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## Community-based approaches for addressing the urban sanitation challenges

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Urban sanitation presents one of the most significant service delivery challenges related to poverty alleviation and sustainable development in the developing world. The past decade has witnessed innovations in service delivery approaches for unserved rural and urban settlements with a clear policy shift to community-based approaches that attempt to overcome the supply-led, over-engineered sanitation solutions of the past decades. This article presents two examples of new developments: the urban-focussed household-centred environmental sanitation (HCES) and the rural-focussed community-led total sanitation (CLTS) approaches. The internationally renowned CLTS approach has achieved considerable success since its introduction, by harnessing community and small private sector capacity to solve sanitation problems locally. Experience with validation of the HCES approach in a variety of urban sites in Africa, Asia and Latin America is presented in the second part of the article highlighting some of the lessons learned. The article closes by arguing that a combination of HCES and CLTS, two field-tested methodologies, has the potential to improve the sustainability of sanitation service interventions.

**Keywords:** urban basic services; infrastructure planning; environmental sanitation; household-centred approach; community-led total sanitation

### 1. Introduction

Rising tensions and recent riots in South Africa's townships in July 2009 (BBC News Africa 2009) have demonstrated that service delivery backlogs in urban areas will continue to present significant political impacts for many developing countries in the years to come. Many of the world's cities experience population growth that far exceeds their absorptive capacity in terms of conventional shelter, water, sanitation infrastructure, public health services, employment, education, food supplies and environmental protection. Urban areas in developing countries are especially at risk as it is predicted that 95% of the urban population growth

will take place in the developing world over the next two decades, and 80% of the world's urban population will be located there by 2030 (UNFPA 2007). Although the majority of the poor will still be living in rural areas, empirical results show that the poor urbanise faster than the population as a whole (Ravaillon *et al.* 2007). However, the urbanisation of poverty must be understood in the context in which it occurs. The accelerated economic growth in China and India in the past two decades, although leading to rising income inequality (especially in urban areas), has lifted over half a billion people out of \$1-a-day poverty between 1981 and 2004 (UN-Habitat 2008). In

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Sub-Saharan Africa, though the urbanisation process has not been associated with falling poverty, in many countries rural and urban poverty prevalence is almost the same (UN-Habitat 2008).

The challenges of sanitation service delivery are exacerbated by the fact that many poor urban residents live in the unplanned and underserved informal settlements commonly known as slums or in expanding peri-urban areas. Urban administrations do not have the capacity and often are not planning for service provision in these marginalised areas. This is reflected in the most recent United Nations Joint Monitoring Programme reports that predict that the number of the world's urban population without access to a safe source of drinking water will increase from 137 million (2006) to 296 million (2015) and those without access to improved sanitation will increase from 661 million to 898 million, respectively (UN JMP 2008).

In these expansive urban and peri-urban settlements, irregular water supply and 'on-site sanitation' are the norms. Yet, despite on-site low-cost sanitation being the reality for the vast majority of the developing world's urban population, much of the focus for policy-makers is still on network sewerage and centralised systems designed and implemented without consultation or participation of stakeholders and beneficiaries (Eawag 2005, Rosemarin *et al.* 2008). Many governments and international donors continue to propagate over-engineered and heavily subsidised solutions assuming that 'one size fits all' will improve access to all persons living in developing cities. Hardware subsidies in the form of infrastructure and connection subsidies can be found in countries as diverse as India, Senegal or Ecuador, but all have faced similar problems; they tend to be expensive programmes with limited reach that encourage subsidy dependency and discourage ownership. These national or regional programmes tend to favour high-cost designs and be poorly targeted so that they hardly ever reach the poorest segments of urban society and stifle market provision and innovation in the sanitation sector (WSSCC 2009). Furthermore, local authorities and utilities by-pass informal settlements and will

not invest in new infrastructure because they lack formal tenure and are seen as 'illegal'. The result is an increasing gap between the 'haves' and 'have-nots' in basic services and municipalities that are locked into expensive systems without the possibilities to extend coverage to those that need it.

Despite this trend, there have been a number of recent innovative initiatives for extending the coverage of sanitation services in both rural and urban contexts. These approaches are based on demand-driven and participatory approaches that both motivate community involvement and encourage appropriate technology which better fits the realities in the field. They promote participatory processes where solutions result from the inputs of local stakeholders and not solely from 'conventional wisdom' or 'prescriptive' planning (Atkinson 2007). This article examines two of these approaches, one from a rural perspective and the other more urban, to extract key lessons for improving service delivery in the growing complexities of the urban environment.

## 2. The heterogeneous city

The rapid rates of urbanisation mean that conventional city planning can no longer keep pace with population growth and urban sprawl. The result is that cities are a patchwork of formal and informal settlements, new and old infrastructure, and a wide variety of cultures and classes. Especially in the informal areas, the slums and peri-urban fringe, the modern city can often be described as a fusion between rural and urban environments. One of the key challenges to urban service delivery is recognising this complexity and providing adaptive solutions that meet people's needs.

