Ecological Sanitation and the UN Millennium Development Goals

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MDG for water and sanitation

☐ To decrease by 50% by 2015 the % of the global population (in 1990) without basic sanitation and safe drinking water
Size of the challenge

- Today there 2.6 billion people without basic sanitation services
- And 1.1 billion without safe water
- 1.8 million deaths per year (mainly children under 5 yrs)
- 1.5 billion people with round worm parasites
Quantifying the MDG sanitation goal to 2015

- 1.75 billion people (50:50 urban:rural)
- 450 million households (60:40)
- 151 million households East Asia (70:30)
- 112 million households South Asia (35:65)
- 80 million hh Sub-Saharan Africa (50:50)
- 39 million hh Latin America & Caribbean (80:20)
- 38 million hh Southeast Asia (50:50)
- 6 million hh Eurasia (33:66)

- In total 95 000 household installations per day between 2003 and 2015
The relative size of the MDG sanitation target for each country based on the number of installations required through to 2015
Number of toilets per thousand households to be installed through to 2015 to meet the MDGs

a measurement of the "physical burden"

SEI Graphic - Ian Caldwell (Aug 2005).
Data source: UN-Habitat, JMP and FAO.
Number of toilets in the different UN regions of the world to be installed through to 2015 per day in order to meet the MDGs.
Sanitation target 2015: Toilets per ‘000 households versus GDP per capita

A measurement of the “financial burden”
Why has conventional sanitation failed?

- Sewage systems cost too much to build and maintain
- Pit latrines are primitive and unsafe but alternatives are not there
- Most people are ignorant about sanitation
- No public dialogue
- Sanitation is a taboo subject
- Sustainability has not entered the sanitation sector
Ecosan has 4 main features

- Source separation
- Containment
- Sanitisation
- Recycling
Double-vault urine-diverting dry ecotoilet used in China, Vietnam, Mexico & India (SARAR; Lin Jiang)
Fossa alterna soil-composting pit latrine. (Aquamor)

After one year of use by a family pit 1 will be almost full. Pit 2 will be empty or filled with compost.

- Superstructure
- Slab
- Ring Beam
- Wooden lid (optional)
- Pit 1 filled with excreta, soil, ash, leaves
- Pit 2 filled with compost from kitchen & garden
A crop of spinach four weeks after planting, using processed excreta from one family, using a Fossa alterna, Zimbabwe. (Aquamor)
Straight-drop dry urine-diverting toilet in multi-story apartments in Dong Sheng, Northern China (SEI)
Annual cost to 2015 for ecological sanitation as percent of regional GDP

(health costs 10%, military 2.5% MDG ecosan 0.2%)
Potentially recycled nutrients from ecosan systems as % of currently utilized chemical fertilizer nutrients in 2002

[Chart showing data for various regions and nutrients, with categories including Developed Regions, East Asia, Eurasia, Latin America and the Caribbean, North Africa, Oceania, South-east Asia, Southern Asia, Sub-saharan Africa, and West Asia.]

Source: FAOstat (2005)
What improvements can be made already today

- Pit latrines could be modified to be soil-composting latrines
- Toilets and especially new toilets could be equipped with urine diversion
- Urinals can be added with separate collector systems
- Flush toilets could be modified to use less water
- Greywater could be kept separate from the blackwater from toilets
Improvements cont’d

- Toilets could be connected to biogas fermentors (10 million already in China)
- Cess (or drainage) pits from pour-flush toilets could be equipped with a safety zone of additional filter material to prevent contamination of ground water
- Dry toilets with urine diversion could be installed in:
  - dry areas lacking water
  - rocky areas where pits are expensive to dig and
  - areas with high water tables and flooding
  - And as alternative to sewage systems, rural and urban
New urban strategies are needed - rural could be put on a fast track

- Sanitation services for urban areas cannot be the same for those for rural areas
- To reach the urban MDG for sanitation will require significant innovation
  - ecosan
- Rural sanitation could be put on a faster track
  - Doable with local capacity and equipment
  - Affordable
Capacity building top priority

- A global programme to build capacity similar to the “Green Revolution” in the 1960s is required
- A global network of 10-12 regional centres of expertise in sustainable sanitation are required
- Each regional centre would
  - develop a capacity building programme and
  - create extension services, training and R&D in target countries
For more information on ecosan

www.ecosanres.org