

**Small-Scale Private Sector and CBO Participation
in Human Excreta Management in Latin America:
Are They Making a Difference?**

A Literature Review

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1. Introduction

The prediction made in the year 1994 that *if the construction of sanitation facilities continues to progress as in the recent years, in 40 years the non-served population would reach a staggering 2 billion* (WSSCC, 1994) is long overtaken by the facts. Already in 2001, approximately 2.4 billion people or 40% of the world's population lacked the means for adequate excreta disposal (Appleton, B and Chatterjee, A., 2001). While in the last decade the supply of water has seen an increase in coverage, the adequate disposal of human waste is lagging behind, undermining the benefits which could be fully extracted from the availability of drinking water. In the actual scenario, every cubic meter of supplied water, generates at least one cubic meter of sewage (Água e Cidade, circa 2001). This, combined with the inappropriate disposal of sewage and unsafe hygiene practices, contributes to increasing levels of diarrhoeal disease, among other ailments, with dramatic consequences for the livelihoods of rural and urban communities. Not only health is affected. Lack of adequate sanitation contributes to the irreversible contamination of often scarce natural water resources.

Realizing this situation, many water supply and sanitation sector—governmental and non-governmental—agencies, at national and local levels, in Africa, Asia and Latin America are committing themselves to the pursuit of innovative approaches in order to face the challenge of implementing universal basic sanitation. One innovative approach emphasizes household-centred environmental sanitation, summarized in the Bellagio Principles for sanitation (SANDEC-WSSCC, 2000). Here, the focus is on the use and re-use of waste products, whenever possible, in the zone of 'production', that is the household (IRC, 2003). At the household level it is assumed that small-scale independent providers (SSIPs) of sanitation services and community-based organizations (CBOs) can play an important role in accelerating the coverage of latrines / toilets, management tasks and commercial (re-) use of human waste.

This paper examines the literature available on the extent to which the private SSIPs and CBOs participate in the coverage, management and commercial (re)use of human waste in Latin America. More specifically, it examines their effective involvement or in other words it asks the question 'Are they making a difference regarding:

- **Coverage** – in construction, provision of material, selling parts,
- **Management** – as operators of facilities, cleaning services, suction truckers or in sludge disposal and treatment, and
- **Productive use** of human excreta and sludge – for agriculture, aquaculture, horticulture, small scale irrigation?'

A search for case material in the literature available was undertaken in order to answer this question. Initially, documents in Portuguese and Spanish were the main focus of attention. Gradually, information in English from international sources, too, was investigated. The reference list in annex represents only a selected set of sources used. Besides these, other documents relating to human excreta were collected from web sites through the use of search engines.

The information gathered and the analysis undertaken are presented in accordance with three main territorial areas of intervention – peri-urban, small towns and rural areas – and distinguishing, in each one of these

areas, the main actors and the role they are playing in human waste issues. The first concern was to have a general overview of the sanitation situation for the Latin American region.

2. The Latin America situation

In Latin America and the Caribbean (LAC), an estimate for 99% of the total population in the year 2000 suggests that the region has relatively high service levels: water supply coverage reaches 88% and sanitation almost 78%. Although on average the percentage of those who lack safe sanitation in Latin America and the Caribbean (23%) is lower than the world wide figure (40%), notable disparities exist between urban and rural areas. Water coverage in urban areas is 93% while in rural that percentage falls to 62%. For sanitation, the coverage is 87% and 49% in urban and rural areas respectively (WHO-UNICEF, 2000).

The table below gives an overview of the situation in some countries in the LAC region, clearly showing the large disparities between urban and rural coverage. It is interesting to note that for some countries, total sanitation coverage is higher than total water coverage. An example is Argentina, where water supply reaches only 30% while sanitation reaches 48% of the rural population. In this country, 90% of the people live in urban areas.

Total, Urban and Rural population in Latin America and the Caribbean (LAC): countries with population larger than 8 million. WSS coverage estimates for the year 2000

Countries	Total pop (1000)	%in urban (approx.)	% urban water coverage	% rural water coverage	%total water coverage	%urban sanitation coverage	%rural sanitation coverage	%total sanitation coverage
Argentina	37 032	90	85	30	79	89	48	85
Bolivia	8 329	62	93	55	79	82	38	66
Brazil	170 115	81	95	54	87	85	40	77
Chile	15 212	86	99	66	94	98	93	97
Colombia	42 322	74	98	73	91	97	51	85
Cuba	11 201	75	99	82	95	96	91	95
Dom.Repub.	8 495	65	83	70	79	75	64	71
Ecuador	12 646	65	81	51	71	70	37	59
Guatemala	11 385	40	97	88	92	98	76	85
Haiti	8 222	36	49	45	46	50	16	28
Honduras	6 485	53	97	82	90	94	57	77
Mexico	98 881	74	94	63	86	87	32	73
Nicaragua	5 074	56	95	59	79	96	68	84
Paraguay	5 497	56	95	58	79	95	95	95
Peru	25 662	73	87	51	77	90	40	76
Venezuela	24 170	87	88	58	84	75	69	74
.....
LAC	519 040	75	93	62	85	87	49	78

Source: WHO-UNICEF, 2000

Except for few cases, also in this region, while gains are made in water supply, sanitation lags behind, especially in the rural areas. Due to inefficiency of the larger-scale water and sanitation utilities in reaching especially the poor in the rural areas and the size of investments needed to improve this situation, it is assumed that SSIPs and CBOs can play an important role.

3. General Findings: The involvement of SSIPs and CBOs in human waste issues in Latin America

Worldwide attention to the private sector as one of the partners in development started in the early 1990s. It is around that period that “strategic partnerships” with the private sector gradually gained space in discussion-forums, general documents, policies and strategies (Elmendorf, 1992 in Rose, 1999; WSSCC, 1994). This contrasted with the earlier decades, when the private sector was involved only in construction and sanitation desludging activities. The new focus on partnership building aimed at increasing the efficiency, the effectiveness and the sustainability of the interventions.

However, even today, the data-bases and information sources on human waste issues in Latin America present a wealth of information but mostly on the technical and health aspects only. Little information is found, on the importance of SSIPs in performing a role as ‘partners for development’, helping to close the gap in areas of human waste. On the whole, more documents were found regarding the involvement of the Private Sector (PS) than of SSIPs, especially during the last years when the privatization of water companies gets increased attention.