Rural and urban settlements offer different challenges regarding planning and the implementation of improved urban services. Rural areas tend to have significantly lower service coverage rates than the world over. The largest disparity between urban and rural sanitation coverage can be found in Latin America and the Caribbean (86–52%) and Southern Asia (57–23%). Sub-Saharan Africa is worst off, as both rural and urban sanitation coverage are both off track to meet the MDG

target coverage (42% vs. 24%) in 2015 (UN JMP 2008). Thus, the focus in the rural sanitation sector is often simply on hygiene and behaviour change and encouraging communities to move towards open-defecation-free (ODF) environments, i.e. the first step towards participation in sanitation services that ensure hygienic separation of human excreta from human contact. In the heterogeneous city, many of the rural attitudes and norms are still present in pockets of the city population, so that it is still relevant to consider planning tools

and service provision approaches that are traditionally adapted to the rural environment.

On the contrary, urban areas, especially the fast-growing non-tenured informal settlements, differ significantly from poor rural areas. This has important implications for implementation and ratcheting-up service coverage in the urban context. Issues that come into play such as the political economy, institutional complexity/fragmentation and urban socio-cultural diversity all make for a daunting policy environment to achieve

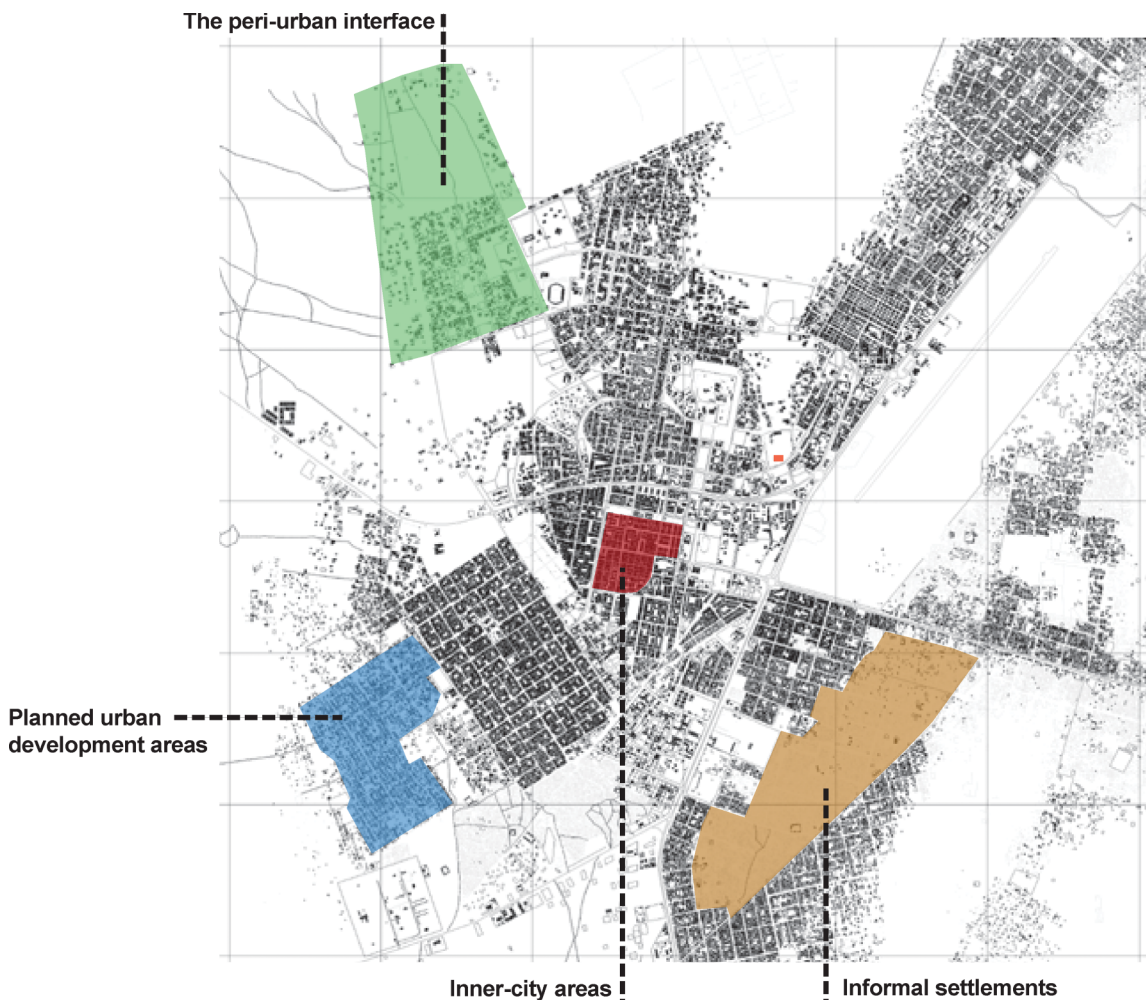


Figure 1. The diverse city: different urban contexts demand context-specific solutions for improved urban services. Map of Nouakchott, capital city of Mauritania.

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progress (SuSanA 2008b). Some of the key challenges that make the urban area more challenging than the rural environment are given below:

- *Heterogeneous populations*: people from different origins, ethnic backgrounds, social norms make for heterogeneous nature of urban settlements (Figure 1);
- *Land tenure*: a key issue that needs to be addressed as it is much more difficult to achieve sustainable infrastructure solutions with tenants or absentee landlords in a commoditised urban land market;
- *Sanitation chain*: Urban sanitation presents great challenges in the development of integrated solutions for managing a variety of waste streams that go beyond achieving defecation-free environments (e.g. proper disposal of household wastewater; faecal sludge management) (Tilley *et al.* 2008);
- *Technology choice*: dense urban settlements limit the feasible technology options available (Mara and Alabaster 2008);
- *Institutional fragmentation*: rural institutional responsibilities are mostly straightforward while in the urban sphere a multitude of different stakeholders have a claim: local authorities, health departments, utilities, communities, etc.

