

Title	The ISSUE Programme: Pushing the Paradigm Shift in the Urban Environment
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Short CV s Gert de Bruijne and Anne Scheinberg	<p>Gert de Bruijne joined WASTE in 2001, where he was invited to create an Ecological Sanitation programme. He has a background in political science and more than 15 years experience in low-external input water and land use and urban sanitation planning as project manager and adviser in Palestine and Jordan. He has consulted on sanitation systems in the Philippines, Vietnam and the Netherlands. He is the Programme Manager of the ISSUE programme.</p> <p>Anne Scheinberg was part of the cohort that institutionalised municipal recycling into mainstream (solid) waste management in the 1980s. She joined WASTE in 1999 and managed the Urban Waste Management Programme between 2001 and 2004. Her specialty areas include facilitation of planning processes, recycling, solid waste management, organic waste, composting, collection logistics, strategic planning, gender analysis, and social theory. She is currently completing a doctorate in Environmental Policy at Wageningen University in the Netherlands.</p>

INTRODUCTION

This paper presents the current thinking about ecological sanitation (EcoSan) as one instance of a larger paradigm shift in the nature of urban environmental infrastructure, a process we refer to as the (ecological) modernisation of the urban environment. Modernisation is usually associated with renewal of infrastructure and a shift to more modern technologies, but this is only part of the story. Ecological modernisation is a theoretical approach worked out by Dutch environmental scholars which analyses the nature of change in socio-technical systems (such as waste, wastewater, housing, and the like).

Sanitation, waste management, housing, energy, transport, and the like fall into the category of what are called “central provisioning systems”. The traditional, civil technical model for these systems is one central authority which “manufactures” the services and distributes them to households. The user in a central provisioning system is the household or business which is connected via its sewer connection, its waste collection contract, or its water pipe and water metre. The iconic example of this is centralised electricity generation with centrally controlled distribution to individual users; sewerage is also a model where “connections” receive service from a central authority, which also processes the wastewater and takes responsibility for disposing of it. Because these systems occupy an institutional space between users (in a social system) and providers of technology, they are also called “socio-technical systems of provision” (Spaargaren and van Vliet).

Both within and outside of the discipline of Ecological Modernisation Theory (EMT) both researchers and practitioners have begun to document changes in the ways these systems are planned, operated, and documented.

Changes in the **process** of modernisation have opened the planning of provisioning systems to participation of the users. Whereas planning for socio-technical provisioning used to be a technical, engineering task, there is now a widely recognised necessity for involving host and client communities and other stakeholders in a **participatory planning process**. Environmental movements around conservation of resources and water and question the resource productivity of large technical systems, as well as their transparency and accountability, and participate actively in the search for alternative approaches. The spectacular financial crashes of large actors in this area, specifically, Enron in the US and Vivendi in Europe (to name just two), have also called into question the credibility of providers of large technical systems.

Changes in the **nature of the modernised systems**, including technical, institutional, political, environmental, economic, and socio-cultural elements appear to be coming about due to pressures and developments in a number of areas. The failure of large-scale technical systems in a number of areas has stimulated searches for alternatives which do not demand such long development times or such large commitments of capital. Deregulation of key provider sectors combine with new developments in technology and financing to present a picture in which the monolithic infrastructure of the urban environment begins to fragment. When this trend meets the unplanned developments associated with rapid urbanisation, a whole new set of options presents itself. Even the relationship between options is changing: it is no longer either-or, but rather both-and-and-and. The tendency of modernisation is to produce **modern mixes**, systems with many diverse elements and a lot of flexibility.

This is accompanied by a **new modernisation discourse** which relates modernisation to sustainability, decentralisation, and participatory development approaches. Ecological Modernisation Theory is one systemisation of this discourse, and the arguments for ecological sanitation represent another.

