Sanitation Challenge

- Serving 2.5 billion people with sanitation!
- Should we force MD-7 to couple sanitation to proper environmental engineering?
- Is “sustainable sanitation” sufficiently defined?

Sanitation Challenges: drawing the balance

- Where do we stand with Desar+ technologies (Appropiate Sanitation/ Desar/ Ecosan/ Rosa/ etc.)
- Technical challenges? and/or Negotiable compromises (Health, EP, RecRes, Finances, socio-cultural)?
- Contribution by the Social Sciences?
- Desar+ in OECD- and LDC-contexts
- Major Innovations: where/ of what kinds

Where do we stand with Desar+

- Is the (technical and social) superiority of Desar+ - technologies
  - Demonstrated in all its aspects?
  - Sufficiently argued for?
  - Bounded to specific circumstances?
  - Recognized by the wider society?

Where do we stand with Desar+

- Desar+ - systems ↔ niche-innovations characteristics
  - Attractive ideas/ potential solutions
  - Not yet broadly accepted/used/trusted
  - Knowledge-development based on pilots
  - Uncertainties about up-scaling
  - Developing best in ‘protected’ niches
- Desar 2008: (not ?)ready for up-scaling

Technological challenges (LDC)

- LDC Innovations: treatment of grey water / black water / strong sewage for Hygiene/ health, EP and Agricultural Reuse
- Treatment of fecal matter (septics /pit latrine content/ nightsoil)
- Cost-effective ww. treatment (15% of L.A. not treated)

Technological challenges (OECD)

- Advanced treatment systems for specific flows (BW, GW, BrownW, YW,..)
- Intense, compact systems creating (internal) loops (Komplett, Otterpohl)
- Novel transport systems (Larsen)
- Mind economics: recycling at any costs?

Contribution by Social Sciences

- Social Sciences research agenda:
  - More visible and present
  - Close cooperation with Technical Sciences
  - Not yet ‘co-decisive’ for Desar+

Contributions by Social Sciences

- Theorize and Measure End-user perception, satisfaction and use
- Rethink (in)visibility of the systems
- Help establish trust in new systems
- Specify participation dynamics (+NGO's)
- Tackle the issue of 'regulation'
- Investigate spatial design and integration in build environment

Desar in LDC- and OECD- contexts

- Prospects Desar+ different for LDC- and OECD- circumstances
- Both main-lines of research are available in the present Desar+ -networks:

Desar in LDC- and OECD- contexts

Key questions for LDC-contexts:

- “which technical configurations fit best into local circumstances”
- “who is deciding about (access to) water and sanitation”
- “how do we secure long-term
  - Robustness/resilience
  - Accessibility
  - Sustainability”

Desar in OECD- and LDC-contexts

Key questions for OECD-countries:

- What obstacles exist for up-scaling/ Sanitary Transition
  - Regulation/regulators at national, EU level
  - Cultural barriers and taboos among population (cooking on biogas, drinking water from waste-water etc.)
  - Existing power-relations in decision making about Sanitation Infra's.
  - Different utilities/ service providers (Drink.water, Sanitation, Energy) generally work separately

Major innovations: where/ of what kind?

- Technical innovations:
  - Combine utilities (e.g. reuse biogas, recover energy from Grey-water)
  - Inventing new toilets
  - Cost-effective transport systems
  - Blackwater and integrated system design (chains!)
  - Dry sanitation/low cost solutions (LDC)
  - Urine-diversion with flush toilets
- Conceptual/ Social Innovation?
  - Re-reading Brundtland: Social and Ecological innovation must go together
  - Desar+ -systems must deliver good ‘Social Quality’
  - Look beyond the Dichotomy: Modernized Mixtures