The rest of this article focusses on two approaches to sanitation service delivery and how they have overcome some of these challenges by integrated processes for achieving environmental sanitation systems with the creation of local demand and acceptance, especially by the urban poor.

### 3. The household-centred environmental sanitation approach

HCES is a multi-sector planning approach geared towards service delivery in poor urban areas: it integrates water supply, storm-water and sewage management; facilitates the incorporation of input from diverse actors and utilises the concept of urban zones for enhancing the implementation of decentralised options. The HCES guidelines (Eawag/

WSSCC 2005) propose a 10-step process initiated with a direct request from a community or community leader and culminating with the implementation of plans developed during the planning process. Figure 2 shows the 10 steps involved.

The HCES approach belongs to the family of communicative planning frameworks that focus on participatory, bottom-up methodologies where planners solicit the participation of a variety of stakeholders in a democratic planning process (Hamdi and Goethert 1997).

Successful implementation of the HCES approach requires the dissemination of information on affordable and sustainable sanitation options to those responsible for improving environmental services, such as municipal officials, urban planners and community representatives or chiefs. To fulfil their new roles, process stakeholders need to be provided with information and assistance so that their capacity to make decisions, implement and manage services grows. Widening the scope of possible adapted and affordable solutions from storage to transport to treatment and disposal/re-use (see Figure 3) is a cornerstone of the household-centred approach (Lüthi *et al.* 2007).

A further feature of HCES is the environmental sustainability concept based on circular resource management systems, addressing environmental sanitation problems as close as possible to their source, and emphasis is placed on resource conservation and waste reduction. This underlines recent sectoral developments that have targeted alternative approaches and solutions to the increasing environmental sanitation problem. Innovations follow the paradigm to develop a set of technologies that facilitate and allow best re-use of human waste products. Some examples are urine and faeces separation and their re-use in agriculture (Pronk *et al.* 2007, Tilley *et al.* 2008), greywater separation and re-use (Morel and Diener 2006) or faecal sludge collection and treatment for re-use (Koné *et al.* 2007).

#### 3.1. HCES validation in Africa and Asia

From 2006 to 2009, the HCES approach was tested in seven different urban and peri-urban sites

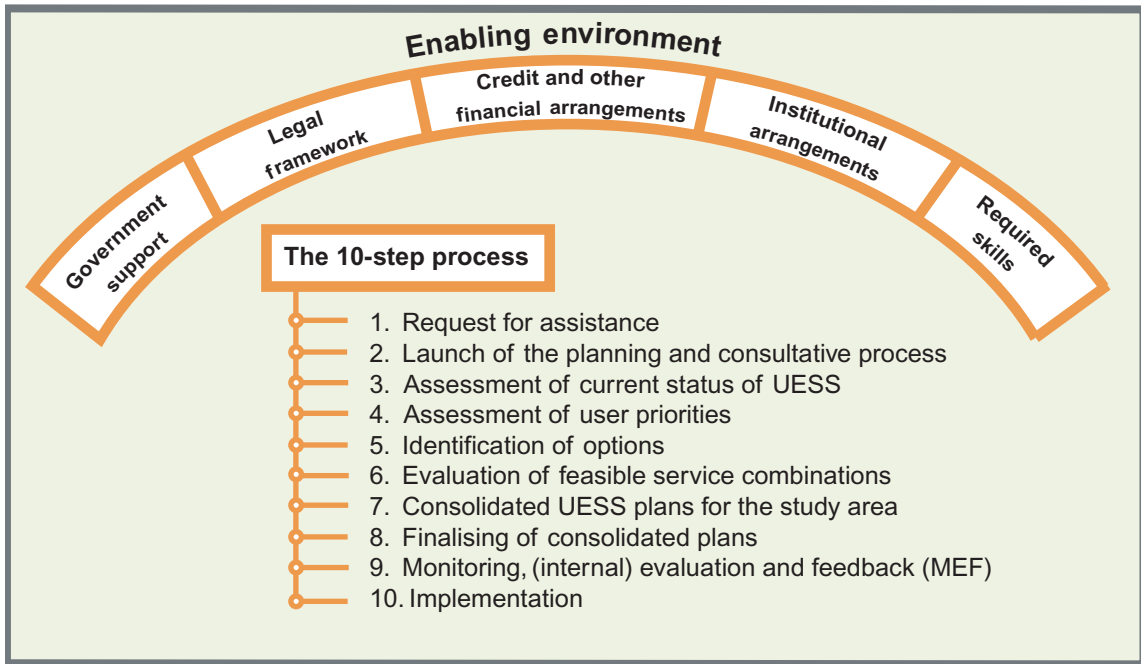


Figure 2. Defining elements of the HCES approach: an enabling environment framework and the 10-step planning process.



Figure 3. HCES consider the entire sanitation system and a variety of technical options that are available from the toilet to the final treatment. Example of a sanitation system configuration involving storage (septic tank), transport (motorised emptying) and treatment (constructed wetland).

across Africa, Asia and Latin America. The two cases from Laos and Tanzania presented below validate the methodology and highlight some key lessons about using HCES. The selected pilot

sites were all situated in either unplanned informal or recently formalised low-income settlements, peri-urban city fringe settlements (peri-urban interface).