When comparing the attention to water and to sanitation by SSIPs in project documents, the literature reviewed reveals that much more attention is given to the role played by the **small scale provider of water** services in peri-urban, small town or rural areas, than to **sanitation** services providers in these three areas. Evidence for this assertion is found in the documentation of the very well-known examples of *aguateros* in Asunción, Paraguay; the water truckers in Guatemala City; the water vendors in Tegucigalpa, Honduras; the Nimja and El Pozón private companies in Guatemala City; and the Water Committees or Comités DLO (de l’Eau) of Port-au-Prince, Haiti. The same attention is not given by the existing documents to the role of providers of services regarding excreta coverage, management or re-use.

Relatively the same can be said about the role played by CBOs regarding human waste issues in Latin America. While **water councils, water committees and grassroots organizations working on water issues** are very well described as engaged in the delivery, operation and maintenance of water supply – just to mention the ACOVA Community Neighbours Association in peri-urban Guatemala City as one example – **the role of CBOs** in the coverage, management or (re-)use of **human waste** is far less referred to in the literature available.

One possible explanation for **the lower degree of attention that the documents give to the private sector and CBOs involvement in human waste issues** may be that these are regarded as less important than water availability. Water is also a more attractive topic. A clear example is how politicians in campaign make use of it while getting public attention to sanitation in comparison to water is not an easy task. One effort being made in Brazil to publicly advocate for better sanitation is the work by the NGO Água e Cidade (Água e Cidade, c. 2001) which started the campaign “*Esgoto é Vida*” (Sewerage is Life) aiming especially at the large and smaller cities’ Mayors. Their main message aims at getting the attention for the importance of sewage collection and treatment at Municipal level, and the political benefits Mayors could derive from it. But this was only one example found in the literature reviewed concerning public attention given to sanitation. Another factor is that sanitation is still a question of intimacy, both in households and in institutions like schools, for example. These are giving more attention to the provision of water, although

gradually city dwellers, especially women, start to recognize the importance of safe human waste disposal for better hygiene and health, and of a cleaner environment around their homes (Borba, 2000).

Table 1 below maps the main actors playing a role in sanitation services coverage (C), maintenance (M) and (re-)use (R), found in the literature reviewed for this study.

Table 1: Main actors playing a role in sanitation services coverage (C), maintenance (M) and (re-)use (R) in Latin America

	Private Sector	CBOs	Other actors
P E R I U R B A N	<ul style="list-style-type: none"> ▪ Privatised Water Utilities (C) (M) ▪ Privatised utilities mobilizing residents (C) (M) ▪ (Small scale) providers are contracted by public utilities for construction and/or O&M (C) (M) ▪ Suction-truckers or tanks (M) ▪ Small suction-mobile devices (M) ▪ Peri-Urban farmers re-use sludge (R) 	<ul style="list-style-type: none"> ▪ Organized residents groups construct sewerage channels (C) ▪ Organized residents groups decide on type of technology and level of services and level of financial contribution (M) ▪ Associations give support to residents (M) ▪ Community water boards (M) ▪ Community Action Council, Local Administration Councils (M) participate in decision making 	<ul style="list-style-type: none"> ▪ Secretariat of Water Resources (M) ▪ Public utilities (C) (M) (R) ▪ Regional offices of public utility mobilizing residents and intermediating action (M) ▪ NGOs, Research Centres act as facilitators (M) ▪ International Banks and NGO grant funding (C) (M)
S M A L L T O W N S	<ul style="list-style-type: none"> ▪ Privatised Water Utilities (C) (M) ▪ ESPs Public Services Enterprises (public, private or mixed) (C) (M) ▪ Business-oriented Service Providers (C) (M) ▪ Small scale business oriented water utilities (C) (M) ▪ (Small-scale) contractors (C) ▪ Suction-truckers and smaller devices (M) ▪ Suction devices (M) 	<ul style="list-style-type: none"> ▪ Organized residents groups take decisions and give support (M) ▪ Community groups negotiate with contractors and supervise their work (M) 	<ul style="list-style-type: none"> ▪ Centralized public utilities (C) (M) ▪ NGOs, Research Centers act as facilitators (C) (M) ▪ Municipal management: autonomous or semi-autonomous (C) (M)
R U R A L A R E A S	<ul style="list-style-type: none"> ▪ Individual or small scale constructors and technicians (C) ▪ Private consultant for planning & supervision of works engaged by projects ▪ Private operator contracted by Residents Association (M) ▪ Rural farmers re-use sludge (R) 	<ul style="list-style-type: none"> ▪ Federation of community associations (M) ▪ Groups of residents discuss project and decide on service (M) ▪ Group of residents construct (C) 	<ul style="list-style-type: none"> ▪ Ministry / Secretariat of Health and Public WSS utility regional officers; public agencies regional and local officers and extension workers (C)(M) ▪ NGOs voluntary agents; ▪ Regional and local NGOs (C)(M) ▪ International banks projects (C) ▪ Household members construct and maintain (C)

From this graphic, it is evident that cases have been found on C, M and R of human excreta. They show the variety of the actors with an interest in human waste, and the possibilities to establish linkages and complementarities among them at all levels. It does not mean, however, that these are many when compared to what the literature offers on water issues. Also, it is interesting to note that the documents identify the presence of large scale private providers (utilities, companies, consultancies) more than that of the small scale independent providers of sanitation services. It also gives a graphic overview of the differences in terms of involvement of private sector, CBOs and other actors in the three geographical areas. More types of actors exist. The intention is not to describe in detail all types of actors but to create space for reflection on the role of the SSIPs (and the PS) and CBOs among all the actors in human waste, documented by the literature.

The next three sections examine the involvement of the different actors in more detail in peri-urban areas, small towns and rural areas. Each section concludes with a summary of main issues. Some general conclusions and recommendations are offered at the end.

4 Peri-Urban Areas

4.1 Some cases of PS and SSIP in peri-urban areas

Their roles and possible linkages

The literature reviewed reflects the overwhelming increase of the urban population in Latin America peri-urban areas and the high demographic density pressure. This is probably the main reason why **implementation of simplified sewerage systems by water and sanitation companies** is gradually gaining space in many Latin American cities, in contrast to what happens in Africa, as documented by Vézina and Collignon (2001).

In their study *Independent Water and Sanitation Providers in African Cities*, these authors found “one single example of small-bore sewerage in Bamako, more a community-based environmental improvement project rather than an entrepreneurial response to market demands” (Vézina et al, 2001).

