

Worldwide sustainable sanitation experience – lessons learnt from ISSUE program



Integrated Support for Sustainable
Urban Environment

Jeroen IJgosse

Content of presentation

- WASTE and ISWM Concept
- ISSUE 1 Program and results
- Lessons learnt
- Reflections
- ISSUE 2 perspectives
- Final thoughts



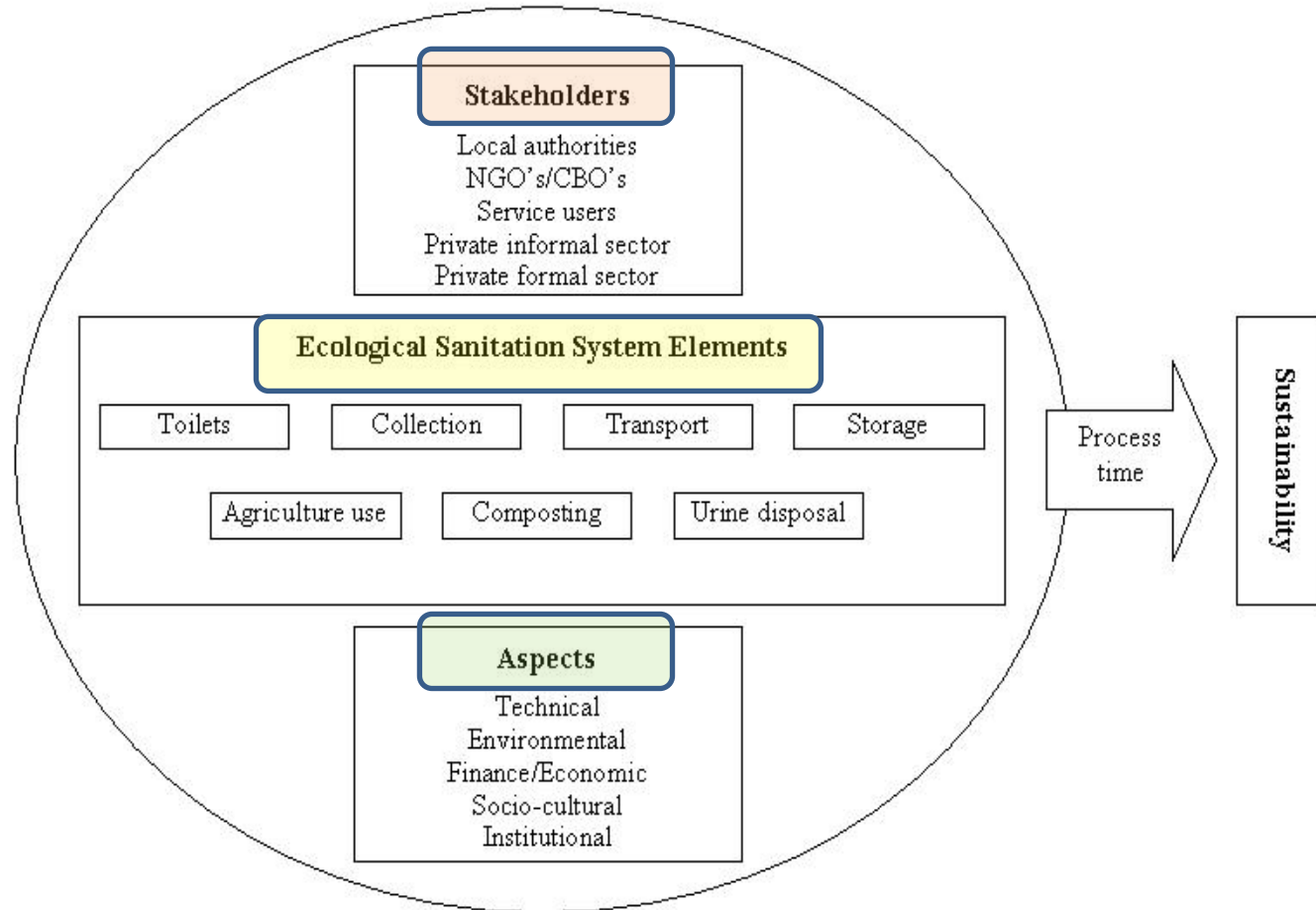
WASTE

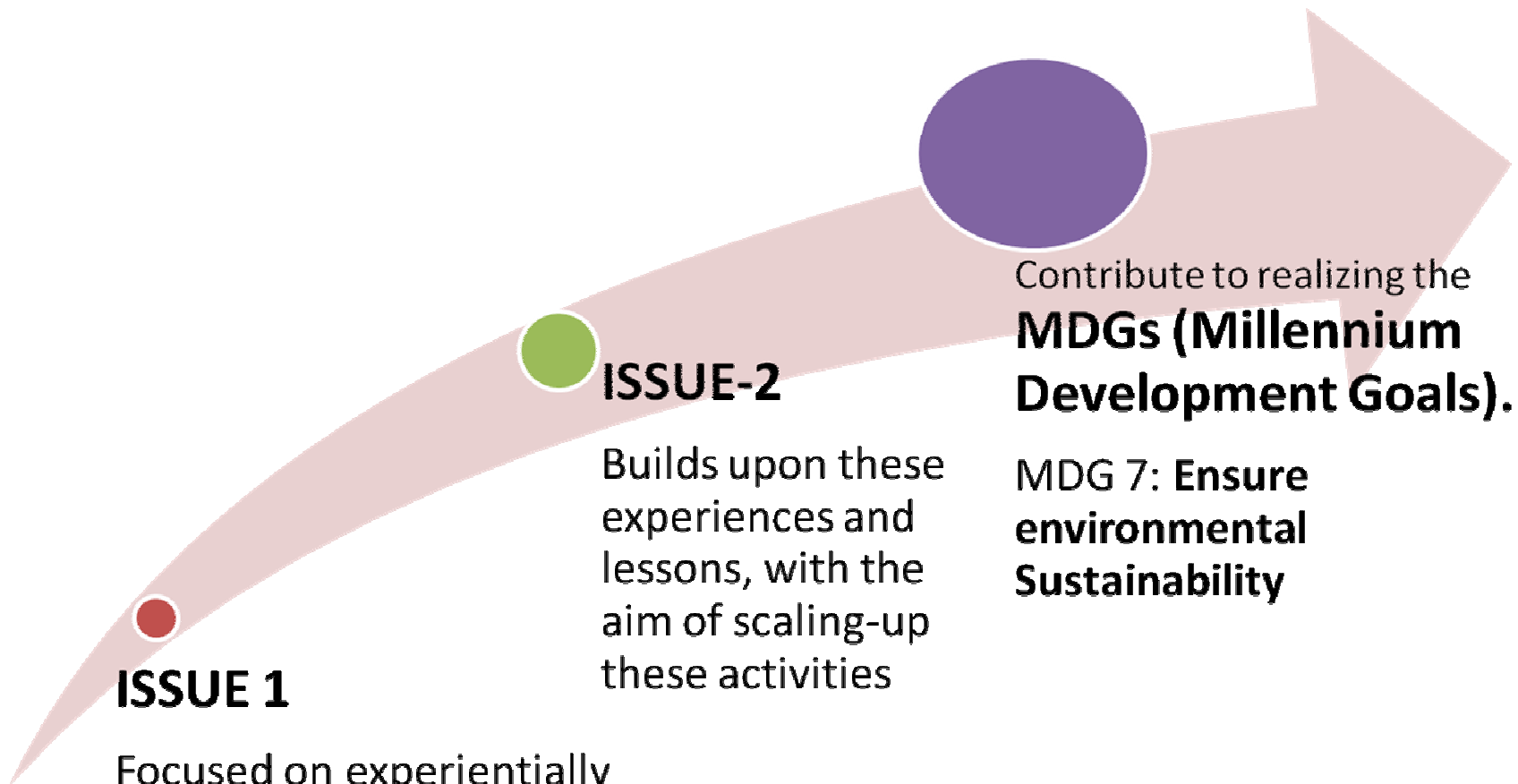
- **Mission statement:** To empower and support stakeholders to create cleaner, better-functioning, and healthier cities which contribute to alleviating poverty and the effects of poverty in cities in the South.
- Working with global (southern) partners
- UWEP and MAPET experience
- ISWM – participatory approach

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Integrated Sustainable Waste Management





ISSUE 1

Focused on experientially learning about the practicalities of sustainable waste management options.