### 3.1.1. Lao PDR (*Hatsady Tai Village, Vientiane*)

Hatsady Tai is a small community of about 100 households in the central part of Vientiane with a lack of basic environmental sanitation services. This densely populated neighbourhood is well organised and community members took an active role in the HCES process. Through the HCES process Hatsady Tai village has succeeded in implementing new sanitary facilities plus small-bore sewers and improved drainage lines to prevent future flooding. No households were relocated and around 80 m<sup>2</sup> of private land was provided voluntarily for new infrastructure by two private land-owners. Beneficiaries and local enterprise contributed about 10% of the total project budget (US\$ 72,000), the rest was funded by a small project fund from the Swiss research programme National Centre of Competence in Research (NCCR) North–South. The success of this case shows the importance of involving all key stakeholders, including the community and private sector from the very start of the planning process.

*3.1.1.1. Contextual challenges in Hatsady Tai Village, Vientiane.* The following section summarises the main challenges faced during planning and implementation of the approach and highlights strengths of the planning process. Some of the challenges were external to the project (e.g. ongoing institutional reforms at the national level) and therefore, could not be addressed by the project coordination team. The following section focusses on the internal challenges and lessons learned during the 18-month planning and implementation process.

*3.1.1.2. Institutional challenges.* The institutional separation of the planning and implementation of the solid waste component and the liquid waste components (drainage, sanitation) compromised the effectiveness of the project elements. The share of responsibilities between Water Resources & Environment Administration (coordination of the solid waste management component) and the Public Works and Transportation Institute (PTI) (coordination of the liquid waste management

component) with limited coordination and information exchange meant that (i) community consultation was not well organised and thus partly inconsistent or repetitive; (ii) one planning team could not benefit from the interactions of the other team with the community and (iii) operation and management procedures were defined separately, generating a feeling of confusion among the community.

*3.1.1.3. Involvement and capacity of key stakeholders.* The importance and the decision-making power of the district authorities were underestimated. This key stakeholder was not involved early and actively enough in the planning process, which compromised full political commitment and thus the smooth management and execution of the project. This was especially felt during Step 8 (finalisation of environmental sanitation service plans) and Step 10 (implementation), when top-down decisions were taken by the district authorities, which put into question the outcomes of the participatory planning process. Project implementation (i.e. construction) was complicated by the fact that the local contractor (selected based on the lowest tender) was not involved in the planning process and thus did not understand the participatory solution-finding process that had taken place in the past 12 months. This resulted in ineffective community mobilisation (community contracting) and communication difficulties with the community.

The project did not put sufficient emphasis on training and human resource development prior to the planning and implementation of the project. Some training was carried out, but it was not oriented specifically enough towards the core stakeholders of the project. Lack of planning capacity of local authorities and community-based organisations is clearly one of the main bottlenecks in urban areas characterised by weak institutional settings. This needs to be addressed early on by community-based approaches such as HCES.

*3.1.1.4. Differing expectations within the beneficiary–implementer–backstopper relationship.* There were different interests and expectations among the community (i.e. the beneficiaries), the implementing

agency (PTI) and the backstopping agency (Eawag). The community expected the implementing agency to provide services as quick as possible. Eawag, as a research institution, was mainly interested in the planning process and requested well-defined working plans and progress documentation. PTI, as the main implementing agency, found itself in the centre of this conflict. Despite contractual agreements and agreed ToR for each party of the project coordination committee, the roles and responsibilities were interpreted in as many ways as there were parties. Clear project monitoring, feedback and accountability procedures were missing.

*3.1.1.5. Limited willingness/ability to pay.* During implementation, it was found that the residents were not able to pay the planned household sanitation improvements and were reluctant to take out loans despite the microcredit scheme established at the neighbourhood level. This reluctance was not recognised early enough and not well addressed in community consultation and awareness campaigns. This eventually led to friction between residents and the project coordination committee during implementation. Issues such as the financial contribution by households or the cost sharing for the retrofitting of buildings had to be settled by the negotiation committee.

### *3.1.2. Tanzania (Changombe, Dodoma)*

An unplanned but formalised settlement north of the town centre, Changombe, offers some of the worst sanitation-related problems in Tanzania's capital city with regular outbreaks of cholera. There are only four public water standpipes, serving a population of 35,000, and many households continue to rely on contaminated high-level groundwater. Innovations in the HCES planning approach included the construction of three demonstration facilities at schools and public buildings based on community priorities identified in an options workshop. These pilot facilities allowed community members to test and better understand novel sanitation facilities adapted to dry, water-scarce environments. The planning process

has led to a strengthening of community capacity and self-organisation and has managed to raise awareness about the water – sanitation – health nexus. The municipality, in collaboration with a local NGO, is now in the process of setting up a microcredit facility for funding improved sanitation at household level in Changombe.

*3.1.2.1. Contextual challenges in Chang'ombe settlement, Dodoma.* In the following, we summarise some of the context-related challenges faced during the validation process in Dodoma.