For Latin America, on the contrary, the privatised drinking water supply and sewerage companies in Buenos Aires, Argentina; the El Pozón system in Cartagena, Colombia; and the condominium water and sewerage systems in El Alto and La Paz, Bolivia (Gutierrez et al, 2003; BPD, 2001; Mathys, A. 2000) represent only a few examples of small-bore sewerage in peri-urban areas. These experiences are fully documented as systems making a difference in sanitation coverage in peri-urban areas, management, operation and maintenance. Tripartite associations between public, private and civil society – and sometimes also with a financing agent – are highlighted as an important factor for the success of the system. However, **little attention is given to CBOs or the SSIPs involved specifically in human excreta in the documents describing these experiences.**

Other PS actors in peri-urban areas are private construction and consulting firms, which are regularly contracted by the water and sewage companies to deliver services. Examples were found of services by these firms to advise on innovative simplified sewerage systems, for example, when private these firms had to adjust their business practices to low-cost alternatives and to include the participation of community in their projects (García, M. n.d). Also, technical advice firms do the same, as with the case

of the small private sector consultants who represent neighbourhood community associations in the negotiation with CDHU – the Urban Housing Development Company of the state of São Paulo, Brazil. This and other consultants gradually start recognizing the need to work with communities in a more extensive partnership including the ‘software’ side of service delivery and an integrated approach – training on health and hygiene, economic development, legislation and negotiation, many times performing as intermediaries between organized community members and utilities and financiers.

Not only privatised, but also public companies, are taking innovative approaches to the delivery of services, consulting and working closely with communities in ‘coverage’ and ‘management’ and to a lesser extent ‘reuse’ sanitation projects. One example comes from the condominium sewerage system implemented by different public water utilities in Brazil. These have been successful in achieving high levels of coverage, good management and re-use of human excreta, like the case of CAESB, the Brasília water and sanitation public company. Such condominium sewerage systems owe their success partially to the use of demand-driven approaches and to community (especially women’s) participation in decisions, payments, construction, and O&M, and agency teams formed by both engineers and social staff (Katakura, Y and Bakalian, A.1998). An important role is played by the utility decentralized offices – whose staff take the lead in advocating for better sanitation among the residents, offer them information on the new service, enquire about their interest in participation and, later, help them to organize for their contribution in the service operation. This work is done not only with households, but also with small scale constructors eventually contracted for work outside the household plots.

In Brasília, the capital city of Brazil, low-income peri-urban areas residents contribute labour for the construction of the sewerage pipelines in and around their plots. CAESB contributes materials, or residents raise funds among themselves for buying what is needed. In some cases, residents pay a private mason to help in construction. When the condominium sewer is being implemented in wealthy neighbourhoods, residents contract a constructor, normally a construction company indicated by CAESB, as this is easier and safer than independent masons, even though the latter may be cheaper (personal communication by Eng. Cesar Rissoli, CAESB’s condominium sewerage system coordinator). As mentioned by Suzanne Snell (Snell, 1998), the main difference with the well-known simplified sewerage system of the Orangi Pilot Project in Karachi, Pakistan, is that in Brazil the **public** water utility takes the lead in organizing residents groups.

Household members’ main role is to maintain and clean the sewerage pipelines on their plots and women in particular are actively involved in operation and maintenance. However, many households are also making use of small scale providers

for O&M and do not follow the original concept of the condominium sewerage, that presupposes that household members take-up this responsibility.

For maintenance purposes outside the plots, the main utility signs contracts with local O&M firms as in parts of Recife, in northeast Brazil, where “COMPESA”, the state water and sewerage company, employs local contracting firms for O&M. “Usually the team comprises of one technician / engineer and two labourers to whom residents report any problems”. (Oragui JI et al, 1987). In some cases in Brasília, CAESB will contract van-mounted water-jet units to clear any blockages when major problems occur and the residents are not able to solve them.

Actually, few cases were found of **small scale private firms** which have fabricated **maintenance** – such as suction and/or cleaning – devices to be used in peri-urban areas. One case was found in Santo André, Metro São Paulo, Brazil, (*Solução para o esgoto no ABC Paulista – A solution for the sewage in Metro São Paulo ABC region*), a politician introduced a prototype, fabricated by a private company (no information on how big / small), for the cleaning of streams and the sewerage network in neighbourhoods located around the Billings water reservoir and catchment area.

Another, more documented case on **private sector firms** is the SIRDO (Integrated System for Recycling of Urban Waste). This is a system used for sewage disposal in two peri-urban areas of Mexico City, not reached by conventional sewerage. Unfortunately, the SIRDO experience did not work out as expected in all neighbourhoods where it was implemented, due in particular to the failure of achieving good connections, linkages and ‘pacts’ among all interested groups.

This shows that the appropriate technology, although desired, will fail if no attention is paid to the agreement among all stakeholders besides other ‘software’ issues like training on hygiene, health and a sustainable environment, also for private sector providers.

In El Molino, due to the lack of partnerships and of a relationship of trust between community members and implementers and lack of a previous community needs assessment on the true demands and expectations of households, mutual accusations and conflicts arose when technical problems occurred—like the clogging of pipes and incomplete decomposition—which condemned the project to failure. In contrast, in another neighbourhood, Tepepan, engineers and technicians were residents of the neighbourhood and trained in community participation. Because residents of Tepepan were involved from the start together with the project engineers and technicians, they felt responsible for its functioning (Perlman, n.d.; Rose 1999).

Besides these cases, there is practically no written evidence documented in the relevant literature on the work done by **small private providers** regarding cleaning of pit-latrines and septic-tanks. Yet it is very well known that suction-truckers are busy in peri-urban areas. Their “*limpa-fossa*” services are notoriously advertised in placards and signs hanging in lamp-posts and trees in streets and dirt roads of peripheral areas of São Paulo, Brazil. However, the re-use of effluents or sludge for commercial purposes is not common practice. Similar to the situation in Africa, as documented by Vézina and Callignon, there are a limited number of private independent providers specialized in—and taking up—the work of sludge disposal and treatment. The suction-truckers may work independently of water and sewerage companies, receive no support or training. In general, there is no designated place for them to dump sewer or sludge, in turn contributing to environmental degradation.

A concern for environmental improvement linked to income generation in the **re-use of sludge** is demonstrated by CAESB, the public utility in Brasília, which distributes sludge to individual private farmers free of charge. Those who apply for sludge have to be owners of land and be in the possession of a certificate by an agronomy expert that the land meets some specific characteristics. Additionally, they must sign a contract stating that the product will not be used on kitchen gardens (lettuce, etc) however, no follow-up or control is carried out. On the other hand, there is no interest in transforming sludge into fertilizer for **commercial purposes** as the associated costs would not be adequately compensated: adding potassium for an ideal mixture, transportation and other arrangements to market their product, including possibly sales taxes, makes it less attractive when compared to industrialized fertilizers available in the market (Cesar Rissoli, personal communication).