In the rest of this paper, we bring these three trends together in order to build the case for a shift in the sanitation paradigm. We begin with an introduction to WASTE, Advisers on Urban Environment and Development, in Gouda, the Netherlands. WASTE is the manager of the programme “Integrated Support for a Sustainable Urban Environment” (ISSUE), which focuses both the technical nature of the main elements in (ecological) sanitation systems and on the (participatory) process of development and with planning the modernised systems as a whole.

INTRODUCTION TO WASTE

WASTE, in Gouda, the Netherlands, manages the ISSUE programme, which has an EcoSan focus. From its beginnings in the 1980s WASTE has designed and implemented multi-year programmes which focus on knowledge sharing and legitimising the activities and practice of community groups and community-based organisations (CBOs) and micro and small enterprises (MSEs). In ISSUE, as in previous multi-year programmes, WASTE works with a network of Southern partners, who set the agenda and implement the work locally, WASTE and the ISSUE partners are committed to elaborating knowledge about the urban environment and in keeping that knowledge and capacity in the South, where it builds up institutional memory, credibility, experience, and the capacity of poor people to intervene to improve the urban environment and their own lives and livelihoods.

The Urban Waste Expertise Programme (UWEP, 1995-2004) focused on this process in relation to modernisation processes in solid waste management. UWEP partners documented small-scale recycling and solid waste innovations, and they worked to support their integration into municipal policy and financing schemes. This was possible in part because solid waste is a relatively disorganised area of urban environmental management, which has recently become a priority in the South. Mainstream solid waste management relies on a few large-scale investments in landfills and/or incinerators, which are fed by a network of collection routes and vehicles of varying types, all of which are smaller, flexible investments. In general, it can be said that solid waste management has a weak institutional structure and is bureaucratically split between a variety of agencies and departments.

The ISSUE programme takes this experience into sanitation. Unlike solid waste, sanitation is well-organised, has clear bureaucratic, institutional and governance rules and structures, has made a clear choice for one particular technology and system of provision (water lines, flush toilets and sewer grids), and is able to make significant claims to have discovered and operationalised “scientific and technical truth”. Sewerage-based sanitation systems in centres of Southern cities (and of course in the North) appear to *work*. They are accepted by political and financial power centres as a proven, mature, reliable solution (the *right answer*) to an unchanging problem. This claim for truth is supported by a century and a half of hard capital infrastructure investment, which translates that certainty into an enormous physical barrier to change. These characteristics make them much more rigid and much more difficult to shift than solid waste – and a much bigger target. But this does not mean that the *processes* for stimulating, supporting, and documenting change on the local level are different, nor that sustainability is less important. In contrast, this is precisely the opportunity for taking the experience built up to new levels. This is the challenge that the ISSUE programme takes on.

PARADIGM SHIFT IN URBAN PROVISIONING SYSTEMS

The ISSUE programme seeks to support a paradigm shift in sanitation. As such, the ISSUE partners focus on **process** of formulating, planning and implementing changes and improvements, on the **form of the overall sanitation system** after modernisation, and on the **discourse surrounding sanitation** what is the purpose of a sanitation system in the 21st century. This focuses on the process, the sanitation system, and the discourse around sanitation.

1.1 The process: participatory and inclusive

The ISSUE programme focuses on sanitation, using experience and insights that the programme partners learned by focusing on solid waste and recycling and latrine-based sanitation over the past 20 years.

1. urban environmental systems depend, for proper functioning, on both the system providers and the system users. Modernisation processes that fail to involve users through public participation and consultation simply don't work or take a high toll on non-renewable and scarce resources. Specifically, not only the activities, but also the administration and programme management in ISSUE are organised around **consortia** of key stakeholders. The lead organisation in each consortium is a local NGO, institute, consultancy or association which

is itself a stakeholder in urban environment in the intervention city, and that is well-positioned not only to identify other key stakeholders, but to see that no important players are excluded.

