

# CCB Promoting Sustainable Wastewater Management in the Baltic Sea Region



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# CCBs Priority area - Promotion of Sustainable Wastewater Management

## *WHY CCB MAKE PRIORITIES FOR SUSTAINABLE SEWAGE TREATMENT (Eco-technologies)*

- Baltic Sea's main problem – EUTROPHICATION – too much nutrients
- Main load of nutrients (approx. 70-80 %) come from small and diffuse sources
  - o In Sweden single family-homes contribute with 1/3 of the P-load and 1/10 of the N-load, from all sources in coastal areas (agriculture run-off not included)
  - o In Sweden, with high standard on P-removal in municipal wastewater treatment (approx 90 %) , the next step for cost-effective P-removal is higher standards for single-family homes wastewater
  - o In Finnish coastal municipalities the pollution load from single family-homes can contribute with as much as 80 % of the nutrient load

- Big point sources are not the main nutrient contributors to Baltic proper
- A strategy to solve Baltic eutrophication must apply effective, long-term sustainable, cost-effective measures for P & N-reduction
- Eco-technologies (sustainable systems) often cost-effective for P & N-removal (Conventional treatment in small settlements give low reduction of P & N)
- Eco-technologies (sustainable systems) – important component for restoration of the Baltic Sea environment

## Some characteristics for Sustainable WasteWater treatment systems

- Good disease protection (hygienic safe)
- Good recipient protection
- Recycling of nutrients (P, N, K)
- Low energy & water consumption
- Low operating costs
- Often cost-effective
- High ambition for Source separation of incoming waters (ind. water, toxics, nutrients)
- Use of renewable energy (production of bioenergy- energy forest)
- Use of natural self-purification properties of water eco-systems
- Beautiful landscape and support to biodiversity

# Some characteristics for Non-Sustainable WasteWater treatment systems (more common with conventional wastewater treatment system)

- lots of expensive high-tech investment
- very expensive and extended wastewater collection pipeline system
- high operating costs  
(energy for pumping, aeration, sludge treatment etc)
- usually produce contaminated sludge – not to be recycled to farmland
- low recycling of nutrient resources (P, N, K) , back to crop production
- 100 % application of the WC (Water Closet) – a "systematic error"

## Why is the "WC + traditional wastewater treatment" sometimes called a "systematic error"?

- start with concentrated toilet waste ( nutrient in urine, and pathogens in faeces)
- mix with clean tap-water in the WC
- dilution of the concentrated toilet waste
- long transportation in pipes (pumping energy etc)
- mixed / dilutes with industrial wastewater ( e g toxic substances)
- start a treatment/cleaning process to get the clean water back
- nutrients (P,N,K) still in treated wastewater, give pollution
- sludge from treatment contaminated ( heavy metals etc)
- the wastewater system lose the "nutrient resources"  
(P for artificial fertilizers, comes from mining, a limited resource on planet Earth)

**Solution:**

- don't mix wastewaters with different character
- focus on separate management of concentrated wastewaters (e.g. urine, toxic's) don't dilute with other wastewater

- **Promotion of good ecological water status**

# Sustainable Wastewater management

**Goal:** reduce eutrophication, less algal blooms, recycling of nutrients

## Activities 2005:

- 1 study tour to Sweden, 1 seminar in St Petersburg
- Demo-sites: Installation of an eco-toilet system in St Petersburg Region
- Translation of WW management material to different languages.
- Dissemination of material
- Lobby activities



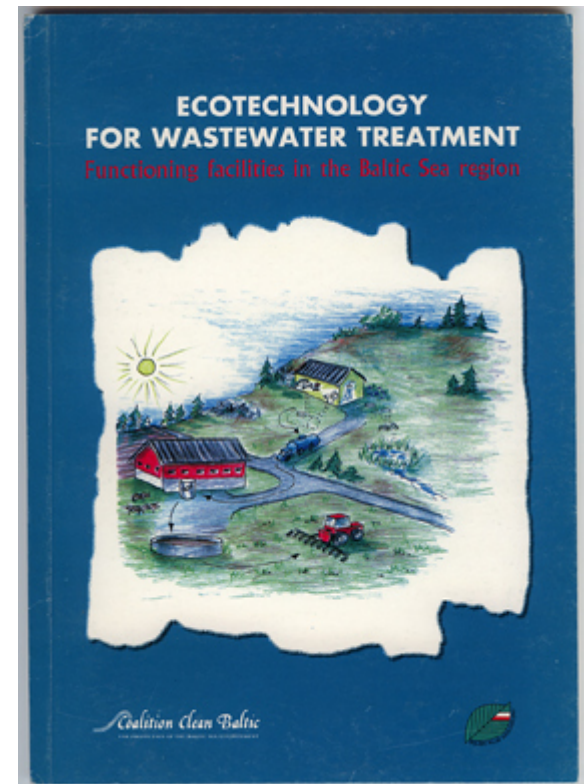
# - More CCB activities for Promotion of Sustainable Wastewater Management – reduction of nutrient load to Baltic Sea