4.2 CBOs as the focus of attention in peri-urban areas

CBOs or organized neighbourhood members being seen as a factor of success

The literature on Latin American human waste issues gives more attention to the development of partnerships with **CBOs** than with small-scale providers. In peri-urban areas, **CBOs appear as**

organized groups of residents, local associations and sometimes larger groups of associations. The establishment of a longer term partnership with these groups, from the planning and construction phases to its operation and maintenance, gradually appears as crucial for the successful implementation of simplified sewerage systems in low-income neighbourhoods.

- In Cartagena, Colombia, a partnership was established between the privatised water and sanitation utility AGUACAR, the Municipality and the community, represented by Community Committees – *Juntas de Acción Comunal & Juntas Administradoras Locales* – with support from the World Bank for the **construction** of water and sanitation infra-structure.
- In peri-urban Tegucigalpa, Honduras, **Community Water Boards** organise the construction, administration, maintenance and operation of the low-cost simplified system. The community commits itself to provide manual labour, local construction material and PVC accessories (Mooijman, A, 1998). This and the fact that residents clearly understood the health benefits of the system was an essential factor for its success.
- In Barrio Sao Jorge, Buenos Aires, Argentina, a group of neighbours improved their water and sewer system with support from a locally based international NGO and with funding from unilateral and bilateral donors, a national foundation and government agencies. Groups of residents contributed material and labour for construction work and repair (Snell, S; 1998).

In these areas, normally situated in the periphery of large cities but also in more distant neighbourhoods, groups of residents organize themselves through committees or associations to ensure their participation in sanitation projects implemented by the larger public or private utility. The condominium sewerage system in Brasília stimulates the forming of groups of residents in associations through which they negotiate the level of service – sewer pipes on the street, in the front or at the back of plots – with the public water and sanitation utility (Borba, ML; 1995). The utility supports them in organizing “**Condominium meetings**” where decisions are taken. Some of the decisions may take as long as one year. This is due to the fact that, for the success of the system, all must agree about financial contributions, the engagement of household members in construction, operation and maintenance (mainly cleaning and supervision of functioning) and correct use by all. It is known that even among the rich neighbourhoods of Brasília, where a higher-cost technology (sewer pipes under sidewalks) condominium system is being implemented the Condominium Meetings, as forums for negotiation between residents and the water and sanitation utility have become an essential element in the process.

The need to involve communities through **CBOs, in the implementation of the condominium sewerage system in Brazil, has lead many public water utilities to incorporate new ideas and innovative approaches into their organization**, which are generally considered characteristic of independent organizations and the private sector. Gabriela Watson states that:

“...although the condominium sewer was first implemented by the public water company of Natal, Brazil, it mirrors innovation and experimentation, issues frequently associated with smaller organizations like NGOs. And due to the fact that it was started and implemented by a big water / sewage company, CAERN, it got the legitimacy it would probably not have had had it been initiated in a more humble setting like an NGO” (Watson, G; 1995).

In Brasília, CAESB have gender balance and the ability to work with communities as the basic criteria for recruiting social and technical staff.

In some cases, when community organizations faced obstacles to their work, they made an effort to **associate with other organizations**. In this case, residents’ associations strengthen themselves by

associating with other associations in different areas or levels. Cases bringing this out were found in Colombia and in Brazil, in projects in peri-urban areas (García, M n.d.; IBAM n.d.).

4.3 The private sector, CBOs and peri-urban human waste: main issues emerging from the cases described in the literature

Coverage

- The high percentage of urban population in Latin America requests massive investments to expand coverage, and simplified-sewerage comes as an important solution by both public or, more recently privatised, water and sanitation companies.
- Contracts between public or private utilities and (small-scale) private constructors are common for the construction of sewage channels, inspection and distribution boxes, etc. In areas where conventional or simplified sewerage systems do not arrive, the small scale providers (working in the informal sector or registered as autonomous workers) participate in the construction of septic-tank and pit-latrines. Unfortunately no documentation was found on their numbers and the importance of their work in terms of coverage.
- In any case, contracts for construction strictly cover only the hard-ware side of construction. Little attention is given to training for more expertise or long-term partnerships for a sustainable environment.
- Groups of residents organized as CBOs also contribute to coverage. Many times they participate in construction and/or contribute material for the setting up of a simplified sewerage system. This has proved to be a gratifying and forward step for further physical upgrading of their environment.

Management

- Normally, household members will undertake O&M of a simplified sewerage system on their own plots. Public or private utilities contract the (small-scale) private sector providers for O&M on the main sewer network.
- It is widely known that small scale providers are taking-up the task of cleaning septic-tanks and pit-latrines and, in general, that they dump what they collect in non-protected water sources or open dumping places. Despite this, no documented information was found on this matter.
- Some utilities implementing simplified systems tend to consider community participation only in terms of residents making a financial contribution. However, there is growing evidence of the success of **community participation in management of low-cost technology systems in peri-urban areas**. The need to help residents to organize themselves in associations for the sustainability of the provision of sanitation services is recognized by large public or private utilities. In this context, **decentralized regional offices support to CBOs** or community groups is being taken-up as a factor of success. Their permanent presence in the area offers a place for residents to come with their ideas and demands, makes it easier to visit plots, regional office staff members are known to residents and trust among them is easier to build than with staff staying mostly in the utilities' headquarters. Also the **linkages established among the various actors**: public, private and civil society, make a difference for the success of the intervention.
- Community development for a sustainable environment and better life in peri-urban areas is taken as a target to be achieved and, confirming this evidence, some public and privatised

utilities are directly engaged in community mobilization for a better environment and the formation of resident associations and other formal groups.

Commercial re-use of effluents and sludge

- There is very little evidence of the use of sludge for commercial purposes. Actually only one case was found of a public utility distributing sludge free of charge to peri-urban and rural farmers.
- In general, the lack of sewage treatment is overwhelming and a rather exceptional case among the big cities of Latin America comes from Brasília, capital of Brazil. In Brazilia currently, one finds the higher levels of human and domestic waste treatment aimed at total sanitation coverage, while the national average does not reach 10%. In practically all regions of Latin America, waste and sewerage is dumped in peri-urban streams and rivers or even in open drains in streets without any treatment.

5 Small Towns

5.1 Some cases of private sector in small towns in Latin America

Arrangements for PS and SSIP participation in small towns

The most remarkable difference between the situation in peri-urban and small towns in the provision of sanitation services is the decentralization to smaller municipalities which occurred in many countries in

At country level, new legislations supported this trend. Law 142 of the new Colombian constitution decentralized responsibilities for service delivery to municipalities and increased private sector participation after 1994. ESPs, or public service enterprises, were created and these are either public (0% private sector participation), private (more than 51%) or mixed public-private (less than 50%). Municipalities continue to be responsible for providing public services directly or by delegating their provision to an independent utility. In the event that a municipality wants to provide services directly, it must prove that no company is interested in providing them. The same law promotes competition between companies and the does not allow monopolies. (Colombia: PROCONSUL, 2001).

the late 80s and the first half of the 90s. In many cases, these smaller municipalities were made responsible for service delivery. **Privatization gains momentum** in an effort to raise efficiency and compensate for the perceived incapability of local governments to tackle such an important task.