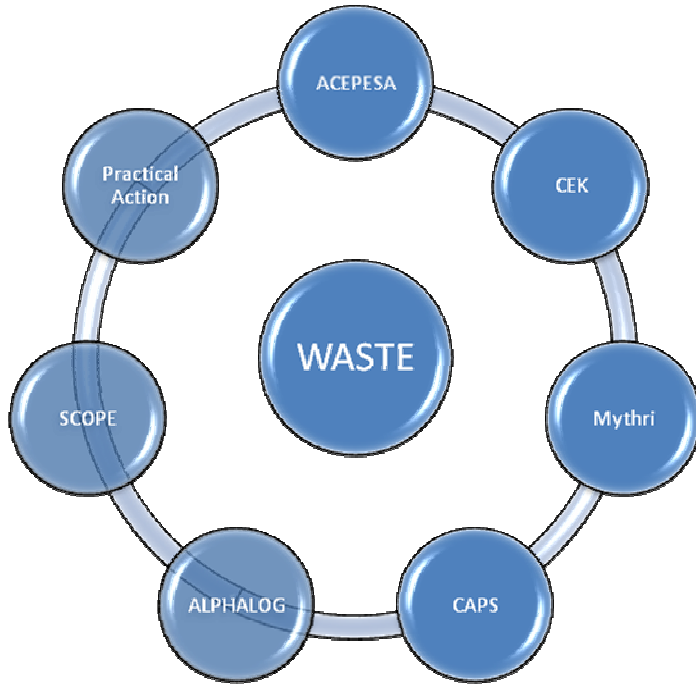
ISSUE-2

Builds upon these experiences and lessons, with the aim of scaling-up these activities

Contribute to realizing the MDGs (Millennium Development Goals).

MDG 7: Ensure environmental Sustainability

ISSUE 1: 2003-2006
DGIS, co-funding CORDAID
(inter) national co-financing



*Consortia
approach*

Overall Objective:

Enabling conditions are improved for key-stakeholders in the South to make and implement sustainable choices for the management of waste streams in urbanised areas.

Operational objective:

Key stakeholders in (four) Southern cities adopt sustainable sanitation as a **guiding (and complementary) principle** for meeting the sanitation and environmental needs.

Overall ISSUE Result:

In at least **4 regional programmes Strategic Environmental Sanitation Plans (SESP)**, in which sustainable sanitation is a guiding (and complementary) principle, are developed.

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Region: West-Africa
Mali

Partner

organization(s): CEK
and ALPHALOG

Principal Cities:

Bamako (comun VI),
Segou and Niono

Size: 130 000, 89 000
and 23 000

Region: Asia - India

Partner

organization(s): Mythri
and SCOPE

Principal City:

Doddabellapur and
Musiri

Size: 100 000 and 50
000

Region: Central America -
Costa Rica, Nicaragua

Partner organization(s):

ACEPESA

Principal City: Desamparados

Size: 200 000

Other cities: San Juan del Sur
(Ni) and Punta Morales (CR)

Region: East Africa -

Kenya

Partner organization(s):

Practical Action

Principal City: Nakuru

Region: Asia -

Philippines

Partner

organization(s): CAPS

Principal City: San
Fernando de la Union

Objective One Inception:

To facilitate the establishment of **strong regional and city programme consortia** supported by stakeholder platforms, collaborations, MoUs, and similar institutional relationships.

Objective Two Ground Work:

To demonstrate the viability of **models for sanitation solutions derived from ecological sanitation principles** through seed and demonstration projects, and to disseminate their resulting information

Objective Three Enabling Environment:

To mobilise and empower co-operating stakeholders at the local, regional and (inter)national level to **form and support an institutional, policy, financial, and informative environment** that endorses an ISWM approach for sanitation management.

Objective Four Strategic Planning:

To use the ISWM framework for stakeholder-driven **strategic environmental and sanitation planning (SESP)** processes focusing on ecological sanitation, organic waste management, and nutrient cycling with the goal of improving the health, safety, and livelihood potential of cities and neighbourhoods.





**Knowledge
Sharing
Facility**



**Ecological
Sanitation
Component**



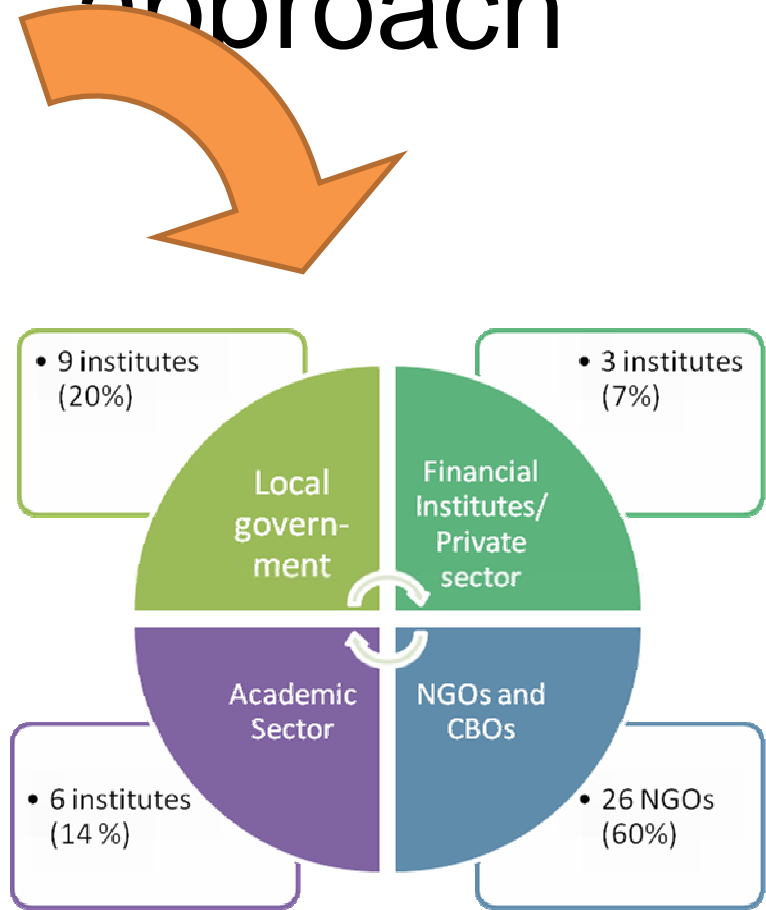
**Waste Ventures
Facility**

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Consortia approach



- Responsibilities and functioning of Consortia
- MoU
- Consortium Multi Annual Plan
- 7 consortia, 38 organizations