2. Compared with other socio-technical systems of provision, solid waste is “light” on capital infrastructure, so systems can change rapidly when confronted with the political or social pressure that accompanies a paradigm shift; Sanitation is saddled with much “heavier” baggage, so the process will most likely take a longer time. For this reason, the ISSUE programme focuses on **integrated strategic planning for sanitation**. This is a process whose goal is to build towards a different vision of sanitation throughout the whole city, not only in the specific intervention wards or communities.
3. In solid waste, informal sector entrepreneurs and individuals are able to make a livelihood by recovering materials they can find. Solid is, relatively speaking, accessible to anyone who wants to pick it up, although there are health hazards and there may be challenges to property ownership of the waste. The analogy in relation to sanitation is a powerful one, but both the resources themselves and safe access to them is more problematic. While urine is relatively benign, faeces are dangerous to health when handled without proper protection. Safety and health considerations make the nutrient or resource value of these materials more complex to recover. They also make it more likely that recovery, if not actively prohibited by public health laws, is surrounded by restrictions which make it difficult or expensive to realise the benefits of recovery.
4. The ISSUE programme works on this by evaluating and optimising the potential to build on and improve existing systems for handling urine, faeces and grey water, so that these, too, become resources which can be the basis for economic activities of poor people. Two key aspects include: (1) working on the enabling environment, so that storage and recovery are allowed, and (b) working on the logistics, as is currently being done in Delhi and in San Fernando – La Union (Philippines) , to investigate how the solid waste system can be adapted to include recovery of solids from EcoSan toilets.

The ISSUE partners are challenging sanitation business as usual –in a bottom-up, participatory way, making alliances with key local partners. The goal is nothing less than, city by city, community by community, challenging received wisdom that large capital sanitation investment should focus on sewerage and flush toilets. The paradigm shift both necessary, and possible.

Table 1. Regions in ISSUE	Examples of participatory process in modernisation and programme management	Examples of participatory process in integrated strategic sanitation planning
	the constitution of the consortium includes representation of civil society (ACEPESA), the technical and academic sector (ITEC), the municipal and public sector (GTZ-IFAM local development project PRODELO) and the international housing sector (UN-HABITAT programme); Close involvement of the users (families that will use the new technologies), farmers that will apply urine, (micro) and small enterprises that will manufactures appliances, collect, transport and treatment urine.	Adjustment of strategic (sanitation) plans of municipality of Desamparados and two other Costa Rica municipalities as well as the incorporation of ecological sanitation in the urban development plans and the municipal budgets At municipal level, the involvement of the mayor, the councilors, and municipal staff in the selection of pilot projects, the technologies alternatives to be decided upon, as well the creation of an enabling environment.
Central America	In the selected municipalities the activities will be done in accordance with the 10-step guidelines of the WSSCC. Depending on the stage the municipality is at will include assessment and advocacy activities.	The consortium is starting the planning process for the demonstration projects: identification of options and feasibility of services and reuse combinations Definition and execution of the strategy to integrate ecological sanitation into the Municipal Strategic Plan of the selected municipalities