## Publishing

- *"Sustainable Wastewater treatment for a new housing area – how to find the right solution"*, booklet by Peter Ridderstolpe, WRS Uppsala, (English), 35p, (2003). Translated to Polish, Russian, Estonian, Lithuanian and Latvian

- "Guidelines for Using Urine and Blackwater Diversion Systems in Single-Family Homes" (English, Estonian, Latvian, Lithuanian, Polish and Russian), 16p, (2001)

- *"Market Survey- Extremely Low Flush Toilets"* (English), 53 p, (2001 and reprint 2003)



- *Sustainable Wastewater Treatment for Single-Family Homes –* (English, Estonian, Latvian, Lithuanian, Polish, Russian), 16p, (1999-2001)
- *Wastewater treatment in a small village – options for up-grading* – Booklet by Swedenviro (English, Latvian, Lithuanian, Russian, Estonian, Polish), 29p, ( 2000)
- *Ecotechnology for Wastewater Treatment – Functioning facilities in the Baltic Sea region*, Book with overview of 15 different innovative approaches to wastewater treatment, (English), 96p, (1997)

## **Seminars and trainings**

Organisation of seminars on Sustainable Wastewater Management for representatives from ministries, regional authorities, municipalities, NGOs, Water associations and business sector in Baltic countries. Mainly in CITs (Estonia, Latvia, Lithuania, Poland, Russia)

## Demonstration sites

- Installation of urine-diverting toilet systems in single family-homes and in public institutions in Latvia (Renda, Grostona, Rujiena, Krakle).
- Installation of urine-diverting device in latrine in gardening areas outside St Pet (planned for 2006)
- Construction of Smeltaite constructed biopond-wetland system, Klaipeda, Lithuania, for treatment of waters of a small river
- Design and building of the Constructed infiltration wetland system, Häädemeeste, Estonia. To further remove P&N from wastewater after a traditional biological treatment plant.
- Expertise advice for planned outdoor natural systems in Lithuania and Latvia.

# Targets for wastewater treatment – traditional and new perspectives

## Traditional targets

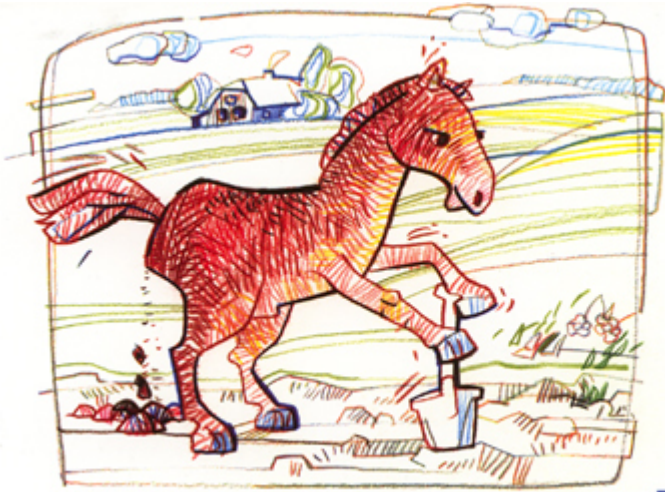
- Protection of water bodies (BOD, P, SS)
- Protection of public health (hygienic safety, disease control)

## New targets

- Protection of public health (hygienic safety, disease control) (stronger requirements, e.g. "bathing water standards" in outgoing wastewater)
- Recycling of natural resources ( Nutrients – P, N, K)  
Managing the wastewater resource
- Low and efficient use of natural resources ( water, energy )

Recycle nutrients  
(P, N, K) from toilet  
waste , back to  
agricultural land  
and crop production  
Use a recycling  
system as for  
manure from  
cattle.





The Past

Eco-evolution



The Present

Eco-evolution

The Future



Eco-revolution