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<p>Objective One Inception:</p>	<p>Objective Two Ground Work:</p>	<p>Objective Three Enabling Environment:</p>	<p>Objective Four Strategic Planning:</p>
<p>7 consortia established and still operating in 5 different countries</p>	<p>1166 Sanitation facilities (toilets) 8 community facilities 6 school facilities</p>	<p>Toolkits and manuals Promotion material Trainings and workshops Audio visuals Websites</p>	<p>5 Sanitation or Solid Strategic Plans developed, amended or in process of development</p>
<p>Baselines Studies carried out Multi annual Plans executed</p>	<p>23 Solid waste facilities 17 000 beneficiaries</p>	<p>4 Banks involved 250 000 euro's loaned 15 Enterprises involved</p>	
	<p>36 Studies and Researches</p>	<p>National legislation amended in two countries</p>	

India

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- Community sanitation Facility
- 100 pers/day
- Maintenance by self help group that sells soap and paper
- Urine used by local farmer applied to bananas
- 2 other similar facilities constructed



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International alliances UNICEF - INDIA



Proud owners of new Ecosan toilet

© Eva van Beek / UNTRIS

The Perfect toilet

In a small rural village in the District of Nagapattinam in Tamil Nadu, the farmers are proud owners of new revolutionary toilet: The Eco-San Toilet, an eco-friendly toilet that even produces compost.

- Musiri: 50 000 persons
- Agriculture orientated
- 202 individual toilets constructed
- Development and construction of Musuri Compost Yard



- Local languages
- Waste Venture used for research apply urine to rice





- Private sector involvement
- Fibre glass pans
- Western style and Indian

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- Training and capacity building (SEI)
- International and regional field trips
- Ecosan exhibitions



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Logistics of collection

7.4 Cost calculation acceptable options

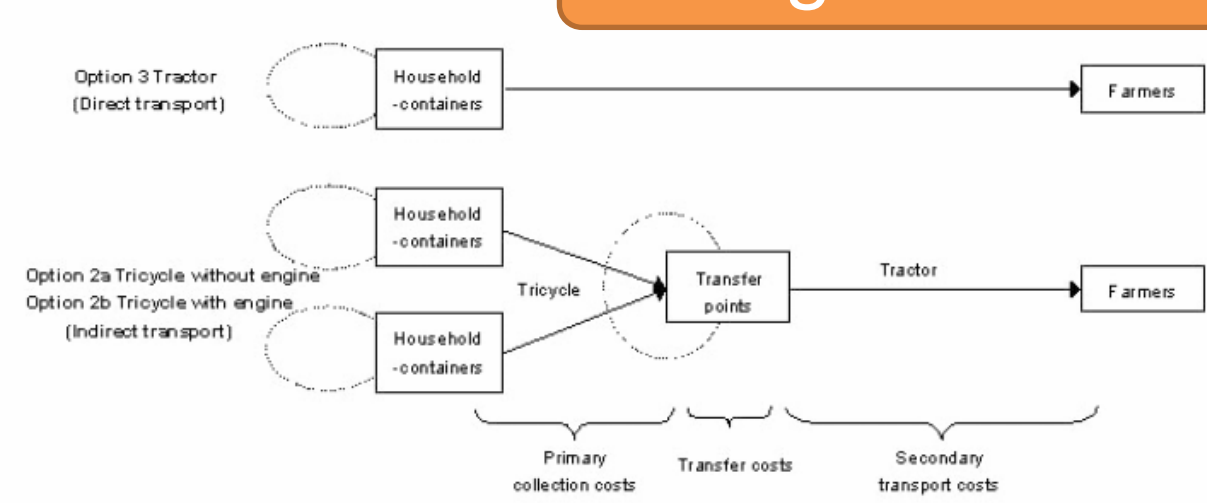


Fig 7.1 Overview of collection and transport chain for the tractor and tricycle options

frequency (days)	per household (litre)	container (litre)	per trip	# Trips possible per day	# Vehicles required (incl. workday and efficiency factor) ¹⁾
1	6-12 ²⁾	50	49	2.3	105
3	18-25	50	17	4.8	50.3
7	43	100	7	7.2	33.1
14	86	150	4	8.6	28.0
21	129	200	3	9.1	26.3
28	173	250	2	9.8	24.5
35	216	300	2	9.8	24.5
42	259	350	2	9.8	24.5

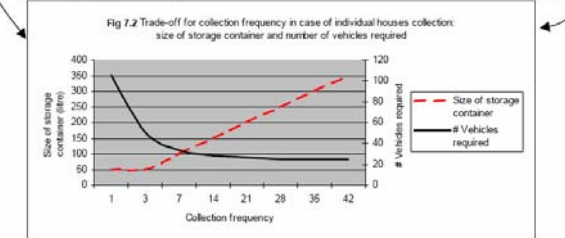
Collection quantity per household = Household size x Generation p.p.d. x Collection frequency

Storage container: The capacity of the household container needs to be bigger than the collection quantity, it should include a safety margin to compensate for the periods in which relatively more urine or water is generated and for times when the collector is delayed. The lower the frequency the lower the safety margin can be, because fluctuations are levelled out over time. The size of the safety margin is not determined exactly, but based on a rough assessment of the researcher.

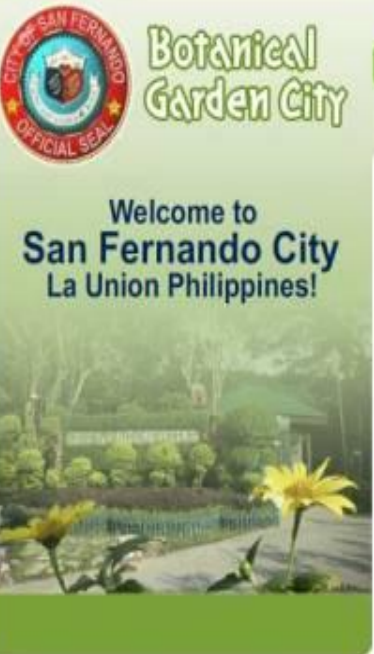
Houses per trip = Capacity of vehicle / Collection quantity per household

Trips possible per day = See Table 7.7 for calculation

Vehicles required (incl. workday and efficiency factor) = See Table 7.7 for calculation



Philippines



WATER AND SANITATION PROGRAM

- Ecological Sanitation (ECOSAN) Project
- Spring Development/Ferro-Cement Water Tanks
- Wastewater Treatment Facility

Ecological Sanitation (ECOSAN) Project



The City with the assistance of ISSUE and EcoSan Consortium pioneers the implementation of the Ecological Sanitation or EcoSan since 2004. Ecosan is a new technology wherein human waste is transformed into a resource thus closing the loop in the waste stream. The principle behind this project is to separate the human excreta from urine so that useful nutrients can be extracted from both and within the process, eliminating the pathogens and accelerates the drying of the excreta too. This program is first adapted in the coastal and upland barangays of San Agustin and Nagyubuyuban respectively. At present, Ecosan toilets are set-up in the Fisherman's Village in Barangay Poro, City Science Centrum, schools, Botanical Garden and City Nurseries

