# EcoSanRes

an international R & D, policy, and capacity building programme on **Ecological Sanitation**

sponsored by Sida

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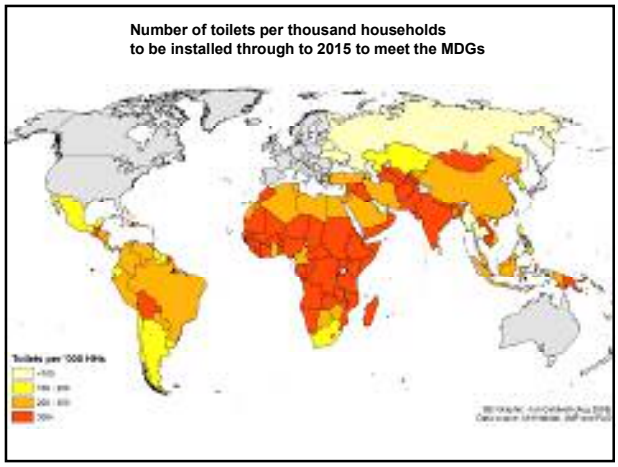
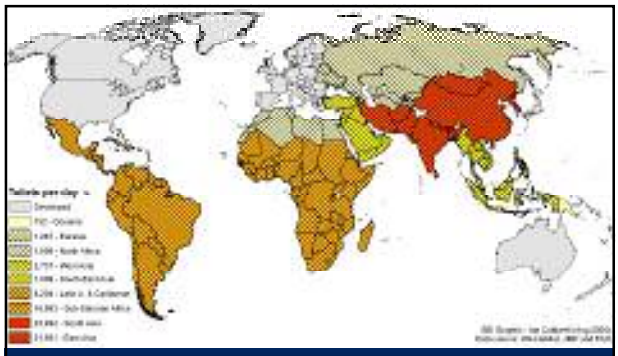
EcoSanRes

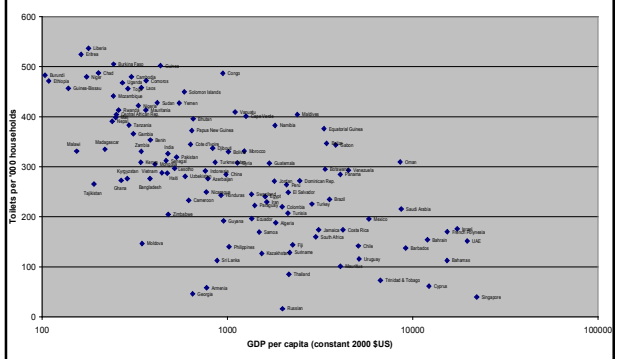


Number of toilets in the different UN regions of the world to be installed through to 2015 per day in order to meet the MDGs; 95,000 installations per day; 60% is in urban areas

Map showing the relative size of the MDG sanitation target for each country based on the number of installations required through to 2015

**Sanitation target 2015: Toilets per '000 households versus GDP per capita**




## Challenge at hand

- *The present MDG roadmaps do not consider sustainable solutions and will perpetuate the problems that conventional solutions bring ie negative environmental and health effects*
- *Sustainable sanitation protects and promotes human health, does not contribute to environmental degradation or depletion of the resource base, is technically and institutionally appropriate, economically viable and socially acceptable.*
- Ecological sanitation means:
  - *source separation of urine, faeces and greywater*
  - *containment of each product*
  - *sanitisation and treatment*
  - *recycling of the nutrients, humus and water to soil and agricultural systems*

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## Limited Ecosan Capacity in the World

- Serious lack of capacity of professionals
- Poor level of understanding and interest among all water and sanitation professionals
- Few comprehensive university programmes exist
- Governments, municipalities, stakeholders, NGOs, industry all suffer from lack of capacity
- Taboos have prevented a open dialogue on sanitation
- Sanitation has yet to become a sustainability issue

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EcoSanRes

- Phase 1 2001-2005
  - Communications and Policy Development
  - Capacity Development – hands-on courses and awareness-raising
  - Technical studies, guidelines
  - Pilot projects - East Asia, South Asia, West, East and Southern Africa, Latin America
- Phase 2 2006-2010
  - Regional node development & capacity building
  - Knowledge management and best practices
  - Communications and networking
  - Global training programme
- Global Fund for Sustainable Sanitation