In small towns, due to the lack of interest by the bigger corporations, there are more types of arrangements for the participation of the private sector in the delivery or the facilitation of sanitation services.

Small-scale sanitation service-providers also participate in **construction**. As in the case of the peri-urban areas, they do not receive support beyond their contracts, and more attention is given to the hardware side of their

In a study undertaken in six small towns in Peru, examples are given of private sector involvement through the work of small scale business oriented water utilities (PYMESS) or business oriented service providers (EPS). PYMESS are small business-like units created to deliver WSS to small towns and were still in a developmental stage at the time this Peruvian study was undertaken. The principles guiding the PYMESS are the same as of a small business, but is in fact still owned and ultimately controlled by the municipality. The EPS are larger water utilities that are widely used in larger cities and to which a small town can be linked as a member, or only to use its physical infrastructure. (Peru: Schiller, 2001)

work (construction) than to the software side (training, participation in decision making, etc). For example, private sector constructors were contracted for the construction of sewerage systems in La Voragine and Altos de Menga, in Cali, Colombia (Tarquino Restrepo, I 2001). It is noticeable that both cases of intervention received a “TLP statute”, meaning that these were ‘team learning projects’ for the sustainability of the WSS intervention. This is an innovative approach and a relevant one. Possibly it would have been more effective if **capacity building had also targeted the private sector on programming aspects such as working with communities, joint decision-making, training on health and hygiene issues, durability and ultimately environmental sustainability.**

An example of SSIP participation in operation and maintenance of sewerage systems and/or sanitary facilities was found in Huicholes, a small town in Mexico, where the private sector participates in a lease contract for **O&M and for technical and commercial services.** However, a most attractive market awaits them in larger urban areas. Also in this case, training of the contractors on environmental sustainability potentially could contribute to raising their interest in working in smaller towns.

In Huicholes, most of the O&M services are carried out through contracts with utilities delivering services, or through households contracting suction-truckers for cleaning. However, these suction-truckers most certainly prefer working in peri-urban areas of bigger cities, closer to more developed centres where bigger markets can be found, and consequently better opportunities to earn an income. (Gutierrez et al, 2003).

The **re-use of human waste in small towns** for the commercial use of effluents from septic tanks or from waste treatment plants is even rarer here than in the bigger cities. Small-scale providers are not interested due to the high investment they still would have to make to use this as a source of income.

It is also true that due to the smaller size of utilities in small towns, very few sewerage schemes are able to treat sewerage before discharging it into streams, rivers or even into the ocean when the town is located in a coastal area. This is a common practice.

In Peru, the use of rivers as a sewage canal has increased the incidence of gastro-intestinal diseases transmitted by water. If the few existing treatment ponds do not receive adequate O&M, they will not render the results expected. Most people in small towns use some type of septic tank for sewage disposal or use either traditional or improved latrines as well as aqua-privies (Schiller, 2001).

In the case of the six small towns in Peru mentioned above as cited in Schiller (2001) — even when 90% of houses were connected to the water supply scheme and the sewerage system and even when public

education on water supply, sanitation and hygiene training was offered to the communities, sewage continued to be dumped into the nearby river. The interventions did not make use of the ‘software’ side of project implementation like education and training for companies, constructors and contractors for a better environment.

The municipal water company of San Julián, a small town in El Salvador, for example, also manages the sewerage system that dumps raw sewage into a nearby river that carries it approximately 35 kilometres to the Pacific Ocean. Very little has been done for aquifer protection. The same happens in Paraguay, where water coverage in the small town of Itagua reaches 100% of households. Yet their domestic sewage, added to the waste from the municipal slaughterhouses, became the most important source of contamination of the Ypacarai Lake, an important tourist resort. More than a third (36%) of Itagua's population relies on septic tanks that are pumped out, once or several times a year, by private tank services; these eject the waste collected directly into the close-by, large streams or into the Asuncion municipal sewerage system that feeds directly into the Paraguay River. The remaining 64% use common latrines or other similar rudimentary methods of waste disposal that are the main cause of contamination of the watershed. El Salvador (Fragano et al, 2001).

A good example of action by local authorities for improvement of the environment through the establishment of well-functioning sewage treatment plant, comes from Marinilla (population 26,000), a small town in Colombia. A domestic private company – CONHYDRA, created in 1997 – was awarded a management contract by ACUANTIOQUIA, the regional agency and owner of the physical infrastructure (Gutierrez et al, 2003). Previously, sanitation coverage reached 90% of households, and sewage was discharged directly into the creek that transects the town through more than 20 disposal points. Through action by local authorities, the regional environmental agency negotiated a grant for the construction of a treatment plant, which started operations in the year 2000. In this case, the private sector made a real difference not only in coverage but also in treatment and user satisfaction reached 93%.

5.2 CBOs and their role in small towns

Similar to peri-urban areas of the bigger cities, in small towns much importance is given to the involvement of CBOs or community organized groups in supporting community decision making, negotiation with local government and financial agencies, and negotiation with the private sector engaged in construction and other work.

In Colombia, the non-conventional sewerage system meant to improve the sanitation of Altos de Menga, mentioned above, promoted joint activities between local institutions and the community through its association. With the help of a sector resource centre, CINARA, the community association not only designed the technology later reviewed by technicians, but also participated in O&M and in the evaluation of the phases of implementation of the project. Women, in particular, were very keen on discussions with the private sector constructors during implementation, which eventually resulted in new adaptations of works to better suit the household and environmental needs. Linkages between utilities, CBOs or groups of residents, financing institutions and NGOs or resource centres were also established. (Tarquino Restrepo, I 2001)

5.3 Private sector and CBOs involvement in small towns of Latin America: main issues where they could make a difference

Coverage

- As larger (including multinational) private corporations may not see benefits in taking up service delivery in small towns, **local private initiatives** find an opportunity to get involved in this setting. They establish partnerships with local municipalities and other local, or even national, players, and they are making a difference in attaining higher levels of coverage.

- The participation of **small-scale private providers** in coverage relates mostly to construction work. Also in small towns, learning processes in sanitation interventions are meant to reach community members, while private sector providers are left out.
- CBOs play an important role in negotiating with private sector providers for more appropriate construction solutions.