*3.1.2.2. Institutional challenges.* The main institutional challenges were in dealing with the two most powerful institutions in Dodoma: the Dodoma Urban Water Supply and Sewerage Authority (DUWASA) and the Capital Development Authority (CDA). Both institutions found it difficult to 'buy-in' to a new participatory process that diverges from the status quo and fosters experimentation outside of the norms within which they are deeply embedded. DUWASA carries the term 'sewerage' in its name and is above all, interested in expanding its sewerage network to all planned areas of town, even if almost 90% of Dodoma's citizens will continue to rely on on-site systems like septic tanks and simple latrines. DUWASA currently does not operate any exhaustor trucks (although it is planning to purchase one in 2010) but does allow faecal sludge to be disposed of in the waste stabilisation ponds and believes that centralised sewerage is still the most efficient and safest way for excreta removal.

Inflexibility on the part of the utility has at times caused uneasy relations between the HCES project unit and DUWASA representatives; DUWASA did not attend the workshops and showed general disinterest in the planning process. However, following the options workshop (July 2008), the DUWASA Sanitary Engineer did start to show interest and contributed to the experts meetings. The willingness to invest in the purchase of a new exhaustor truck shows that DUWASA began to see a potential money-earning market in emptying the thousands of on-site facilities in



Dodoma. Overcoming ‘institutional inertia’ takes time and comes in gradual steps, but it appears as if DUWASA is making steps in the right direction.

The CDA is a powerful institution that holds all public land in Dodoma and wields overall planning authority. This means that unlike other local authorities in Tanzania, Dodoma Municipality has no major assets and no real planning authority. CDA managed to regularise the entire unplanned settlement of Chang’ombe in 2007 and ensured that the inhabitants secured tenure. The promised upgrading of roads and drainage systems has been delayed because of the lack of funds. It also created some project delays by initially refusing to grant construction permits to the three planned pilot facilities in Chang’ombe.

As in Laos, a further challenge was the limited management capacity at all levels; capacity that is needed to carry out this kind of comprehensive planning approach in a secondary city in Africa. There are too few professionals who understand sanitation options at household and community levels, a lack of expertise to carry out statistically sound sample surveys and a lack of skilled moderators/communicators who combine communication skills with knowledge about community dynamics. Professional capacity development requires considerable attention in the future. Given the low capacity in terms of time and human resources, the HCES approach in its current format is still too demanding for the reality of small- and medium-sized African towns.

An important learning is that planning and programming for safe sanitation is not only about logistical and financial issues but about another obstacle to improving hygiene and sanitation: getting people to change their behaviour – especially in the expanding peri-urban settlement areas. This is where the CLTS participatory approach to empower local communities may add value to the structured HCES planning approach.

*3.1.2.3. Strengths.* The 14-month planning process in Dodoma brought together a great many stakeholders from public, private and civil society (local and international NGOs). During the process, officials

and community representatives shared their views and discussed viable options for improving environmental conditions. A good degree of agreement was achieved during the workshops and group work sessions. Initial resistance from the water and sewerage utility could be partially overcome. Because of the many workshops, focus group discussions and social events (e.g. official opening of the school toilets at Chang’ombe Primary), there is now a great willingness to improve urban environmental conditions in the neighbourhood. This is crucial for raising demand for funds from the microfinance project to be used for sanitation.

Key project features of the HCES validation include the following:

- efficient planning and implementation costs (planning costs below US\$ 2 per inhabitant and implementation costs of between US\$ 30 and 60 per beneficiary);
- reasonable planning timeframe of 15–20 months – depending on context and size of settlement and
- ability to attain real participation in project selection, project design to operation and maintenance of works (this is currently being studied in more detail through an ex-post cross-country evaluation).

#### 4. Community-led total sanitation

Community-led total sanitation was initiated in Bangladesh in 1999, as an innovative methodology for eliminating open defecation (Kar 2005). It has attracted much attention for its simplicity of approach and the rapid results that follow. Success stories of the CLTS approach in rural areas show that after a single-day triggering event in which communities are led to experience disgust at the present sanitation situation, villages achieve ODF status within a month (Kar and Chambers 2008). CLTS uses a participatory approach to empower local communities to stop open defecation and promote the building and use of latrines through community-led action instead of subsidies. Although there are many variations in the specifics of the approach, all apply the

core elements of (a) working with the whole community rather than individuals and (b) focussing on stopping open defecation rather than construction of a particular type of latrine, hence no subsidies for hardware. The approach has shown positive results and proved to be a strong triggering mechanism for community hygiene behaviour change, especially in rural South and Southeast Asian, as well as in several African countries.

Where it has been implemented in rural areas of Asia and Africa, CLTS has resulted in a very large uptake in latrine construction and latrine use. In Bangladesh, where CLTS started, more than 16,000 rural villages have been declared ODF and the approach is now recognised in national policy (MoLG 2005). In the Southern Region of Ethiopia, with a population of 14 million, a locally adapted version of CLTS has been developed and used within an existing institutional setting, the Bureau of Health, using its own funding sources to run the process and this has led to a pit latrine ownership increase from 13% in 2003 to 88% in 2008 (WSP 2007). In a study of the WaterAid-supported CLTS interventions in rural Bangladesh (Evans *et al.* 2009), the general outcome showed continued up-grading and repairing of latrines, sustained behaviour change and highly cost-effective programme implementation.

As noted earlier, many of today's rapidly urbanising cities contain a heterogeneous mix of people, infrastructure and service provision which are representative of both urban and rural attitudes and standards. The great strength of the CLTS approach is in triggering behaviour change and mobilising community action to reinforce this change. Poor hygiene practices and open defecation are not problems restricted to rural areas and therefore hygiene promotion campaigns are frequently included in urban sanitation programmes. The CLTS success with mobilising behaviour change and increasing community involvement makes the adaptation of this tool to urban setting an attractive possibility.