West Africa	Work on changing the policy, legal and financial context to achieve more sustainable sanitation	Development of a strategic sanitation plan for Commune VI in Bamako and for Ségou and Niono that include ecological sanitation as an option (next to other, more conventional options).
East Africa - Nakuru, Kenya	In Nakuru, the priority for all stakeholders is stopping the polluting of lake Nakuru (major national tourist attraction) by pit latrine and other toilet leachate and the wind-blown-away plastic bags. Cooperation with the Town Council (NTC), the Nakuru Business Association (NBA) and the Kenya Wildlife Society (KWS).	
Dar es Salaam, Tanzania	Through the development of a sanitation policy for initially a DSM sub-municipality, later for DSM itself, it will lay a foundation for the development of a national policy. It will also pay attention to the modern mixtures in urban waste and sanitation infrastructure.	This policy development will be organised in an ISWM participatory way, including stakeholders in making assessments and planning.
Lugazi, Uganda	ISSUE plans to cooperate with WaterAid and the World Bank Water and San Program (WSP) in the town of Lugazi. The demand from the Town Clerk and Mayor and key stakeholders is for assistance on solid waste management, so this demand will be used to integrate human waste collection and processing as well and to try and generate a useful compost and fertilizer (organic solid waste, faeces and urine) and to create employment in the sector for MSEs and if needed to provide financial guarantee for MSE bank loans.	In Uganda there is quite a wide spread experience with EcoSan but mostly focussed on rural areas. In Lugazi there is an opportunity to develop an integrated system for secondary towns and to develop a modern mixtures system of solid waste and sanitation provision
Philippines	The consortia works with a technical working group of the City of San Fernando - La Union. ISSUE supports planning and design of ecosan as basis for an entire sanitation system from the household to final reuse in two neighbourhoods.	All stakeholders are involved in planning, improving design, exploring cooperation options. The mayor of the city has supported the project as she considers ecosan an appropriate sanitation option for the entire city, and is including it in the integrated management plan of the city.
India	In Delhi, the decision-making, planning and implementation process on sanitation is based on gradual expansion. About 90% of the people living in the target area have some kind of sanitary facility (single pit latrines). Still, around 100 Self Help Groups, supported by FODRA, the NGO active in this Delhi slum area, decided to introduce ecological sanitation in their neighbourhood.	The council members and the municipal corporation become gradually more involved in the activities.

1.2 The form: Modernised Mixes -- sustainability and flexibility in urban environmental systems

In recent years, practitioners in the urban environmental fields of waste and sanitation have increasingly focused their efforts on understanding and conceptualising the experience in modernisation of urban systems. The main impetus behind this has been the practical failure of a

wide variety of attempts to install, maintain, and manage the central provisioning-type models, such as sewerage sanitation, in the South. A series of failures in large-scale waste management and the increasing costs of the conventional approach to sewerage have stimulated modest investment in small-scale or alternative approaches, many of them in rural or peri-urban areas or in small sections of a larger municipal entity. While these “small gem” successes are promising, they prove resistant both to replication and upscaling on a basis that would generalise their applicability to the increasing number of third world “mega-cities.” Similarly, the community-level management approaches to water supply, sanitation, and waste management which came out of the PRA movement have proved to be highly site-specific, and difficult to replicate with a different group of stakeholders or in a different institutional context.

At the same time, the increasing reflexivity¹ of decision-making has led to a kind of practitioner consensus that “integrated” approaches, supported by strategic planning processes, provide the best basis for sustainable development, both in the South and in the developed countries of the North. In solid waste management, the terms are “integrated waste management” or “integrated sustainable waste management;” in sanitation the discourse centres around “ecological sanitation” (EcoSan) and “integrated strategic sanitation planning.” In the North, parallel developments can be seen in terms of the gradual decline of the formerly universal grid system for electricity (van Vliet 2002), and in the accelerated shift in the 1990s from centralised, industrialised, post “green revolution” food provisioning to an increasingly eclectic and variable food production and supply system based on supporting local agriculture and local markets.

The rise and increasing legitimacy (Anschütz et al 2003) of these integrated, complex approaches is the “edge of the wedge” of the paradigm shift to modernised mixtures. The complex character of the modern urbanisation, especially in the South but also in the old urban centres in Northern Europe, increasingly seems to demand a mixed, complex approach that includes elements of all of these, with a high level of reflexivity (Giddens 1994) being required in assembling the various elements into one whole. The resulting systems bring together a variety of elements at a variety of scales, but treats this combination as an integrated whole for purposes of financing, management, and client interface. Now household centred sanitation merges into community approaches, which both challenge and depend on large, centralised facilities for final treatment.

The literature of ecological modernisation (Mol, Spaargaren, and others) refers to these complex systems as ‘modernised mixtures’, in that they bring together elements from all paradigms in a number of highly idiosyncratic regimes that – given the institutional context or landscape – are aimed to optimise the environmental and economic performance of the system as a whole, based on a detailed and practical assessment of a variety of micro-niches, and an understanding of the opinions of a diverse group of users who have different service and financial profiles. While there is a certain recognition, both in urban management and planning circles and among development professionals, that these systems are the best that can be found, there remains a core of conviction, often centred in and reinforced by institutions for technical higher education, that they are ultimately transitional: that the relatively teleological and predictable development process will ultimately choose the simple modernisation approach, and simply get on with the process of building sewers.

