

# Sustainable wastewater reuse for agricultural application

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# Introduction

## Test site

**Hammarby Sjöstadswerk**  
Research and innovation for clean water

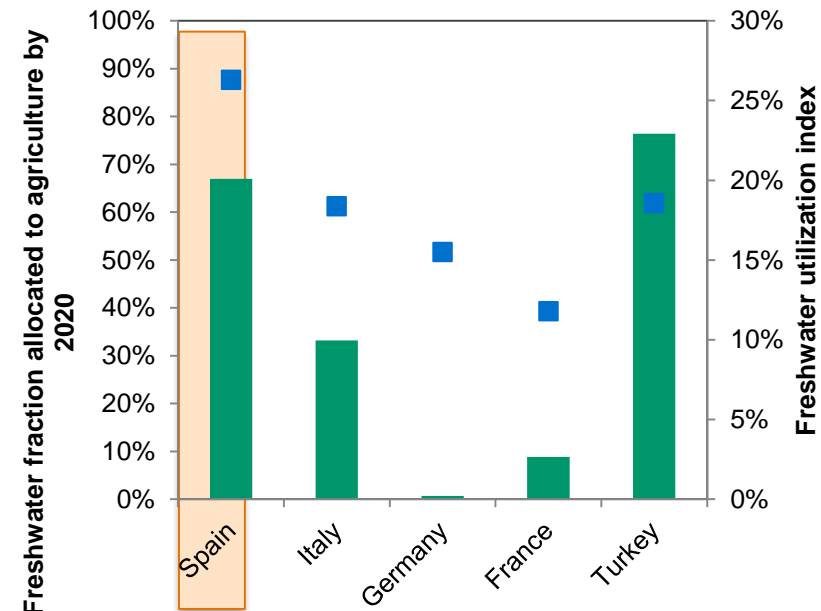
R&D-facility Hammarby  
Sjöstadswerk (owned by IVL)  
used to test technologies