#### 4.1. CLTS validation

Although most of the experience with CLTS comes from the rural context, the success of the method

inspired authorities in the urban municipality of Kalyani near Kolkata, India, to introduce CLTS in its informal settlements. The Kolkata Metropolis has over 12 million inhabitants, of which about one third are estimated to live in slums. Before the CLTS intervention, the area was characterised by a high rate of open defecation. Since 2003, the Department for International Development (DFID) supported Kolkata Urban Services for the Poor (KUSP) Programme, which has been active in providing sanitation solutions to the Kalyani urban poor. Originally, almost one third of its budget (US\$ 17.7 million in 2003–2004) was spent on infrastructure, with the highest priority given to household toilet construction (SEI 2008). The KUSP provided slum households with free toilets (cost of US\$ 236). However, it was noted that the subsidised facilities often had low usage rates, were poorly maintained or were used for other purposes than defecation. In addition, the programme realised that the subsidy approach would not be able to reach 100% of the population at the same time as it was creating a dependence on external subsidies.

In 2005, the concept of an urban CLTS was conceived under the KUSP and with the support of the Chairman of Kalyani Municipality who showed the political will to make Kalyani an ODF City (SEI 2008). A pilot CLTS exercise was conducted in the Kalyani slums with the objective to test the approach of 'self-mobilisation' in an urban slum and to empower the local community through community participation. The CLTS programme was coordinated and facilitated by the chief health officer of Kalyani Municipality who was keenly interested in the approach. The CLTS process sensitised all levels of stakeholders about the method, including elected municipal councillors and departmental heads of the municipality, local NGOs and Community-based organisations (CBOs), health workers and community people including local community leaders. It was made clear that the goal was behaviour change and not the model of toilet. However, the first piloting failed, primarily because of high expectations for subsidies.

In the other four pilot areas, however, the CLTS approach 'clicked'. There were natural community

leaders who emerged to take on the process of promoting ODF and eventually other community projects. All five slum settlements were declared ODF within six months although it took longer in the first slum. The approach was spread to the rest of the municipality and 44 out of the 52 slums in Kalyani were declared 100% ODF by 2007. The municipality established a monitoring system in which ward representative publicly kept track of the number of ODF slums under their supervision. Several thousand slum dwellers have built their own toilets and some slums have also started projects to repair tube wells and clean drainage ways, showing how CLTS can act as a springboard to other community development initiatives.

The lessons learned from this urban CLTS experience highlight the influence of subsidies, natural leaders and political will. It was found that subsidies and the associated politics are hurdles for community self-mobilisation. At the same time, it was found that the CLTS approach was less expensive than scaling up a large subsidised programme, and investment in software approaches proved more cost-effective than infrastructure investment (SEI 2008). In the first five months of CLTS, 10 slums covering more than 800 households were engaged, constructing their own toilets, mobilising more money than what KUSP could offer as subsidy. The natural leaders who were so instrumental in motivating the change were encouraged for their work, but at a small cost to the municipality.

The role of the natural leaders in the process was also emphasised. After the triggering process, these leaders took over the role of motivating change in the other slums. However, it was also noted that there was initially more resistance in the slums with stronger tribal connections and, as would be expected, less social cohesion in those slums with more migrant populations. The lack of legal status in some slums was also a challenge, which underlined how important the support and involvement of the local authorities was to the success of the programme. However, local leaders could also act as gate-keepers and the Kalyani experience showed how crucial political will is in implementation of a CLTS approach.

The results from the urban experience in Kalyani support the lessons learned from rural work with CLTS. Key lessons learned from these rural CLTS experiences are the importance of (i) leadership that is well-informed, well-respected and well-connected, (ii) an affordable product, (iii) latent demand by a critical mass of early adopters, (iv) the right context and (v) the tipping point (WSP 2007). However, the WaterAid study of CLTS (Evans *et al.* 2009) also supported the need to institutionalise the results of CLTS interventions. It emphasised that triggering is only one point along a trajectory towards improved sanitary conditions and that closer involvement of local politicians and service-providers could lead to improvements in the sustainability of ODF status and sanitation infrastructure. This conclusion is also highlighted from the Southern region experience in Ethiopia where the Bureau of Health definitely sees the need to build on the existing momentum achieved by CLTS and take further steps towards a more sustained sanitation situation (WSP 2007). There appears to be room for the institutionalisation and formalisation of CLTS, which could fit it better to the urban context. Given the results achieved through CLTS in the Kalyani slum there seems to be a potential for CLTS to be a tool for urban authorities for achieving behavioural change and genuine community participation.

## 5. Experiences in applying people-centred approaches

Creating a demand-driven approach means working in a participatory way with a wide range of stakeholders. Multi-disciplinary participation throughout the planning, decision-making and implementation processes is seen by many planning scholars as a critical means of achieving more equitable and thoughtfully designed cities (Friedmann 1992, Allen *et al.* 2008). Participatory planning frameworks allow actors from different spheres and sectors (public, private, parastatal) to work together, thereby changing individual and institutional perceptions. Working together and trying to

find common ground and workable solutions adds value in many ways.