Clean Water Act

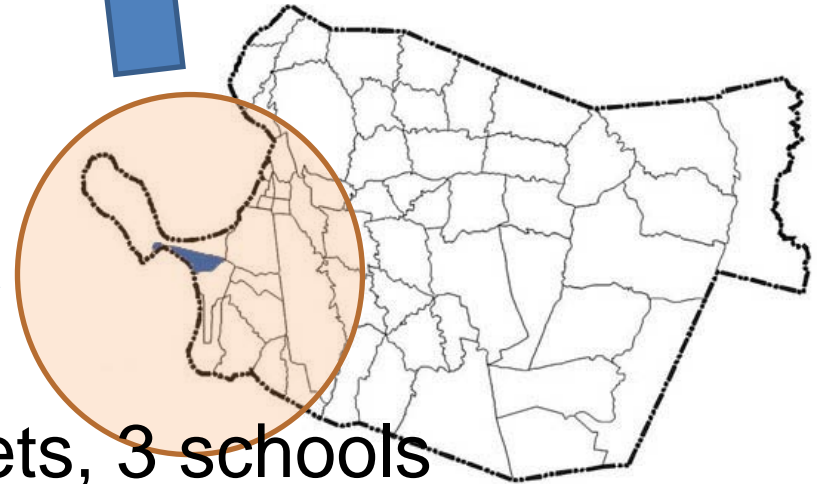
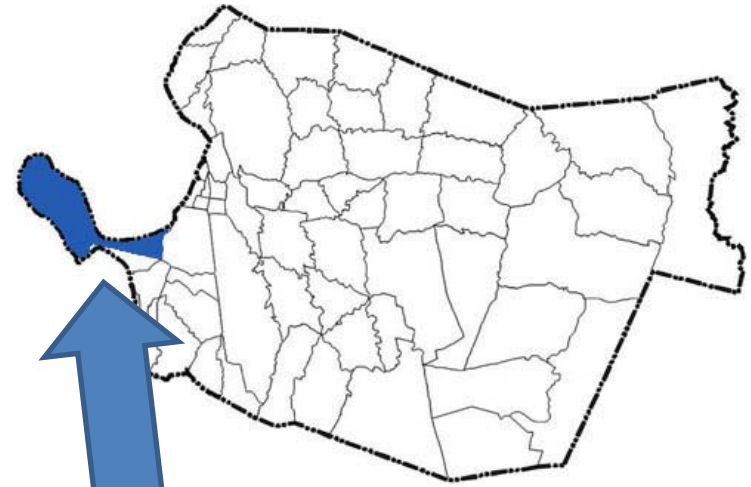
City Environment Code
The City Environment Code as the blueprint for environmental management programs for the City of San Fernando is ready for publication this month of November 2006. Hon. Jessie Miranda, Committee Chairman on Health and Sanitation sponsored the passage of this law with the end view of a attaining a more effective and sustained implementation of environmental projects and programs in the City

SWAPP SOLID WASTE, HEALTH AND SANITATION FOR A LIVABLE COMMUNITY
November 10, 2006 - 2007

Google Custom Search Search

Quick Calls
City Hall - 072 - 888 - 6901
EMS Hotline - 072 - 888 - 6915
PNP Hotline - 072 - 888 - 6910

Contact Us
City Hall
San Fernando City, La Union
Philippines, 2500
email : csflu@sflu.com



- 272 toilets, 3 schools
- Botanical garden, nurseries, science centrum

- Local development of urine separating toilets (Wisdom Ceramics)
- Waste Ventures with FSSI (local financing institute)
- 40 000 euros loan
- FSSI Micro financing schemes for ecosan users
- Exportation to other regions





Periurban Vegetable Project

"Empowering Urban Poor Communities through Integrated Vegetable Production in Allotment Gardens"



- Strategic alliances
- Research institutes
- University
- Farmers
- Urine application

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Costa Rica

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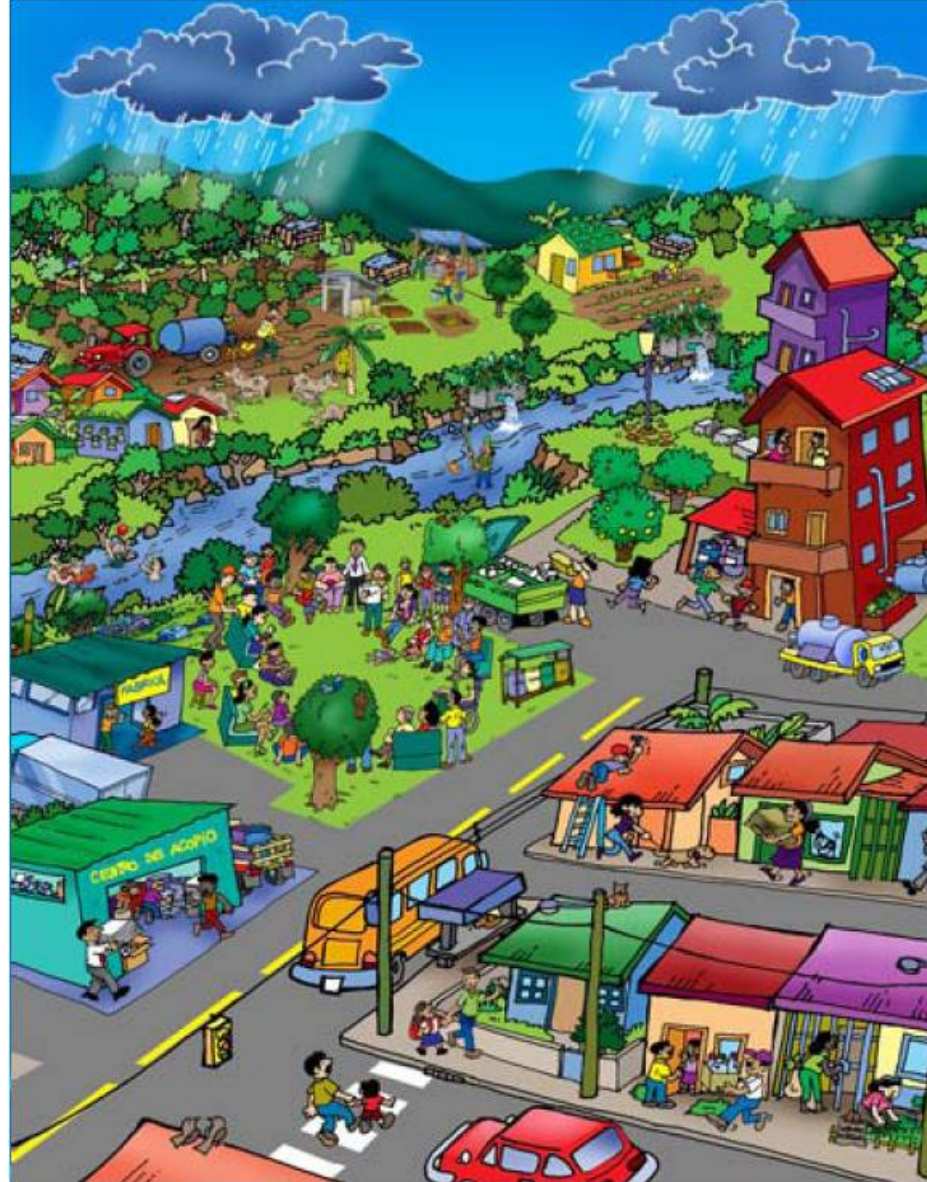
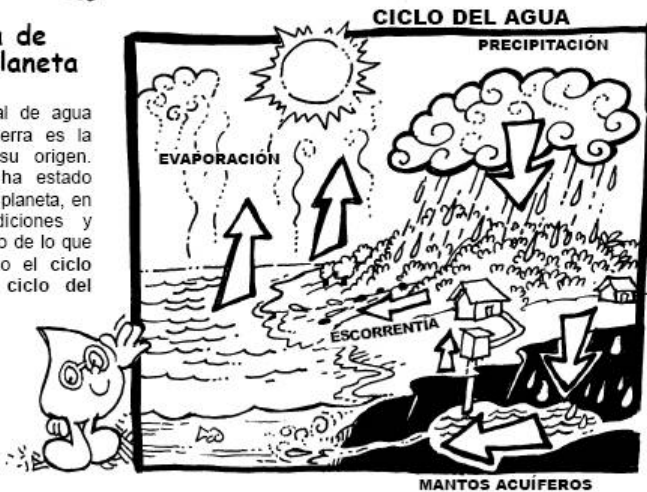
El Agua: Nuestro tesoro de vida, salud y limpieza