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## Phase 1

Training
- Ecosan Training Courses

Methods
- Guidelines on Handling of Urine and Faeces
- Guidelines on Agricultural Reuse of Human Excreta
- Implementation and Planning Tools

Studies
- Grey Water Assessment
- Review of Alternative Sanitation Systems
- Review of Regulatory Frameworks
- Study on Norms and Attitudes

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## General Directions of ESR 2

- Gender mainstreaming
- Targeted Capacity Building
- Policy, Legislation and Regulation
- Local leadership
- Social Marketing of Sanitation
- Economic analysis
- Environmental, health and social impact assessment
- Broader range of sustainable sanitation solutions including wastewater treatment and reuse
- Technology Development and Town Planning
- Cross-cutting issues of relevance
- Mechanisms of pathogen destruction
- Linkage of sanitation to improvements in coping with health–based vulnerability
- School sanitation
- Collaboration with the private sector and influencing large-scale investment
- Networking and coordination between international actors

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## General Modus Operandi


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## General Organisation ESR 2

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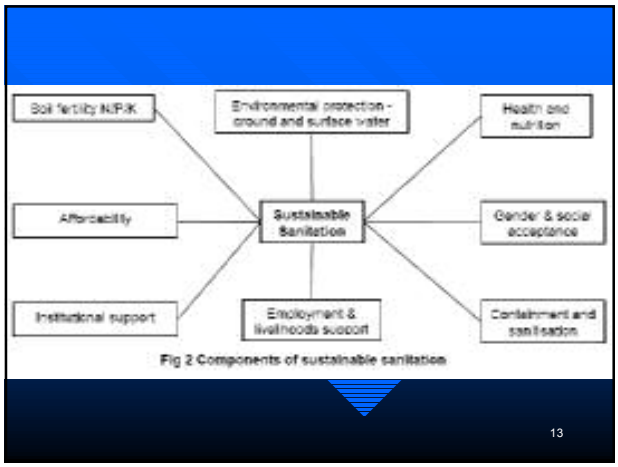

Fig 2 Components of sustainable sanitation

## Opportunities for Alternative Solutions

- Humans produce only 50 L of faeces and 500 L of urine per year per person
- A normal flush toilet uses an additional 15,000 L of drinking water per person per year
- The greywater from kitchens and bathrooms adds an additional 35,000 L per person per year
- Mixing the above and adding storm water makes centralised sewage systems often unaffordable for poor cities
- Source separation allows for the development of new sustainable alternatives
- These are being tested in small towns at present within the EcoSanRes Programme and other international programmes

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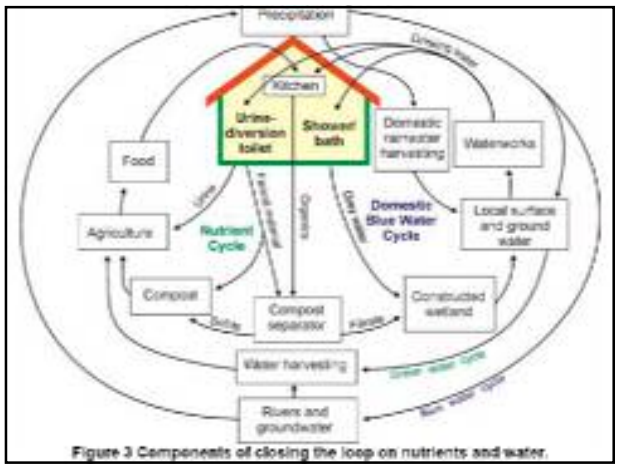

Figure 3 Components of closing the loop on nutrients and water.

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Phase one pilot projects:

- West Africa - seven countries (CREPA)
- East and Southern Africa - Uganda (KCC), Mozambique (Water Aid), Zimbabwe (Aquamor)
- South Africa (Northern and Eastern Cape)
- China (Inner Mongolia)
- India (7 states)
- Latin America - Mexico (Tepotzlan), Bolivia
- Middle East - Palestine (Hebron)

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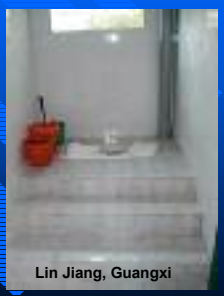
**Double-vault urine-diverting dry ecotoilet used in e.g. China, Vietnam, Mexico, Bolivia, India, Sri Lanka, W. Africa, S. Africa, Ethiopia, Uganda, Kenya, etc…..**