Experiences with CLTS in rural and peri-urban settings show the power of collective action and the need to involve the entire community in change. Achieving an ODF community is not the work of one individual but requires the full participation of all inhabitants. However, it also underlines the role of natural leaders and local politicians and the influence that they can have on motivating or hindering successful action. A core element of the CLTS philosophy is therefore the need to sensitise all stakeholders and keep them informed (Kar 2006). The strength of CLTS is in its ability to trigger community action and develop a sense of community pride and empowerment through joint action. However, in the urban setting, the approach has stumbled at hurdles related to local politics and technology subsidies. CLTS is a powerful behaviour change tool, but by itself lacks institutional weight. It has also been criticised for motivating a desire for sanitation without providing the capacity and knowledge for developing appropriate sanitation systems.

Experiences in testing the HCES process in the urban context also stress the importance of developing people's capacity, skills and local knowledge, in a way which is parallel to CLTS. It also shows the importance of an open-ended and flexible planning framework, which makes the planning more relevant to local conditions, increases people's control over their livelihoods and helps promote community-based action (Eawag 2005). Validation of the household-centred approach highlighted the following lessons, which are in line with participatory planning principles:

- Participation should be relevant and time-efficient to the project end-users.
- Methods and tools used respect the knowledge and experience of all stakeholders.
- There is an emphasis on learning and knowledge for action.
- The process must acknowledge and address inequalities of power among participants.
- The process must remain flexible, even within a set of guiding principles such as HCES.

Critical analysis of the HCES experiences has also shown that user participation can take on many forms and degrees of empowerment, from weak 'participation by consultation' to more empowering 'interactive participation', where stakeholders are fully involved in the analysis and action planning, right-down to project implementation and infrastructure improvements. The choice of which approach to use depends on the complexity of the issues and the purpose of the engagement. There is no 'one size fits all' formula but a number of tools and techniques that can be applied. Ideally, a good participatory process features three elements:

- participatory methods and tools (e.g. pocket voting or problem mapping exercises);
- a flexible process for the planning and sequencing of events;
- a set of guiding principles (as is the case with the HCES or CLTS Guidelines).

To achieve genuine participation, it is important to empower local people by raising their skill-level and capacity for action. A key issue is information-sharing from the outset of any project or programme. Individual and collective capacity development deserves special attention for the household-centred approach as this is the main sphere of decision making. Although capacity development is not explicitly mentioned in the existing guidelines, experience in the different pilot sites has shown that while training and awareness-raising workshops were carried out in several of the case studies (e.g. Laos and Tanzania), this aspect deserves more attention and resources. In the future, planning efforts must address the capacity deficiency at community and municipal levels in a more structured way (Lüthi *et al.* 2009).

This recognised need for capacity development, awareness-raising and triggering for behavioural change within HCES is perhaps the first step in bridging the divide between urban and rural approaches to sanitation service delivery. In the past, urban sanitation planning tools and guidelines, such as HCES, have been designed to work mainly within a formalised administrative

network with defined roles and procedures that give structure to subsequent actions. Although they might challenge decision makers to find innovative solutions, the tools still worked within the framework of urban government and policies, with minimal impact on the actions of households or individuals. In contrast, rural sanitation tools such as CLTS are often designed to work directly at the household level. The origin of many of these tools is often based on participatory rural appraisal and Self-esteem, Associated strengths, Resourcefulness, Action planning and Responsibility (SARAR) techniques, which seek to stimulate individuals to identify and solve their own problems. Tools like participatory hygiene and sanitation transformation aim to overcome community resistance to change by creating a space for dialogue and raising awareness of the consequences of poor sanitation. Although the hygiene message in these tools often targets individual behaviour change, they have also been effectively used for community mobilisation. In the absence of strong administrative units, rural tools focus on individuals and community action as the drivers of sanitation improvements. A comparison of CLTS and HCES clearly shows the differing perspectives from which they were developed (Table 1). However, when considering the heterogeneous urban

reality of the contemporary cities of the South, it is also clear that these approaches can complement each other.

## 6. Financing community-scale infrastructure projects

Experiences with communicative planning processes in the past decades have shown that multi-stakeholder approaches with community involvement can lead to cost-effective solutions. In many cases, they have been shown to be less expensive than hardware, supply-driven solutions that fail to meet people's needs and desires. For example, rural-based CLTS implementation delivers direct benefits for poor households thanks to its self-help, zero-subsidy approach.

In dense urban environments, however, capital costs for infrastructure services are beyond the means of the poor and various forms of government or donor-funded subsidies for capital investments are needed, as is the case for drinking water supply. In the HCES cases presented earlier, this was provided in the form of a microcredit for sanitation that provides households credit for household infrastructure improvements below Tanzanian market rates or through external donor funds matched by private local funds in the case of Vientiane in Laos.

Table 1. Overview of the two presented planning approaches.

	HCES (2005)	CLTS (1999)
Context	Urban and peri-urban	Rural and peri-urban
Main aim	Improve service delivery for environmental sanitation	Motivate behavioural change to stop open defecation
Countries tested	Applied since 2007 in urban areas of Costa Rica, Burkina Faso, Kenya, Tanzania, Laos, Nepal and Mongolia	First applied in Bangladesh, since then in over 20 countries in Asia and Africa
Stakeholder involvement and methods used	- Multi-stakeholder format, focus on primary stakeholders - Include community in all planning steps	- Participatory rural appraisal techniques - Mobilise entire community into collective action
Technology choice	- Technology neutrality - Waste seen as a resource	- Mainly simple pit latrines (first rung of the sanitation ladder)
Infrastructure funding	- Link to existing municipal and national funding vehicles; full cost recovery	- 0% subsidy approach

Note: Adapted from SuSanA 2008a.