Es seguro que no podemos vivir sin agua... pero ¿tendremos agua para siempre?

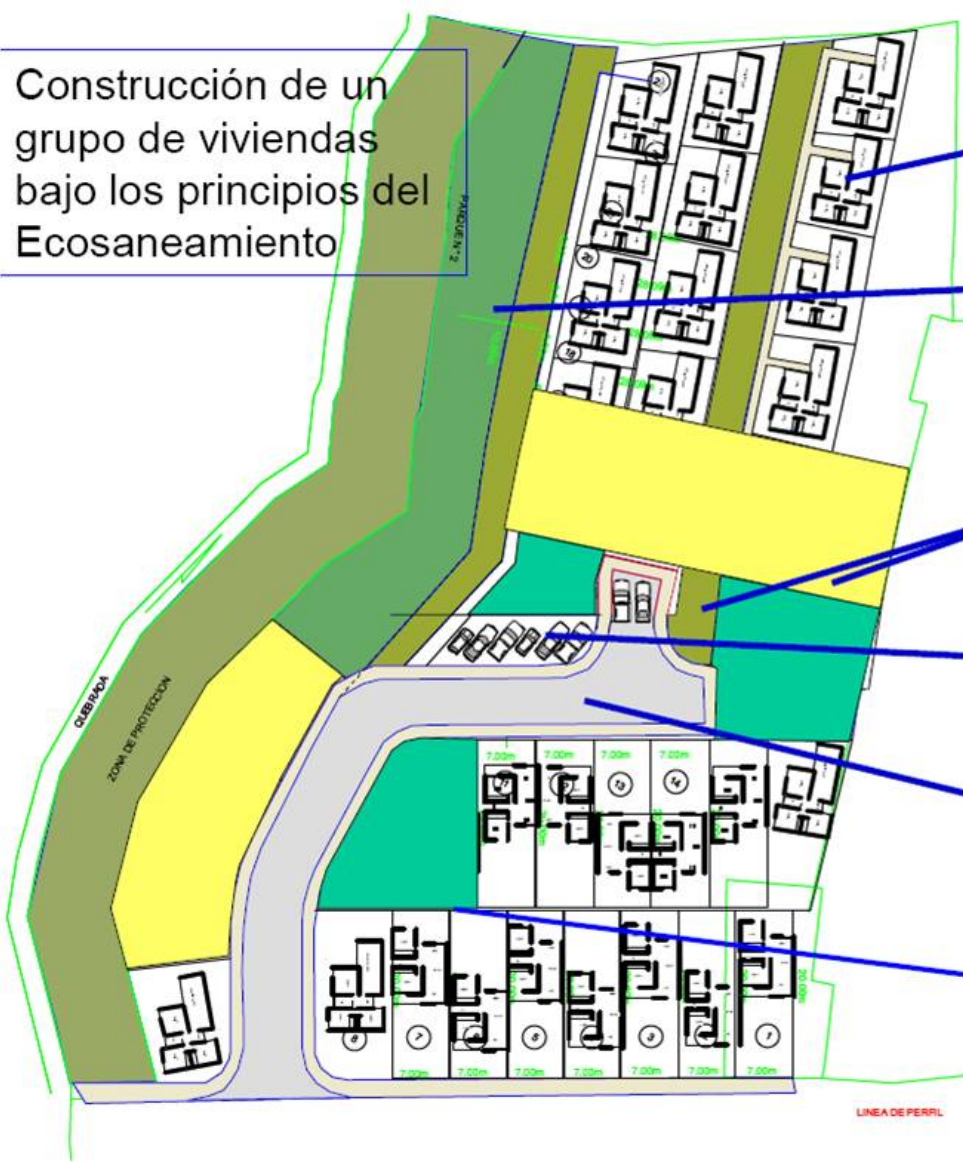


El agua de nuestro planeta

La cantidad total de agua que tiene la Tierra es la misma desde su origen. Esta agua se ha estado moviendo por el planeta, en diferentes condiciones y estados, producto de lo que se conoce como el ciclo hidrológico o ciclo del agua.