Management

- Local private utilities are engaged in issues related to the O&M of systems from their interventions. Partnerships with municipalities and other local instances are established and a variety of arrangements exist in small towns.
- The work by small-scale independent private providers in management issues in small towns relates mostly to suction-truckers and suction-mobile devices. As little, or no, attention is given to their training on health, hygiene and environmental issues, and little or no support is given to them to do their work in a more integrated manner, the cleaning of septic tanks at household level contributes to the contamination of the environment.
- In small towns, maybe even more than in peri-urban areas, there is scope for **CBOs' involvement**, as a channel for community participation in decision making, in negotiations with the private sector and local authorities, and in stimulating associations with other organizations in order to strengthen their capacity. CBOs themselves need capacity building for better performance and scaling-up their achievements. When community men and women and private sector providers are more educated and understand better the health and economic implications of better sewerage and sewage disposal, there will be a greater demand for safe sanitation and the care it deserves. CBOs could play an important role here. However, as mentioned above, sometimes community participation is merely seen as a source of community financing, labour or other contributions for the service received. These may be needed but are, of course, not enough for sustained community involvement and development.

Re-use

- In small towns, like in the peri-urban areas, little attention is given to the work which the private-sector (coverage & management) and CBOs (training, capacity building, advocacy, awareness raising at household and among private providers) could perform in re-using human waste. On the one hand, water utilities in small towns do not have the same treatment capacity as in some larger cities, where sludge from sewer treatment could easier be distributed for re-use in agriculture. On the other hand, the small scale private providers of services of cleaning septic-tanks do not see the advantage of getting involved in re-use of effluents for commercial use due to the high costs they would still have.

6 Rural areas

6.1 Some cases of private sector participation in rural Latin America

Private sector providers as the focus of attention

Similar to what often happens in peri-urban and small towns, the trend in the rural areas is to consider a **private sector provider only as contractor for specific tasks** – usually the construction of

The LASF project does not include per se the involvement of the private sector in construction or management. Apparently, household members were being stimulated to undertake latrine construction themselves. The programme suggested that small farmers should try to use human waste from LASF for purposes of soil-filling and soil-recuperation, and to enhance soil quality for certain types of cultivation. This use of human excreta (a spin-off of LASF) for agricultural purposes, however, does not elaborate on possibilities for income-generating activities (Schiere, J. 1993).

infrastructure to enhance coverage. This is a common understanding, even regarding integrated projects, where appropriate technologies are to be tested, and higher levels of hygiene and health and better conditions for environmental improvement are explicit goals to be achieved. Training or awareness raising on such issues does not target contractors. One case in rural Guatemala, the dry alkaline family latrine programme of 1989 (LASF), aimed at spreading this latrine technology for better health and improved environmental sanitation. Although not documented in detail, the programme somehow comes closer to the household centred approach of excreta management. It also tackled coverage and reuse for agriculture purposes. The private sector was not involved,

however.

More recently, project documents explore the participation of the private sector, although still in a very rudimentary way. In Cajamarca, Perú, the APRISABAC project includes **private enterprises as important partners for the provision of sanitation services (construction and rehabilitation of facilities) and technical assistance** (APRISABAC, 1999). These enterprises, together with NGOs, develop technical options, elaborate and construct projects, offer technical assistance during project implementation, and train the community for O&M. However, as with many other documents on water supply and sanitation, the role of the private sector specifically concerning human waste and water supply facilities, is not made clear in the overall organisation of water – sanitation – hygiene services provision.

The role of **NGOs as facilitators of sanitation projects, and as a linkage between households and the private sector**, is further explored by the Environmental Health Project (EHP), in a project in Nicaragua's Rural Water Supply, Sanitation and Environmental Health Programme documented by Lockwood, Medrano and Olmedo. The purpose of this project is to upgrade water supply and sanitation after the devastation left by hurricane Mitch's passage through the region in 1998. It points to the importance given to private sector participation in rural sanitation (and water supply), in order to increase coverage. One of the results expected from this project was the formation and training of **small community organizations or municipal officers**, to be responsible for water, sanitation and solid waste management. Training to increase local skilled labour for repairs (in both water and sanitation facilities) was considered an essential factor for good O&M, and eventually for the success of the intervention.

Another specific result expected from the EHP project in Nicaragua, was the availability of a **trained local NGO, the involvement of the private sector** and the dissemination of official sector policy and norms to both, for the implementation of rural water & sanitation projects. This project recognizes the need to tackle not only 'hardware' issues, but also the 'software' side of sanitation including education and awareness-raising. The development of new technologies for and the construction of household latrines, hygiene promotion, communication and advocacy techniques, and an enabling environment were priorities in the project. Private Voluntary Organizations (PVOs) – actually NGOs – were trained in these issues, and performed the role of intermediaries between households and local government. Some PVOs relied on household members for the construction of latrines, but when these alleged lack of time, **private sector small-scale constructors and even big firms for standardised facilities where contracted**. One lesson learned from the experience was that when community members participated in latrine construction, skills were developed and a sense of ownership emerged. (Lockwood, Medrano and Olmedo 2001).

Some cases were found where private sector operators engage in O&M. In the condominium sewerage system implemented in rural Ceará, Brazil, one of the **villagers is employed by the Residents' Association to operate and maintain the sewerage system and the wastewater treatment plant (a single facultative waste-stabilization pond)**, revealing the importance given to such a private operator. Also in rural Bolivia, the importance of private providers in construction is highlighted in the PROSAR project (Ministerio de Vivienda y Servicios Básicos, n.d.). Together with the involvement of the private provider, the project highlights the need to also involve communities, local governments and sector agencies. The project has helped the construction of 100.000 sanitary facilities in rural households.

Unfortunately, the documentation on private sector participation in human waste disposal and management in rural areas does not give information in detail. Even in the above cases of Ceará and rural Bolivia, where the participation of the private sector is considered very important. For example, a case in Venezuela (Holmes, D., 1995) describes how a private NGO was created to tackle VIP latrine construction, water supply and hygiene promotion activities.

The activity undertaken by the private NGO in Venezuela increased coverage in the country and 'helped small farmers and indigenous communities in selected areas to take more responsibility for their own welfare, and to upgrade sanitary conditions to the level they can afford and maintain with limited outside assistance from the oil industry and other sources'. No detailed information on private sector participation is given, suggesting that contracts for construction did not include any other issue. (Holmes, D 1995)

Apparently, rural areas are not financially attractive to **small-scale independent providers of construction work and even less for O&M services**. They will be involved when they receive support from an organization, like the NGO in Venezuela, or from a larger project, like in the rural areas around Brasília. Here, small-scale constructors were involved in the construction of sanitation facilities and in O&M. Farmers in these rural areas can also apply for sludge from the water company of Brasília. Human waste in natura is not used for agricultural purposes due to cultural constraints, preconceived ideas, lack of information and of appropriate technologies (Antonio Carlos Maia Figueiredo of IGAM, MG, personal communication, April 2003).