In the North, where the history of failures is longer and the maturity of the urban environmental systems is more complete, it is possible to speak of a paradigm shift away from large technical systems towards modern complex or integrated systems. In the South, especially in Africa where both urbanisation and urban environmental management are still in a rapid phase of development, the old paradigm is unevenly developed. There are doubts as to its financial feasibility, and yet it still appears to represent the ideal. There, officials object to something they fear is “second-best” and demand access to the most developed science and technology available. Those in charge resist the idea that simple, industrial modernisation is already a second-best approach and there remains a high level of commitment to conventional, expensive sewerage.

¹*Reflexivity* is a concept used by social theorists discussing modernisation, especially Giddens (1994) and Beck (2000). It has a range of uses, but is used here to refer to the concept that we are in a reflexive period of modernity, where the conventional approaches, especially relying on technology to solve problems, no longer work. Reflexivity also implies a rate of change so rapid that it changes the nature of change, making a focus on process the only option.

As a result, the present day situation is best characterised by an overall landscape ‘in transition’ to sustainability, with a discourse which acknowledges the importance of modern mixes and integrated systems, but with capital investment and bank-driven decisions still largely dominated by centralised provisioning, which later fails or is adapted. Experiments on decentralisation on community- or household scale appear throughout the landscape and are increasing in number and sort, but there is not yet a broad consensus of their place in the wider whole. While there is widespread endorsement of their usefulness there remains somewhat limited belief in their sustainability or legitimacy over the long term. In sanitation, proposals to invest in anything other than flush toilets and sewers have a difficult time being taken seriously.

It is against this background of an incomplete paradigm shift away from centralised provisioning, and increasing understanding and acceptance of integrated, complex, modern mixes, that the ISSUE programme operates. In five regions, the activities are focused on exploring mixed or complex approaches to sanitation, with an emphasis on participation and mobilisation of stakeholders, strategic planning processes, and macro-nutrient cycling. The programme offers both facilities for financing local initiatives, and the potential for interventions in the form of demonstration projects.

The ISSUE programme is working to push the legitimacy of this vision of a different paradigm for modern system as well. Specifically, in each of the regions, the consortium is in the process of formulating “demonstration projects” that test technical elements of the sanitation system. In some regions this extends also to non-technical elements in terms of institutional arrangements and the like.

Table 2.	Contributions to the technical elements of modern mixed sanitation systems	Contributions to non-technical elements of sanitation systems
Regions in ISSUE		
Central America	Manufacturing of new toilets, urine and faeces storage devices, decentralised grey water treatment systems, agriculture application of urine; combination of organic solid waste management and urine and faeces management.	Adjustment of related legislation and building and construction norms, opening up of financial access to micro-small enterprises in sanitation activities Formation of inter-sectorial ministerial committee that monitors and evaluates the pilot projects and safeguards the adjustments of the related legislation.
West Africa	Work with stakeholders to improve existing systems of application of raw excreta on the field, inadequate drainage of grey water via cesspits and pollution of surface and ground water from traditional pit latrines, through demonstration and dissemination. Test various locally appropriate options for ecological sanitation in demonstration projects.	Work on changing the policy, legal and financial context to achieve more sustainable sanitation in Bamako and Ségou-Niono area
East Africa - Nakuru, Kenya	With ITDG and the Egerton Agricultural University tests will be done on application of faeces and urine in the large agricultural industry around the city. A demonstration project will be run on biogas production at estate scale.	Communication is established with Comic Relief of Ireland (sic), JICA (Japan). Assistance might be sought for supporting MSEs in this integrated field ITDG participated in the national committee on developing a new sanitation policy. This national policy will be transferred into a Nakuru city sanitation planning including room for EcoSan.
Dar es	Policy development will also pay	ISSUE cooperates with EEPKO in the