Construcción de un grupo de viviendas bajo los principios del Ecosaneamiento



Movimientos mínimos de tierra para evitar la erosión

Zonas para actividades comunales

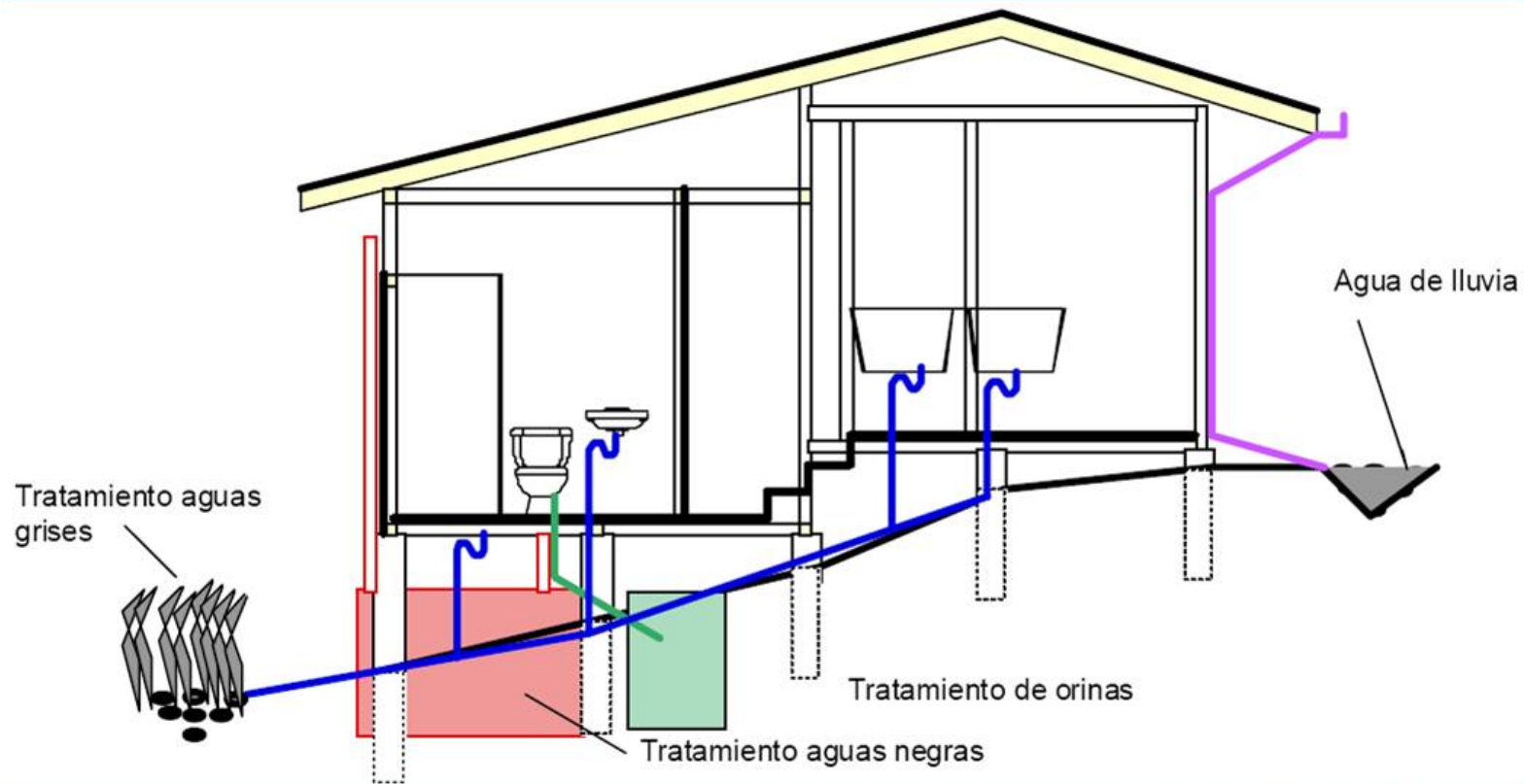
Prioridad para peatones y zonas verdes (biofiltros)

Zonas especiales para estacionamientos

Adoquines para infiltración del agua lluvia

Espacios para acopio de reciclables y tratamiento de materia orgánica

Características de la vivienda ECOSAN



Técnicas menor uso o no uso
del agua para saneamiento
(llaves y regaderas ABC)

Sanitarios separadores, sin
agua o con poca agua

MODULOS SANITARIOS ESCOLARES

o MS-1-FRP



Protección intelectual pendiente según patente # 6825. Registro de la Propiedad Intelectual, Costa Rica y Nicaragua.



Letrina MI-36-500 con Brocal

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San José, Costa Rica

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Local adaptation of Clivus multrum by local private sector

Original imported from Netherlands



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WASTE advisers on urban environment and development



Grey water treatment

PANFLETOS DE ECOSANEAMIENTO
3



La Biojardinería:
Una alternativa natural para limpiar las aguas grises de nuestra casa

La biojardinería es un jardín que le da belleza a nuestra vivienda y da salud a nuestra vida.



¿Qué es una Biojardinería?

Las biojardinerías o humedales construidos son unidades para el tratamiento de aguas residuales, principalmente las que provienen de una vivienda, aunque también se usan en proyectos de dimensiones mayores como comunidades, residenciales, industrias u hoteles.

Una biojardinería es un recipiente o excavación impermeable. No se le debe escapar el agua. Puede construirse con diferentes materiales como concreto, ferrocemento, bloques o ladrillos, plástico reforzado con fibra de vidrio o simplemente logrando impermeabilizar el suelo con telas de plástico o con el mismo suelo, si es arcilloso.

¿Qué son las aguas grises?

Son las aguas provenientes de los lavamanos, de las regaderas o duchas en los baños, del lavadero en la cocina y del lavado de ropa. Las aguas grises son las aguas residuales que desechamos diariamente en mayor cantidad.



Mali

- CEK and Alphalog, installed a number of ecosan toilets in their target areas, based on the Philippine design of a urine-diversion toilet.



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Urine applied
to corn



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Kenya - Tanzania

- In Kenya, **Practical Action** worked in Nakuru, installing 3 public ecosan toilet blocks.
- Nyayo Gardens Facility with 10 000 users per month. 400 households have access.
- Collected urine mixed at municipal composting facility.
- These are operated under public-private partnerships and are gradually becoming economically viable.

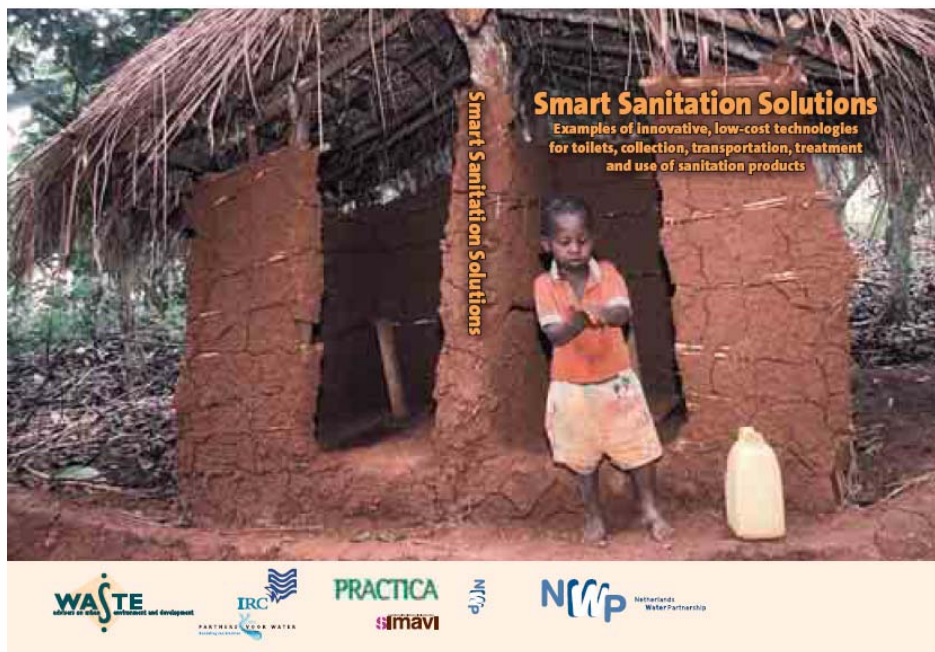
Netherlands

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At the End of the Pipe?

- Advocacy
- Disseminations of knowledge tools
- Audio-visual materials
- Alliances with GTZ-SEI etc



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THE HUMAN EXCRETA INDEX

A **60 Minute Documentary** in which people from 7 countries (China, India, Palestine, Peru, Uganda, South Africa and Sweden) tell about their urgent need for appropriate sanitation in their neighbourhoods and their experiences in the use of **ecological sanitation**.

Also included: 60 Minutes of film offering more educational material on dry ecological sanitation.