SARAR, Mexico



Lin Jiang, Guangxi

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Guangxi Province Southern China

Double vault urine-diverting toilet

ca 800,000 installations in villages in China

ca 500,000 installations in Vietnam

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## Mexico - Tepoztlan

double vault urine-diverting toilets & waterless urinals

100 peri-urban households completed

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## Burkina Faso

Double vault urine-diverting toilet

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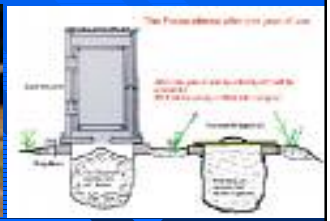
## Zimbabwe - Harare

The Fossa Alterna – soil composting pit toilet



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## Urine diversion toilets for washers

Dan Lapid, Philippines

Kannan, Sri Lanka

Paul Calvert, Kerala, India

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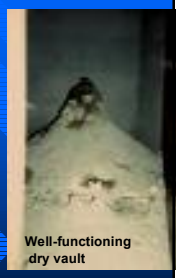
## India – Trichy, TN (Scope)



Well-functioning dry vault

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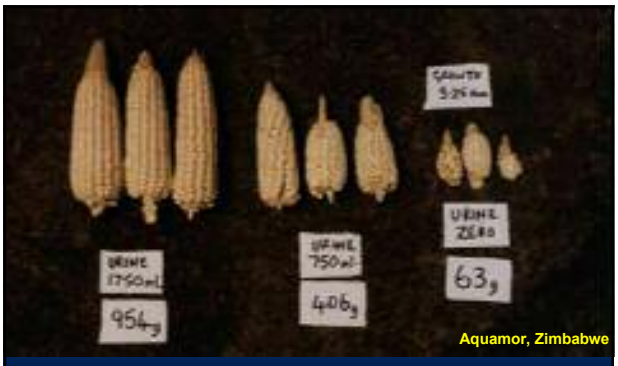
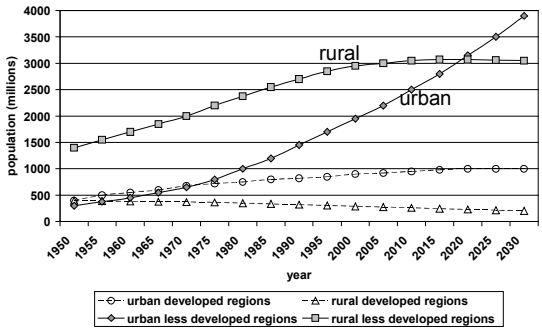



One day's urine from an adult produces a kilo of food

## The urban challenge ahead is in the developing world




## New urban strategies needed

- *Strategies for providing sanitation services to urban areas cannot be the same for those for rural areas. The urban MDG for sanitation will most probably not be reached unless significant innovation is introduced.*

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## South Africa - Kimberley

Urine-diverting dry toilets
100 households completed – 2000 planned

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## Sustainable sanitation is affordable - capacity and policy are lacking

- *The data show that ecosan costs lie within the range of 0.1 and 0.3 % of the domestic GDP of the target countries or about a 50th of what present health costs are. The challenge is therefore not one of money but one of capacity and policy reform.*

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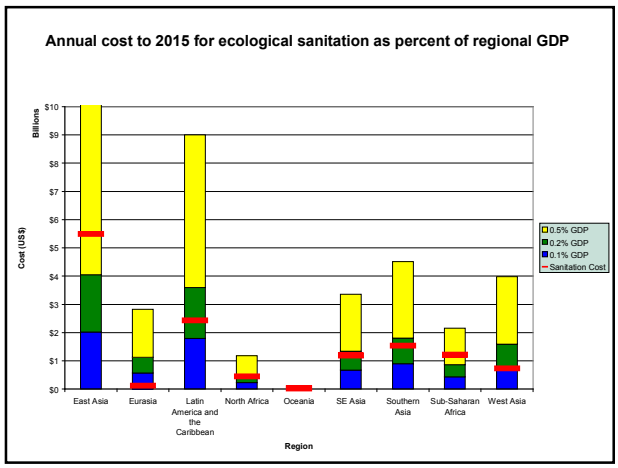

