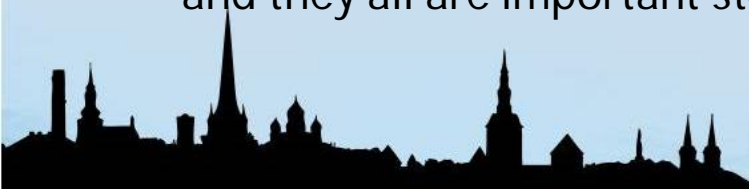
Buffer zone II in Turku

- 4,000 €; 20,000 €



Results and lessons learned

- Nutrient load reductions were significant
- In addition, the measures provided many other benefits
- The cases differed a lot from each others and provided different benefits
- When the state of the Baltic Sea is poor, the nutrient reductions and actions are very valuable
- All of the measures are likely worth of implementing
- Cost-benefit analysis is a recommendable tool for municipalities
- Local measures are in crucial role in protecting the Baltic Sea and the local waters and they all are important steps toward healthier sea





Recommendations

- Implement different kinds of water protection measures, in order to get as various benefits as possible
- Prefer measures having connection to other fields of environmental protection in order to maximise the benefits of one measure
- Use cost-benefit analysis as a tool for bringing the benefits of water protection to decision-making, for choosing among potential measures to be implemented or to improve efficiency of already implemented measures
- Put more effort in water protection research and data compilation
- Utilise the provided information and lessons learned of the study to support water protection work in practice
- Utilise the existing networks, for example the Baltic Sea Challenge, for sharing ideas, experiences and best practices regarding water protection





How to identify the need of CBA?

Cost-benefit approach:

1. Specify the considered measure(s)
2. Identify the potential impacts and set them on a time line
3. Consider the magnitude and the relevance of the impacts
4. Consider the overall impacts
5. Consider if some of the impacts should be assessed more in detail
6. Consider if the overall impacts should be assessed to provide support for decision-making

→ If decision-making requires comparison of overall impacts, perform a cost-benefit analysis





Different approaches to find support for water protection

- Cost-Benefit Analysis
 - Take all relevant impacts into account
 - A holistic, long term perspective
 - Allows comparison of different alternatives
- Qualitative Cost-Benefit Analysis
 - Impacts are identified, categorized and their magnitude is assessed but not monetised if it is not possible
 - Apply cost-benefit thinking: What costs and benefits are relevant? How much they count? Short-term vs. long-term impacts?
- Cost-Effectiveness Analysis
 - Compare costs and measured (non-monetised) impact(s)
 - Suitable if you want to focus on certain target, e.g. only nutrient reduction





Further information

Punttila, Eliisa. 2014. Cost-benefit analysis of municipal water protection measures: Environmental benefits versus cost of implementation. City of Helsinki Environment Centre publications 2014. Helsinki: City of Helsinki & EU Life+ project CITYWATER Benchmarking water protection in cities. Available at <http://www.hel.fi/static/ymk/julkaisut/julkaisu-21-14.pdf>

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Tools for water protection web site (available soon!) waterprotectiontools.net

The CITYWATER project www.citywater.fi

The Baltic Sea Challenge www.balticseachallenge.net/

The Baltic Sea Challenge in Facebook www.facebook.com/TheBalticSeaChallenge



Thank you for
your attention!