Producer: WASTE (www.waste.nl)
Director: Mattias Ylstra (www.ylstra.nl)
For more information:
(www.thehumanexcretaindex.com)
© 2005 WASTE, Gouda, The Netherlands



How to order the DVD:
Mail to: office@waste.nl

- **China:** More than 1.000.000 ecosan toilets are installed
- **India:** A public toilet facility of which the excreta are used as fertilizers in a banana plantation
- **Palestine:** In water scarce areas ecological sanitation can be a welcome answer
- **Peru:** In Lima, a resettlement area urine diversion toilets have been installed, using the grey water and urine for growing alfalfa as fodder for rabbits for own consumption
- **Uganda:** An example of ecosan toilets in a school
- **South Africa:** A cry for sanitation in Diepsloot a city near Johannesburg. In Durban a large urine diversion toilet project is demonstrated
- **Sweden:** Ecological sanitation is also desirable as an approach towards sustainable water and nutrient management

With financing from:



A film by: Mattias Ylstra
Production Ylstra.nl

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Lessons learnt (1)

- Different countries accepted Eco-San for different reasons and varying priority setting
- Waste Venture takes **time and trust** to implement
- **Collaboration** with other programs and organizations is essential
- Partner organizations need to be involved in **program decision making**

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Lessons learnt (2)

- Innovative programs need **flexibility & time**
- Local government support essential
- Increasingly present on **International Agenda**
- Recognition by international organizations
- The importance of an '**enabling environment**'
- Need to integrate with **solid waste and drainage** management

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Lessons learnt (3)

- How to **'scale-up'** or expand the approaches,
- Success leads to success: **good examples** automatically create a demand for **replication**
- Real and sustainable up-scaling is only possible when the **private sector** plays an active role.
- **Nutrient loops** can most effectively be closed when a city has links with its rural hinterland.
- Projects are not sustainable if they rely solely on donor funding, **local financial stakes** are also required

Reflections (1)

- How to overcome prejudice of “**poor-(wo)man’s toilet**” and what role should the urban rich play?
- How to convince the **urban planners** and **decision makers**?
- Definitions of eco-logical sanitation
- At what scale? Relation to MDG goals
- How to find a balance between “**right to Sanitation**” (*public good*) and “**re-use of nutrients**” (*private good*)”. ----*food security (public-private good?) and water consumption reduction*



substances

U
(yellow
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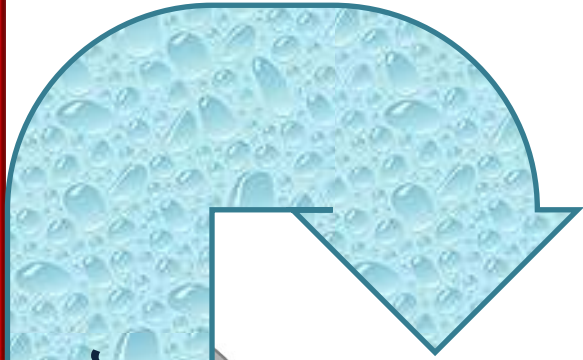
treatment

Nutrients
Hygien
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utilisation

liquid
fer

Pathogens



Recover clean water



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Reflections (2)

- Who **pays** for sanitation and how is it **financed**?
- Legislation and guidelines their effect on re-use of nutrients
- **Maintenance and operation**: who's responsible? Accountable? Especially when safe sanitation is at stake






Challenges

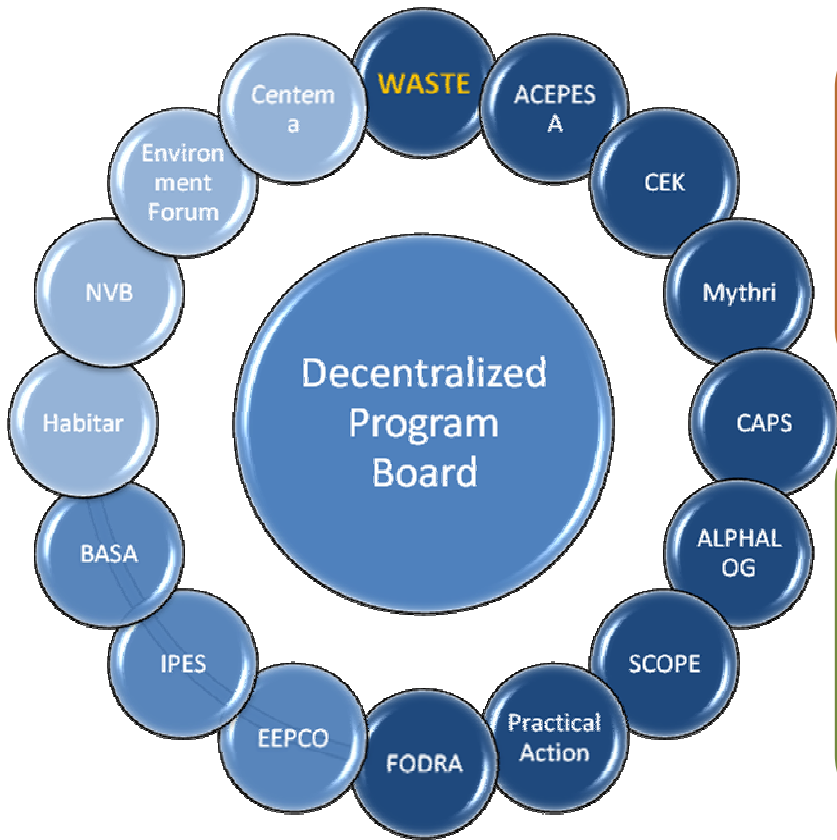
- How to overcome paradigm's as **old fashioned, supply-driven, infrastructure approaches**, which have strong limitations and have proved to be both irrelevant and inappropriate to the needs of urban areas in the South.
- Sustainable sanitation and waste management can be achieved through using a **mixture of technologies, economic tools, and governance instruments**, giving rise to new economic opportunities and the modernisation of the urban environment

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Basic types of ecosan-projects

Project-type	A	B	C	D
				
	Scaling up 			
Characteristics	rural upgrading	urban upgrading	new urban development areas	particular objects (tourism, schools ..)
1. User of sanitation facilities	household	household / neighbourhood	household / neighbourhood	tourists, employees, pupils ...
2. User of the end products	household	household (partly) farmer, external user (partly)	household (partly) farmer, external user (partly)	user-institution (partly) farmer, external user (partly)
3. Level of initiative / decision	micro macro	micro macro	macro	micro macro
4. Considered resources (minimum / optimum)	faeces + urine only plus greywater, rainwater harvesting, organic waste	faeces + urine + greywater only plus rainwater harvesting, stormwater management, organic waste	faeces + urine + greywater + stormwater-management plus rainwater harvesting, organic waste	faeces + urine + greywater + stormwater-management plus rainwater harvesting, organic waste
5. Service provision for operation, transport, treatment and marketing	household	household public/private service provider	household public/private service provider	user institution public/private service provider



Consortia approach

ISSUE 2: 2007-2010

Funding: DGIS

Northern Partners: SNS Bank, IRC, Wetlands International, Netherlands Water Partnership, Simavi, SEI

Overall Objective:

To support key stakeholders in modernizing their systems for the management of excreta and solid waste, leading to improved living standards and stable livelihoods among disadvantaged people and communities in 15 districts in the South.

Overall ISSUE Result:

To achieve demonstrable and practical change. Each district should have improved and expanded its sanitation and solid waste infrastructure and activities, to the benefit of an average of 5.000 households per district.

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- Seventeen districts (in 14 countries)
- Benefit 75,000 households.
- The main beneficiaries: **users** of the systems and the **entrepreneurs** who provide the required services.