6.2 CBOs in rural areas

The role of CBOs in rural human waste issues

Similarly to what happens in peri-urban and small towns, the role of community associations in the rural areas also receives more attention in the literature than that of small-scale private providers. Community members either through CBOs or directly discuss project interventions and decide on the service technology and level. In most cases, centralized water and sanitation utilities do not reach these areas and prefer to leave them to their regional offices and extension workers or to community associations who, if needed, may contract private service providers for sewer and latrine construction.

In one rural area around Morelos, Mexico, **CBOs**, with funding from the National Water Commission CAN, work with a small NGO on sanitation programmes using a modified version of the Vietnamese double-chamber dry toilet. The CBOs provide education to community members and technical assistance, and negotiate subsidies for construction material. Through their work, community members are empowered to multiply the use of this technology, as happened in the case of a woman who quickly learned the basics of dry sanitation, built a toilet for her family's use, worked afterwards within her community and is now helping communities in two other states (Clark, 1998).

6.3 The private sector and CBOs involvement in rural areas of Latin America: where they are making a difference

Coverage

- In general, the private sector constructors and technicians participate in latrine building in poor rural areas when contracted by projects to enhance coverage. However, this does not involve a large number of contractors.

In Honduras, O&M technicians (TOM, employees of SANAA, the National Water Supply and Sewerage company) and environmental health technicians from the Ministry of Health/COSUDE PROSAR both operate from regional offices in rural areas. Because of their positive impact on sanitation in rural areas, and the extension of their sphere of activity, these officers appear to function as role models for consideration by government agencies interested in contracting private sector technicians to operate in a similar scheme.

- Independent small-scale providers are not willing to work in poverty-stricken rural areas, where they see no financial benefits, especially regarding O&M.
- Quite often, households are involved in the construction of sanitation facilities in rural areas. In particular, this occurs when household latrine construction is a condition for the implementation of a water supply project. In contrast to other regions, in general in Latin America, even in rural areas, households prefer to have private facilities.

Management

- CBOs may have a more important role than SSIPs in the rural areas regarding the management of sanitation facilities. They participate in training household members on hygiene and health issues related to safe sanitation, on the use of facilities, on their repair and on environmental sustainability.
- The role of these CBOs is recognised as crucial for the success of project implementation and a safer environment in rural areas. In performing their role, CBOs are frequently supported by other organizations, regional offices of government agencies, national NGOs, local government and local NGOs.

Re-use

- In general, re-use of human waste is not common in rural areas of Latin America due to lack of information, preconceived ideas and lack of appropriate technologies. What exists is the distribution of sludge by public waste treatment plant to farmers for agriculture purposes. However, as previously noted, only one such case was found in the literature reviewed.

7 Summary of main points: how private sector (small-scale) providers and CBOs are participating in coverage, management and re-use of human waste

7.1 *The role of the (small-scale) private sector*

The private sector in coverage

According to the documents examined for this study, in Latin American **peri-urban areas**, large privatised water utilities, more so than small-scale sanitation services providers, implement (simplified or non-simplified) sewerage systems. These privatised water utilities are actually the **main private actors** making a difference in coverage. Both these and the public companies who, on the whole, are the larger providers of sanitation services may contract private constructors for the implementation of simplified sewerage systems in peri-urban areas. On the other hand, it is well known that independent (formal or informal) small-scale constructors are also being contracted by households to build individual pit-latrines and septic-tanks in peri-urban areas, yet information on their impact on coverage is difficult to find. The same was found concerning pit-latrines built by household members themselves in low-income peri-urban areas.

In **small-towns**, more than in peri-urban areas, private local initiatives are frequently found to be active in coverage, through partnerships with local government and other instances present at this level.

In **rural areas** it is **more difficult to find (small-scale) independent private providers**, unless they have been contracted by projects (internationally or nationally funded) implementing sanitation in the area. In general, in rural areas, households will construct their own latrines or other types of sanitation facilities. Rural areas do not offer an attractive market for private providers.

The private sector in management

In **peri-urban areas**, **private utilities** perform O&M of the sewerage systems they implement. Additionally, small-scale **private sector providers** of sanitation services are contracted by both public and privatised utilities for O&M activities, especially to clean sewerage channels, remove debris and free them from obstruction. Suction-truckers and suction-simplified devices are contracted, both by privatised or public sewerage utilities and individual households, although no documented information confirming this assertion was found. Many times, residents in the richer areas will contract private O&M workers for the maintenance of the system in their neighbourhoods, as in the case in Brasília, Brazil.

In **small-towns**, the same actors are performing O&M and other management activities, with the difference that here, private large utilities are, in general, substituted by smaller local private companies. These smaller local companies face more difficulties in undertaking treatment of wastewater than the larger utilities in larger cities. Not enough capacity for O&M in treatment plants tends to cause more damage than using no waste treatment plant at all.

In general, in both peri-urban and small towns, private suction tanks and truckers dump what they have collected into streams, rivers or the ocean. Cases were found in small towns where, even when

household members were sensitized for keeping a clean environment and performed good environmental practices, the water company dumped sewage in rivers and close to water sources.

In **rural areas**, operations and maintenance of facilities are mostly performed by household members themselves, possibly more so by women than by men, and supported by NGOs or regional officers of public departments. In one case, an operator was contracted by a CBO, an association of residents, to operate and maintain the sewerage system.

The private sector in re-use

The only case of re-use of sludge for agriculture purposes consists of the distribution of sludge, free of charge, by a public utility. However, this refers to private (peri-urban and rural) small-scale farmers for use on their own plots, and not for purposes of selling the product in the market.

7.2 The role of CBOs

CBOs in coverage

In **peri-urban** areas, community men and women are organized in, and /or supported by, Associations of Residents, Condominium Meetings, Formal or Informal Groups of Residents, or Councils. They participate in construction of ditches for laying sewage pipelines on their plots and in their neighbourhoods.

In **small-towns**, cases were found of CBOs negotiating construction standards with private constructors and make a difference in getting needs met.

CBOs in management

In **peri-urban** areas, householders supported by their association, are engaged in O&M of simplified sewerage networks on their own plots and in residential blocks. The work by **local associations** is valued by public or private utilities as crucial for the sustainability of the system. Support to them may come directly from the utilities or from NGOs. The same can happen in **small towns**.