## Positive benefits from ecosan

- *If ecological sanitation were to be introduced it could replace a significant amount of chemical fertiliser used in the developing world. For Sub-Saharan Africa it could replace the entire requirement.*

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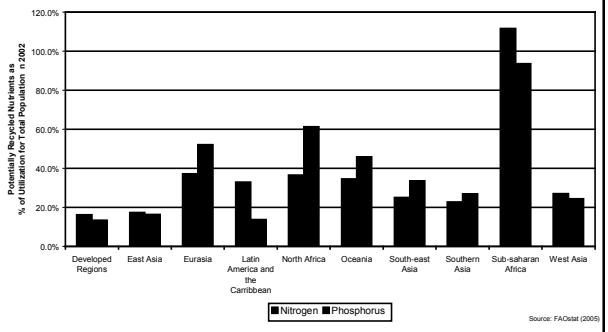
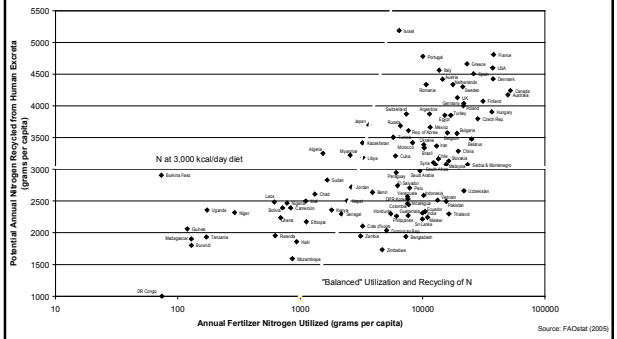
**Potentially recycled nutrients from ecosan systems as % of currently utilized chemical fertilizer nutrients in 2002**




Source: FAOstat (2005)

**Nitrogen chemical fertiliser utilized and potential recycled using ecological sanitation (2002)**
(countries with population greater than five million)




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

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## 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
  - areas with high water tables and flooding
  - as alternative to sewage systems, rural and urban

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## EcoSanRes Regional Nodes

- 10 global regions
  - C. America & Caribbean, S. America, W. Africa, E.Africa, S.Africa, MENA, EECCCA, S. Asia, S.E. Asia, E. Asia
- Regional centres for awareness raising, networking, capacity building and training, demonstration projects, policy-making, standards, etc.
- Regional surveys on ecosan development

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## International Co-ordination Group

- Collaboration with the global and regional actors such as WSP, GTZ, WASTE, SANDEC-EAWAG, BOKU, WECF, CREPA, WaterNet, CapNet, WaterAid, etc.
- Outreach and linkage to
  - bilaterals eg NORAD, FINNIDA, DANIDA, BMZ, DIFID, Switzerland, Austria, CIDA, USAID,etc.
  - Development banks eg AfDB, ADB, WB, LADB
  - lead UN organisations e.g. WHO, UNICEF, UNEP, UNDP, FAO, UN-Habitat, CGIAR
  - EU

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## Knowledge Development

- Knowledge development and advisory team (4 half time specialists)
  - guidelines
  - curricula development
  - training courses and materials
- Four Thematic Knowledge Groups
  - toilet design and architecture,
  - urine & faeces collection, composting, storage and reuse
  - greywater and wastewater reuse
  - social aspects
  - livelihood and vulnerability research
  - economics
  - health and hygiene aspects
  - environmental aspects

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## Communications and Networking

- Supporting developing policy, legislation and regulation
- Social marketing of sanitation
- Integrating sustainable sanitation into livelihood concepts
- International publications series and fact sheets
- Global projects database (in collaboration w/ Google)
- Website and discussion group
- Library service
- Support to international conferences
- Media outreach

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## Global Fund for Sustainable Sanitation

- Launch in 2007 with 2-year development period (governance and review committee system being set up Nov/Dec 2006)
- Grant budget for 2007 and 2008 ca. 12 M SEK per yr
- Budget for 2009 from Sida ca 50 M SEK
- Additional international donors (bilaterals, dev banks and foundations) to match the Swedish funds in 2009 and 2010
- At full development the fund will provide both grants and loans

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EcoSanRes

www.ecosanres.org

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