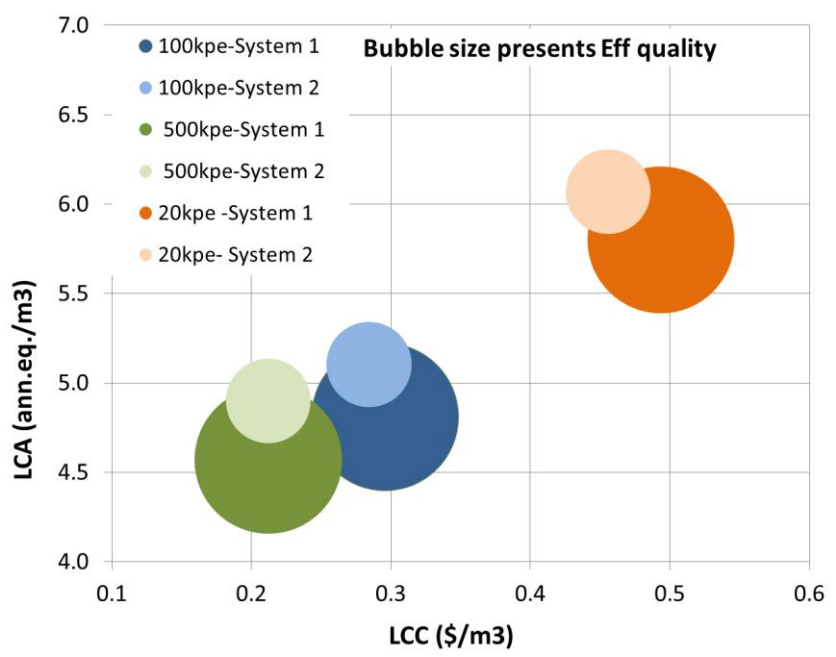
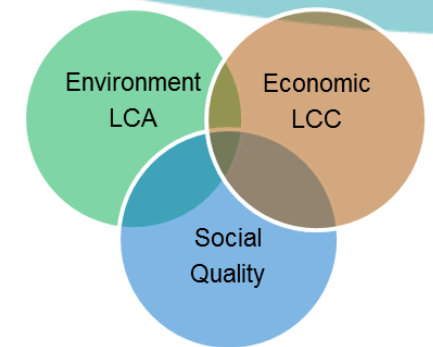
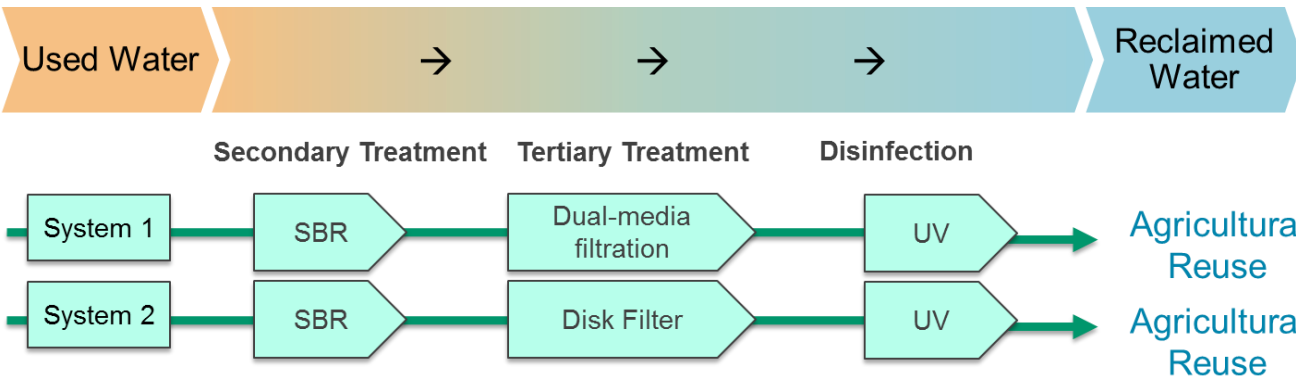
## EU WW Reuse Regulatory work

- Target to align reuse water quality standards as part of Circular Economy
- Proposal to be released by the EU commission by end of 2017
- Reuse in Spain:
  - About 6 to 8% of its treated municipal WW
  - Estimated to double by 2025
- If EU votes for binding standard alignment in Spain needed lower TSS, BOD and Turbidity

■ Fraction of freshwater allocated to agriculture and irrigation  
■ Freshwater utilization index



# Sustainability metrics - Spanish case study



Size of the plant plays important role → System 2 more economical for smaller plants!

System 1 reached better quality without addition of polymers

Lower environmental impact of System 1

Optimization of Sec step important

# Closing Thoughts

- Sustainability tools should be used to provide a more complete understanding of the environmental and economic impacts on the selected reuse treatment systems
- There is a trade-off between LCA, LCC and effluent quality
- Selection of the most sustainable and optimal agriculture reuse solution is regional-specific as well as size-specific
- The developed treatment systems are ready to be implemented as they are based on available technologies.
- Conventional treatments can be used to reach Reuse Quality Standard and make reuse a safe solution for agriculture application
- These conventional treatments are very cost effective making water reuse for agriculture an affordable solution to better manage freshwater resources
- Especially if:
  - Reuse solutions are implemented on larger WWTP to minimize cost and environmental footprint
  - The EU votes for binding quality standards for Reuse in order to further increase the social acceptance of reuse by the public and water users

**Thank You!**



**Questions?**

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Baresel, C., Dahlgren, L., Lazic, A., de Kerchove, A., Almemark, M., Ek, M., Harding, M., Ottosson, E., Karlsson, J., Yang, J. 2015. Reuse of treated wastewater for nonpotable use (ReUse) - Final Report. IVL Swedish Environmental Research Institute, report B2219 (free download at [www.ivl.se](http://www.ivl.se)).