Salaam, Tanzania	attention to the modern mixtures in urban waste and sanitation infrastructure.	development of a national sanitation policy as has been agreed between all SADC countries.
Uganda	Several organisations are busy with EcoSan and pilots so ISSUE prefers to share our knowledge rather than to execute our own demonstration projects	
Philippines	Two universities will conduct research on the agricultural reuse and health aspect. Local manufacturers design and produce urine diversion toilets out of fiberglass, stainless steel, ceramic and plastic. Vehicles (tricycles and trailers), storage and treatment of urine (oil drums and larger containers) and treatment facilities for faeces (incinerators and dehydration ovens) are being developed.	Ecosan has been adopted as a acceptable approach in the Clean Water Act. A Philippine Ecosan Network (PEN) has been establish to exchange experience and influence policy making. The city has decided to use the urine in the Botanic Garden. A contest encourages households to design their own, better adapted (and cheaper) toilet facilities.
India	The main drive behind the change from pit latrines towards ecological sanitation is that EcoSan toilet pits last longer before the need emptying, something valued in an area so densely populated that emptying of the pits is a very difficult and dirty job that has to be done by hand. The demonstration plans to construct double vault urine diverting toilets, with faecal matter drying for at least a year. A urine transport system is being locally designed.	The system focuses on urine transporting and reuse of urine. In Musiri, the urine will be directly used in kitchen-gardens. In Delhi the establishment of kitchen gardens is not possible, so urine will be transported to three neighbouring villages where the farmers have already agreed to accept the urine as substitute for the chemical fertilisers.

1.3 The discourse: what is modern sanitation for and what does it do?

The third area where there is a paradigm shift is the discourse. This discourse raises issues that have long been taboo, or not discussable, within sanitation. These issues and this discourse is used both to advocate the paradigm shift, and to support it.

- ◆ **Mixed approach rather than dependency on large capital infrastructure.** When it becomes clear that new investment in construction and operation of sewers are (too) expensive for most communities, especially in Africa and other poor countries, there arises a demand for other kinds of approaches to remove human excreta and grey water safely from highly densely populated areas. The emphasis then shifts to an exploration of mixed systems and on integrating sanitation and solid waste modernisation processes, both of which rely on logistics, rather than facilities.
- ◆ **Short term modest investments versus long term large investment:** International financial institutions urge cities to invest in capital-intensive systems for transporting water, faeces and urine towards (occasional treatment and) discharge to the commons-- often the only resources poor people can depend on. But the commons are increasingly in private ownership, so there are fewer and fewer common property sinks -- land, rivers, seas -- where a sewer can discharge.
- ◆ **Ecological and low-water sanitation systems, promote mixed, context-sensitive, flexible modernisation.** They are based on a continuing cycle of modest investments in modernising infrastructure which suits the needs of specific communities, with their own specific economic, social, and environmental circumstances.
- ◆ **The end of the age of simple industrialisation** The previous round of development in the water and sanitation sector occurred in the height of the age of industrial or simple modernity. Innovators in that era looked to the models of industry to solve urban problems, and a sewer

and centralised water treatment facility establishes the same kind of relationship with the user as the Ford company had with its clients when it was still the main automobile manufacturer in North America: “You may choice any colour as long it’s black”. Thus sanitation engineers believe (or claim) that they know what the toilet user wants. In shifting the paradigm, an ecosan engineer places herself in the unusual position of listening to people talking about their most intimate relationship with nature. The process requires time, and the willingness to unpack taboos and take risks in communication, to challenge the idea that excreta is shameful. Ecological sanitation is highly reflexive, and looks beyond technical fixes to culture change.