Region: Central America – Nicaragua
Partner organization(s): ACEPESA, Habitar

Partner organization(s): ACEPESA, Habitar

Region: South America – Peru, Surinam
Partner organization(s): IPES, NVB

Partner organization(s): IPES, NVB

Region: West-Africa – Benin, Mali
Partner organization(s): Bethesda, CEK and ALPHALOG

Region: South Asia – Bangladesh, India, Sri Lanka
Partner organization(s): BASA, Fodra, Mythri, SCOPE and Environment Forum

Region: East Asia – Philippines, Vietnam
Partner organization(s): CAPS, Centema

Region: East Africa – Kenya, Tanzania
Partner organization(s): Practical Action, EEPCO

Region: South Africa – Malawi, Zambia

Genuinely **decentralised management**, done by a programme board at programme level and with management in the field at district level.

Utilisation of sanitation and solid waste management as the springboard to **supporting sustainable livelihoods**.

A **co-financing agreement with SNS-bank** that supplements DGIS resources with debt and potentially equity financing for hard investment.

A substantive focus on **sustainable modernisation** of the urban environmental sector, based on a mix of approaches, rather than on one large technical system.

A focus on the economic and environmental potentials available from better understanding and managing the **resource and nutrient cycling** within and between districts.

A commitment to exploring the synergies from **integration of solid waste and excreta waste streams management**.

1. Improved SMART urban environmental management.

- To **support local consortia** in working with key stakeholders to plan, implement and mainstream models of **smart urban environmental management**

2. Sustainable Capacity Building

- To stimulate local stakeholders to **build their own capacities and make resources available** to them for that purpose.

3. Enabling governance

- To **create an enabling institutional environment** for participatory, transparent and accountable decision-making.

4. Sustainable financing

- To **institutionalise structural access to financing for modernised urban environmental activities** that is available to both women and men active in the private, public and civil society sectors.

5. Coherence

- To **strengthen coherent policy and programme implementation of urban environmental systems** through engagement in local, national and international policy and programme formulation with the aim of triggering sustainable up-scaling.

6. Empowering partners

- To put **programme management firmly in the hands of capable partner organisations** and their district consortia so that they, and their stakeholders, take full responsibility and ownership for the formulation, planning implementation, evaluation and continuation of the process.

Final thoughts

Development Crossing

« One million Scots live in poverty | Main | 'Juiced-up' Sugar-Fueled Battery »

MARCH 28, 2007

Eco-san toilets reuse "resources"

The village of Kunnathur in India is taking eco-friendly living to a new area of the home...the toilet. The District Rural Development Agency (DRDA) of Kancheepuram has completed a pilot project for eco-friendly toilets in the village, which currently has 20 families using the eco-sanitation (eco-san) toilets in their homes. The designer of the toilets, Paul Calvert (a water and sanitation expert), says, "Eco-san toilets may cost more than conventional ones. However, they do not pollute water resources and yield rich manure."

The manner in which it works seems quite straightforward. The eco-toilet is built above the ground with a twin-chamber beneath the toilet pan to collect faecal matter, over which ash is strewn to help dehydrate and deodorise it. Urine and wastewater are then diverted and let out onto a home garden, while the faecal matter in the chamber is reduced to powdery manure that can be removed from the chamber once a year.



I, for one, would rather just take a **huge dumb** in the garden when no one is looking...

I like this idea. Fully composted feces should be very safe. However sending urine and waterwater directly into your garden has me a little worried. **How do they address the issues of smell, disease, overconcentration salt and nitrogen etc?**

Does anyone even care about the smell and potential health hazard problems with everyone shitting in their own backyards? It was kind of the reason we went to a centralized sewage system, isn't this exactly what they do for all of us? Personally if I found a neighbor doing anything like this I'd have him reported, I don't think any of my neighbors have the knowledge on how to safely dispose of their own waste

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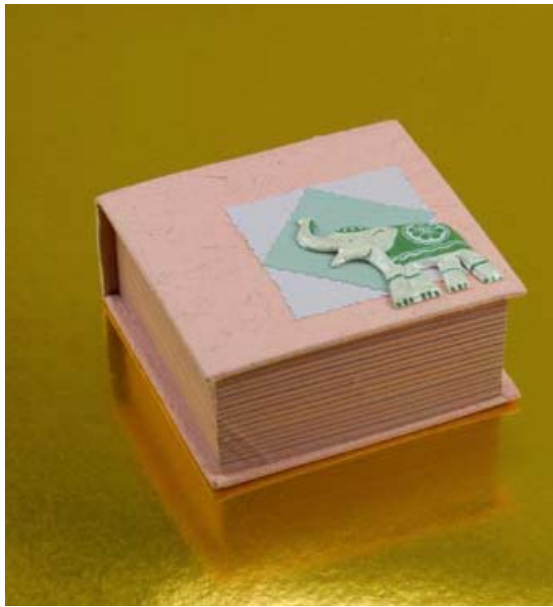
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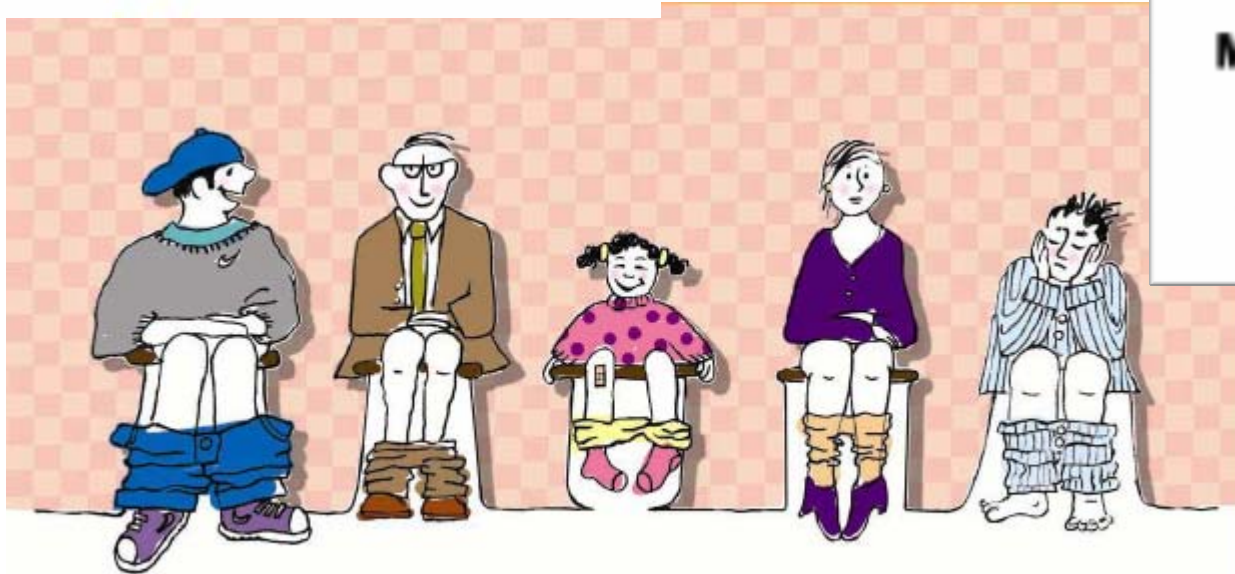


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