In **rural areas**, an association of dwellers that contracted and paid a private operator for the maintenance of the system was found in the literature. In general, households will perform cleaning and repairs of their individual household latrines or any other type of household level sanitation facility.

8 Main conclusions and recommendations concerning opportunities for small-scale private sector providers and CBOs in human waste issues and the household-centred approach

The literature reviewed confirmed that documents on water supply and sanitation projects and interventions are much more specific regarding water issues than sanitation issues. Where sanitation is concerned, it is therefore often difficult to identify the roles played by Water Committees, Councils, Associations and even Private Utilities involved in the provision of water and sanitation services. Questions that remain unanswered include: how are these institutions dealing with the establishment of standards for sanitation facilities and use? How is the financing of O&M for sanitation schemes arranged? How are they giving support to hygiene and health in sanitation? Most difficult of all was to find information on the role and the scope of impact of the small-scale provider of sanitation services.

When compared to countries in Africa, for example, where the majority of the population still lives in the rural areas and much attention is given to the implementation of low-cost sanitation, the literature on Latin America is very poor regarding the description of human excreta cases with the participation of the small-scale private provider and the role of CBOs.

The conclusions that one can extract from this literature study go beyond trying to answer the first initial question: What difference do small-scale private providers and CBOs make in human waste management in Latin America? Following, some issues are presented to open space for a broader discussion on the roles that small-scale private providers and CBOs could perform for better sanitation interventions and particularly, a cleaner and safer environment.

▪ *General tendency*

Population growth in larger cities of Latin America has contributed to massive investments in low-cost and simplified sewerage systems by public and privatised utilities of some countries. The results of this literature review reflect this situation: the search for information on **private sector involvement** in human waste issues – coverage, management and (re-use) – refers mainly to large-scale sewerage systems in peri-urban areas. Information on the rural areas, including the participation of the private sector, is still very scattered. This said however, implementing agents do look for the involvement of private sector, especially for O&M purposes.

In both peri-urban areas and small towns, private and public utilities establish partnerships with private contractors for the construction of sewerage systems. However, they tend to exclude from the signed contracts any reference to the “software” aspects of coverage, such as awareness raising programmes for private providers on the importance of a sustainable environment, training on health and hygiene, and how to work with communities.

In peri-urban areas, small towns and rural areas, the **role of CBOs** has gained importance in the intermediation between providers and household members. However, CBOs as well as small-scale providers of services in peri-urban areas are being substituted by more formal and institutionalized arrangements.

In such an urbanized context, one question for sanitation utilities would be how they can train small-scale providers on issues such as hygiene and health, sustainable development and community work? Additionally, how they can best support CBOs to work with communities for the mobilization of urban dwellers, participatory planning, a more demand-driven approach, training men and women on hygiene, health and financial issues? And finally, what is the potential of income-generating activities in connection with sanitation coverage, management and re-use? Scaling-up the many examples of innovative approaches could find an opportunity through the work of CBOs and small scale providers.

- *Human waste treatment*

The literature reviewed showed that even when sanitation coverage reaches 90%, lack of (human) waste treatment is causing diseases and irremediable damage to the environment. Waste treatment is one of the issues demanding more attention in Latin America, especially in small towns. In larger cities, larger utilities are better positioned to plan and implement waste treatment plants. In small towns, mini treatment plants at district, neighbourhood and even household level, could provide opportunities for work for small-scale private service providers and CBOs in coverage, management and re-use.

- *Involvement in the software side of sanitation*

While the hardware side of human waste disposal is explored (infrastructure construction), the software side (education, advocacy, training on hygiene and health hazards, environmental sustainability) is largely left unattended, especially regarding the private (small-scale) providers of services.

In small towns, waste treatment needs sufficient O&M-trained personnel and appropriate technology, thus opening space for the involvement of the private sector and CBOs.

- *Human resources development*

Although there are examples of positive actions undertaken by local authorities in small towns, the lack of capacity of municipalities may jeopardize the desired decentralization of the responsibility for the provision of sanitation services. When the more educated **operators of private sector** utilities do not engage in fair partnerships with municipalities, the lack of capacity of the latter will put them in a vulnerable position in the negotiation of contracts, in the delegation of service-provision to third parties, or when entering into a joint-venture for the delivery of water and sanitation services. Even to be able to perform the role of facilitators, capacity building of municipal officials will be important in maintaining a community's interest. Local municipalities will benefit most from training in fields like financial and legal issues, policy- and strategy-development, and administrative topics and skills. This is especially true in Latin America, where the best educational institutions and expertise – with the better-paid jobs and most valued positions – tend to be concentrated in the bigger cities, which act as poles of attraction. Capacity building for local authorities is an important component of fair public-private partnerships and for the successful involvement of the private sector in service delivery. Socially committed and technically trained local authorities will help construct good partnerships with the private sector. They should also be prepared in the event that they have to take back management and implementation of services in case of failure of the private utility, a not so rare possibility.

Projects should understand, however, that environmental sustainability also depends on the training of specialized small-scale providers in topics like project-design and negotiation, hygiene and health hazards, and a safe environment.

- *Linkages*

Linkages between the various actors appear to be a major factor conducive to the success of projects. Indeed, the combination of different actors, each with its own comparative advantage, acting in a complimentary manner, emerges as a strategic (pre-)condition. This implies, too, the need for effective decentralization of sanitation agencies, and preferably the active involvement of the organized population in building and managing sewerage systems. Particularly in small towns, such linkages at various levels are already being explored. Yet, still missing in such partnerships is a stronger emphasis on small-scale private service providers.

- *Gender*

The projects and interventions reviewed regarding human waste issues (coverage, management and re-use) did not consider gender mainstreaming. An analysis of the consequences of the implementation of sanitation interventions in peri-urban areas, small towns and rural areas on men and women, richer and poorer, would help one to understand why some interventions are more sustainable than others. Income-generating activities that can originate from projects – e.g. opportunities for employment or work, starting an O&M business and the like – and those seeking a connection between domestic hygiene and human health, on the one hand, and productivity, on the other, represent some of the issues to be examined in the light of a gender approach. With the exception of one example from rural Mexico of a woman who replicated the dry latrine technology and of women participating in O&M in simplified sewerage schemes, a systematic approach to a more equitable gender-distribution of burdens and benefits is still to be explored in area of human waste management issues. Especially a household-centred approach in human waste issues would benefit from such a gender perspective.

More attention by authors and projects to the role of the small-scale private sector and CBOs

One final recommendation is that authors, project planners and implementers make an concerted effort to document cases where small-scale private providers and/or CBOs are making a difference in human excreta issues for a cleaner and safer environment in Latin America.