- ◆ **Complex or mixed systems allow a variety of combinations of the main waste and sanitation system elements.** The very fact that the investments are modest means that resources can be shifted or shared, whereas a capital-intensive approach to sewerage and treatment sucks up all resources in one single system. The result is that all urban environmental services together have a better chance of forming one single integrated system, so that city departments can collaborate with each other for better functioning, sharing rather than competing for resources, staff, equipment, and funds.
- ◆ **Decentralized sanitation systems empower communities to take action on their own and so strengthen cooperation and democratic decision making processes,** reducing dependency on centralised provisioning authorities. The modest scale and size of its system elements allow people to more easily understand, to influence the central authority, or, failing central action, to work on their own solutions to the problem, and take their own initiatives to create their own better living environment.
- ◆ **Modern mixed systems provide a greater range of opportunities for micro and small enterprises (MSEs) and community-based organisations (CBOs).** When the system elements are small, they can be designed, sourced, serviced, and maintained by micro economic actors, often from the same community as the users. These micro economic niches provide livelihoods, but are not attractive to international or national formal private companies.
- ◆ **Most new sanitation options allow or require a system of decentralized components or interrelated system(s).** These smaller systems may, though not necessarily, allow stakeholders to have more ownership over their own environment.
- ◆ **Waste is resource versus waste is something to be removed:** Nutrient recovery for food production is one of the core arguments for ecological sanitation, especially in relation to conserving phosphorus. Only two countries, China and Morocco (and the occupied Western Sahara) have phosphorus reserves that will last within the second half this century. The world population depends for nutrition on the natural phosphorous cycles, and recovery of phosphorus from excreta may become crucial for future generations.
- ◆ **Modern mixed systems promote the restoration of tradition values and principles** and a more balanced, less industrial relationship between people and environment. Whereas the period of simple modernisation created distance between consumers and producers of food, the cycling of water, nitrogen, carbon, phosphorus and sulphur that occurs in ecological sanitation restores this relationship, since people, through their production of excreta, are actually creating resources for the food and nutrient cycle). Restoring the relationship also makes it more see-able, and counter-acts 150 years of movement away from children knowing that milk comes from a cow and bread from wheat which grows in a field.
- ◆ **Modern mixed systems are more likely to share small-scale approaches and elements across sectors.** For example, dry toilets bring faeces into the solid waste stream; collection of urine might integrate with other house-to-house services. Thus the shift to a complex, mixed system promotes **integration of urban service provisions across sectors**, which in turn promotes optimisation of systems and the productivity of resources.

Table 3.	Contributions to the content of the discourse	Contributions to the form and process
Central America	In Costa Rica, with water in potential in abundance flush toilets have been considered a claimed right and a symbol of modernisation, to which most of the population has access. However, placing a system in place that does not depend on leaking and badly maintained septic tanks and within a culture of spillage of water, is the main challenge; whereby separation of grey water, rain water, urine and faeces forms the backbone of the system, with a focus on saving water, application of urine, decentralised treatment and re-use of greywater as well as restoring the water carrying capacity of the soils	
West Africa	Sanitation gets on the political agenda through feed back about demonstration projects to all local stakeholders	project partners discuss EcoSan with decision makers in the field of sanitation at city and national, and include them in ISWM assessment and strategic planning process WASTE and ISSUE partners write papers and articles for conferences and journals
India	The discussion on sanitation changes from a means solely to improve the public health to a means of capturing valuable resources. This change in discourse opens the dialogue towards other sanitary systems than the conventional water borne ones. The protection of groundwater as potential drinking water source, the reduction of valuable water for toilet use and the reduction of the use of chemical fertilisers, become gradually more apparent arguments for local and state decision makers. The main concern seems to be more how to mainstream reuse of excreta in the policy development in India.	
East Africa	A demand for solid waste assistance has been parlayed into an interest in integrating waste and sanitation interventions.	
Philippines	Within less than two years, significant progress has been made to obtain the acceptance and support for ecosan from international development organisations (Worldbank and WSP), the parliamentary environment committee of the congress (Clean Water Act), City of San Fernando (Technical Working Group). Ecosan was presented at several regional and national fora and interest is increasing so rapidly that practitioners and experts are now discussing with universities and training institutes to integrate ecosan in standard sanitation courses and curricula.	

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