

There is an urgent need for initiatives that will contribute to meet several of the Millennium Development Goals and the Johannesburg Plan of Implementation. We at EcoSanRes believe that the creation of ecosystem-based sanitation systems offers precisely such an initiative. EcoSanRes addresses a wide range of professionals, academics, teachers/trainers and decision-makers, who work with water provision, agriculture and food security, poverty alleviation, human health, environmental protection, human rights, child perspectives, gender aspects, participatory processes, income generation, financing and human settlements. We aspire to foster a viable worldwide debate on the important services of ecosystem-based sanitation - ecological sanitation - and the resulting multi-faceted benefits.

## Sanitation in a global perspective

How important is sanitation? Inadequate access to sanitation impacts human health and environmental safety. We also know that proper sanitation positively affects the individual's nutritional status, disease resistance, income opportunities, self-esteem, personal security, etc. Enhanced opportunities for improved livelihoods can be achieved through ecosystem-based sanitation with radical perspectives on gender balance, societal development, agricultural production and sustainability.

Worldwide, over 2.6 billion individuals live without sanitation. Another 2.8 billion individuals have access to some type of sanitation, mostly pit latrines, of which many are unhygienic and contaminate the human and natural environments. About 1.1 billion individuals have water-born sewerage. Though many water-born sewerage systems are connected to an advanced sewage treatment facility, most are not and are thus sources of downstream contamination. Clearly, innovative sanitation solutions, firm institutional foundations and locally adapted technologies are required to help meet the

MDGs in a sustainable way. Sanitation has now become part of the international development agenda along with water supply and human settlements as it was prioritized by the UN Commission on Sustainable Development in 2004 and 2005.

## Ecological sanitation for ecosystem-based societies

Ecological Sanitation (ecosan) is an approach that offers many advantages over and above sanitation provision, an otherwise much neglected issue, by closing the nutrient and water cycles. Essential features of ecosan are: containment, sanitization and reuse. Ecosan recommends that human excreta and household organics be sanitized and that the resulting plant nutrients and soil improvements be applied in agricultural production in the proximity of human settlements. The greywater from household showers, baths and kitchens undergoes treatment and is safely recycled or returned to nature. Ecosan proposes a sanitation system that reduces or eliminates the use of water as a means of disposal of faecal material. This is an important advantage since water shortages affect one third of the world's population. Additionally, water-based sanitation discharges untreated sewage into rivers and other bodies of water and causes severe pollution problems around the world. Ninety percent of towns and cities in developing countries lack sewage treatment. Developed countries face the same problem; only 80 out of 600 large European Union cities have advanced/tertiary treatment. Another acute problem is contaminated sludge from conventional treatment

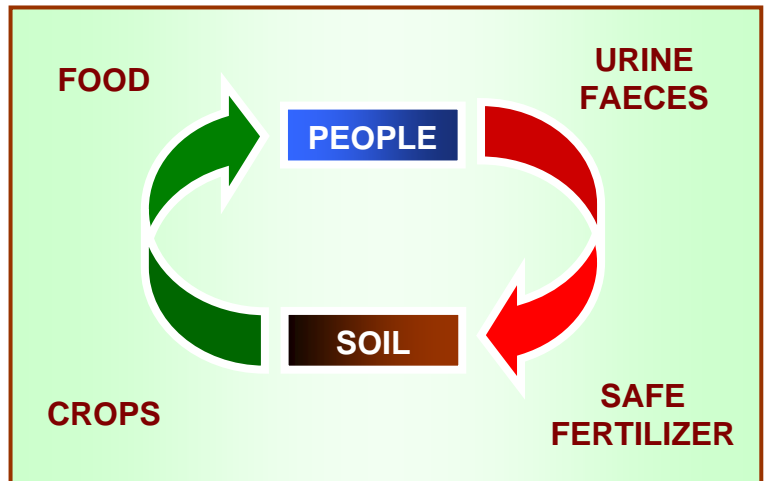


Figure 1: Closing the loop on sanitation

facilities. This sludge is impossible to reuse for its nutrients and soil-improvement properties due to toxins. In summary, ecosan provides opportunities that are affordable and appropriate and aim to use soil as the processing system, not surface or groundwater.

## Focus on closing the loop on sanitation

The ecosan approach enables environment-friendly recovery of nutrients and water. This should be compared with water-borne sewer systems that blend water-mixed human excreta with greywater, storm water and industrial effluents into a hazardous mix, including human pathogens and toxic compounds. Most cities are unable to cope with such a mega-sized water treatment problem. Pit latrines, septic tanks and cess pits often contaminate drinking water. By comparison, the ecosan household or community source-separates human excreta into urine, faeces, household organics and greywater. Each fraction is contained and handled separately. Human urine contains about 75% of the nutrients leaving the body and represents about 80% of the total excreta volume. The nutrient content of urine is comparable to commercial fertilizers. Sanitized faecal matter, composted with household organics, is an excellent soil conditioner. Ecological sanitation represents an approach to sanitation where human excreta is contained, sanitized and

recovered for use in soil systems to enhance agricultural production. This closes the loop on the nutrient cycle.

## Implementation

Ecosan initiatives are currently operating in developing and developed countries, including: Bangladesh, Bolivia, Burkina Faso, China, Côte d'Ivoire, Denmark, El Salvador, Ethiopia, Germany, Guinea, India, Kenya, Mali, Mexico, Mongolia, Mozambique, Nepal, Norway, Palestinian Territories, Peru, Senegal, South Africa, Sri Lanka, Sweden, Switzerland, Tanzania, Togo, Uganda, Vietnam, and Zimbabwe.

Evaluations reveal considerable achievements and demonstrate that ecosan is viable as a decentralised infrastructure application in diverse socio-economic locations in both rural and urban contexts, enabling equitable services for men, women, children, and the elderly.

### The EcoSanRes programme

Sweden, through Sida and the SEI-administered EcoSanRes Programme, is one of the major international actors promoting and developing the ecosan approach. Other international actors include: GTZ, WASTE, UNDP, Water and Sanitation Programme of the World Bank, WHO, UNICEF, WaterAid, EU, CREPA (West Africa), EAWAG and the Norwegian, Austrian, Dutch, German and Swiss bilateral agencies. The cornerstones of the EcoSanRes Programme include:

**Capacity building**, through the development of regional nodes so that regional-based training, policy development and implementation can be carried out. It is through re-



Figure 2: Ecosan initiatives around the world

gionally based, hands-on projects that this capacity is being built up.

**Knowledge development**, primarily through pilot projects (in order to learn how these systems function, how household and users adapt to them, how authorities adapt to them and how the systems can be further improved).

**Communications, networking and international coordination** through, for instance, the newly formed ad hoc Sustainable Sanitation Alliance, the ESR publication series, the global GIS database of ecosan projects, the online discussion group, the ecosan library service, international conferences, and the promotion of sustainable sanitation through the media.

The worldwide EcoSanRes network of experts is engaged in policy promotion, capacity building, institutional development, technical innovations, and applied research in developed and developing countries. Urban ecosan pilot projects include: Erdos Eco-town (Inner Mongolia, China); Tepoztlán (Morelos, Mexico); and Kimberley and Buffalo City (South Africa). There is also an international discussion group, where scientific, technical and socio-economic ecosan-related issues are debated. For references, research findings, links, debate and announcements of the EcoSanRes Programme, please refer to [www.ecosanres.org](http://www.ecosanres.org). To participate in the discussion group, please visit: [groups.yahoo.com/group/ecosanres/](http://groups.yahoo.com/group/ecosanres/).

[www.ecosanres.org](http://www.ecosanres.org)



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