Why WECF develops dry urine diverting toilets in its projects in Europe and EECCA region

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Probability of Dying Before Age 5

Source: WHO Regional Office for Europe
Sanitation in rural areas

- 3% of rural citizens connected to sewage system
- 11% of rural citizens have individual system (septic)
- 15.1% of rural citizens have access to central drinking water system
- Most of the rural citizens have pit latrine in their yard: often not sealed and emptied, flies and bad odour
- 94.7% of schools do not have proper sanitary facilities
- Ground water often polluted: nitrates & micro-organisms
Example Garla Mare, Romania
3500 inhabitants

Water from
400 private wells
78 public wells

1200 households with pit-latrines in yard

The 2 Schools (500 children) have bad smelling pit latrines, no water for drinking or washing hands
Results of investigation: Extreme high levels of nitrates and faecal bacteria

**Nitrate:** average 120 mg/l (EU limit 50 mg/l)

**Faecal bacteria:** Acc. to EU guideline water would not even be safe for bathing

**Health effects:**
Immediate: *intestinal, parasite diseases, diarrhoea, blue-baby-disease* (methaemoglobinaemia)
Long-term: *thyroid, brain dysfunction*
WECF survey on experiences with toilets in Garla Mare

Sanitation at home:

- All the families have a pit latrine

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disadvantages of latrines

- Emptying, 47%
- Flies, 68%
- Odour, 100%

- All complain about bad odour
- 68% about nuisance of flies
- 47% about emptying the pit
Sources of pollution: *Latrines and agriculture*

- **Pit latrines in people’s gardens**
  
  In general the latrines are not sealed and not emptied

  *Yearly lost of human waste in soil/groundwater*
  
  1.5 million liter urine
  
  150,000 kg faeces
  
  15,000 kg Nitrogen

- **Bad maintenance of wells**

- **Intensive agriculture; livestock in yards**
Romania is not an exception

WECF observed in particular inadequate school sanitation in its project countries:

- Armenia
- Belarus
- Bulgaria
- Georgia
- Kazakhstan
- Kyrgyzstan
- Moldova
- Ukraine
- Uzbekistan
- Afghanistan
Today: only 3 rural sanitation options

- **Pit latrines** (ground water pollution, smells)
- **Septic tanks** (perforated, lack service, pollution)
- **Centralized sewage + WWTP**
Planning:

*How to improve sanitation and quality of drinking water?*

- No budget for installation, operating and maintenance of central water supply system
- Households are not able to pay for connection
- Central water supply system implements automatically the need of an adequate wastewater management; no budget
Advantages of ecological sanitation

- Improvement of sanitary facilities, even without connection to water and sewage system possible
- Safe management of pathogens
  - pathogens are eliminated on spot
  - pathogens and nutrients are not spread in the environment
- No smell
- No flies
- Affordable and sustainable
  - saving water
  - reuse of nutrients from excreta
World Health Organisation (WHO, 2006)

Principal forces driving the increase of use of excreta and grey water in agriculture are:

- Increasing of stress and degradation of fresh water resources resulting from the improper disposal of wastewater, excreta and greywater,
- Population increase and related increased demand of food and fibre,
- A growing recognition of the resource value of excreta and the nutrient it contains,
- The MDG’s: especially the goals for ensuring environmental sustainability and eliminating poverty and hunger.
WECF forces driving implementation of ecosan

• Improving sanitary conditions and hygiene
• Protection of groundwater against infiltration of human excrements
• Poverty reduction: increased harvest with less financial input
• Saving of resources: water and nutrients
• Quick implementation possible
Double vault dry urine diverting toilets for school in Garla Mare

Design: Hamburg University of Technology
Garla Mare dry urine diverting toilets for town hall and families
Ukraine school in Stepanovka
Ecosan means sanitizing of potential pathogens

WHO guidelines on the safe reuse of human excrements (2006)

- **Urine**: storage and crop restriction
  Urine: household level direct use or after storage
  Urine: Schools or public toilets 6 month storage time

- **Faeces**: storage, treatment and crop restriction
  Faeces: 1-2 years storage time combined with alkaline treatment by addition of ash or lime, or by composting
Gaining experiences with safe reuse of urine

- Analyses
- Trials
- Implementation
Safe reuse of faeces

For an elimination of pathogens an adequate treatment is essential!!

- Storage in alkaline environment (ashes, lime)
- Composting
Ecological sanitation and raising awareness
Awareness raising

- Why u.d. toilets
- Benefits-obstacles
- How to construct
- Why and how to sanitize/hygienic risks
- Why and how to fertilize with products of u.d. toilets
- Why and how to clean the toilet
- Why to wash hands

- Workshops
- Instruction materials
- Frequently personal visits and discussion
- Support during construction
- Support / control for maintenance and operation
Obstacles we meet in Europe and EECCA region

- Sanitation has not the first priority
- A new toilet is for many families not affordable
- Lack of knowledge on hygiene
- Lack of knowledge on how to sanitize and use Ecosan products
- Use of human excrements not common in most cultures

- Storage capacity to overcome the winter time: urine should not be applied
- Freezing and breaking of reservoirs
- Large size reservoirs are expensive
WECF Ecosan Publications
To download: www.wecf.eu/publications

- Ecological Sanitation and Associated Health risks
- Sustainable Development for All; Reducing effects of polluted drinking water and inadequate sanitation on children’s health in rural Romania
- Urine diverting toilets, principles, operation and construction
- Survey results: From pit latrine to ecological toilet

- Poster: the benefits of ecological sanitation
- Leaflet: Ecosan; a new sanitation approach
- Leaflet: Ecological Sanitation and Hygienic Considerations for Women
Relevant Ecosan Websites

✓ EcoSanRes Publications:
  www.ecosanres.org
  2004-1 Guidelines for the Safe Use of Urine and Faeces in Ecological Sanitation Systems
  2004-2 Guidelines on the Use of Urine and Faeces in Crop Production
  2004-3 Open Planning of Sanitation Systems
  2004-4 Introduction to Greywater Management
  2004-5 Norms and Attitudes Towards Ecosan and Other Sanitation Systems
  2005-1 Review of Sanitation Regulatory Frameworks

✓ GTZ ecosan database

✓ WHO guidelines for the safe use of wastewater, excreta and greywater in agriculture
Thank you!