To move to scale and beyond one-off, small-scale projects, approaches must be able to tap into decentralised urban infrastructure finance. Targeted funding vehicles include poverty-oriented grant financing of International Finance Institutions (e.g. the World Bank's Social Funds) or national Municipal Development Funds. In a further example from an ongoing HCES site in Kathmandu Valley in Nepal, follow-up grant funding for implementation has been secured from UN-Habitat's Water for Asian Cities (WAC) programme.

## 7. Conclusion: creatively combining the best of both worlds

This article argues that the two approaches reviewed here, HCES and CLTS, have complementary features making a combination of both approaches ideal for tackling sanitation service delivery in a sustainable manner in challenging urban and peri-urban contexts. The CLTS approach with the triggering and stimulating positive behavioural change has its strengths in creating genuinely meaningful action through a community-led and community-owned process. However, CLTS cannot maintain a more complex sanitation system as exemplified in Figure 3 as this involves stakeholders at higher levels than the community. HCES on the contrary, with its forte as a structured planning methodology with multi-stakeholder involvement does ensure sustainable basic urban services, especially for disenfranchised urban areas, but is less strong in triggering behavioural change which may be necessary in many urban and peri-urban settings.

The spotlight in this article on novel, but field-tested approaches to service delivery in urban and rural contexts has sought to focus much needed attention on the process of bringing about effective and sustained access to sanitation. An important feature of both planning tools is that they take a position of technology neutrality; they attempt to broaden the set of technology solutions that get implemented, such that choices are better matched to the economic constraints and management capacity of a given area (Murray 2009). This technology neutrality improves chances for sustainability of

the sanitation service delivery down the line. Technology neutrality forces the stakeholders to think actively on their demands they have on the sanitation system and what functions the systems should supply. The CLTS process stops at the choice of toilet/latrine, because CLTS in its pure form is only aspiring excreta containment, whereas the technology neutrality of HCES goes all the way through from collection to treatment and reuse/disposal by explaining the variety of options available for each step. An open approach to technologies, in combination with an understanding of the capacity of the service delivery entity on their capacities to deliver the desired functions, will improve chances of a technology choice that meets the demands of the users and the management capacity of the service delivery entity.

Urban and peri-urban areas are complex with regard to meeting infrastructure needs and the problems facing them are heterogeneous and are inter-linked, but this does not mean that they are impossible to solve. Solutions will require a planning approach to environmental sanitation that is more inclusive, participatory, comprehensive and multi-disciplinary. Service provision in such a mixed environment will require an integrated planning process and a variety of technologies that meet the needs of the poor, rich and middle income groups. Planning will need to recognise the mixture of rural and urban characteristics within the peri-urban interface and draw on established strengths within these respective fields. Sanitation plans should utilise behaviour change and community mobilisation techniques at the same time as establishing an institutional framework that supports the Bellagio principles.<sup>1</sup> For this to work, a specific enabling environment needs to be put in place – government support, political will and support at all levels, legal framework, institutional arrangements, required skills, credit and other financial arrangements, information and knowledge management. Here some of the experiences with HCES can provide insights and inspiration for the way forward.

Each sanitation context is unique from a physical, social, economical, environmental and institutional point of view, which needs to be reflected in

the planning of the sanitation service delivery. This demands a creative approach where a combination of different existing sanitation planning tools can improve the likelihood of sustainable sanitation service delivery through catering for the specific demands in the context at hand. Several organisations and consulting services have already started to move in this direction. For example, to achieve a higher level of adaptation to the West African peri-urban context, the EU project Netssaf proposed a planning model combining HCES with participatory hygiene and sanitation transformation and other awareness raising tools (Netssaf 2008). A combination of the IWA planning tool Sanitation 21, participatory tools and social marketing has also been proposed for sanitation planning and implementation in Northern Ghana (Kvarnström and McConville 2007). This article therefore suggests that a combination of several methodologies and structured planning approaches have the potential to improve the sustainability of sanitation service interventions in underserved urban areas.

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### Note

1. The Bellagio Principles were formulated in the year 2000 by urban sanitation experts and place the principles of human dignity, good governance and resource recovery in the focus of future urban sanitation delivery. See WSSCC 2000 for full text.

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### References

- Allen, A., Hofmann, P., and Griffiths, H., 2008. Moving down the ladder: governance and sanitation that works for the urban poor. *In: Background paper produced for the IRC symposium: sanitation for the urban poor, partnerships and governance*, November 2008, Delft.
- Atkinson, A., 2007. Analysis of urban trends, culture, theory, policy, action. *City*, 9 (3), 277–295.
- BBC News Africa, 2009. South Africa vows to stop riots. *BBC* [online]. Available from: <http://news.bbc.co.uk/2/hi/africa/8164956.stm> [Accessed 2 February 2010].
- Eawag, 2005. *Household-centred environmental sanitation: provisional guideline for decision makers*. Dübendorf, Switzerland: Swiss Federal Institute of Aquatic Science and Technology (Eawag).
- Evans, B., et al., 2009. *Sustainability and equity aspects of total sanitation programmes: a study of recent wateraid-supported programmes in three countries. Global synthesis report*. Preprint prepared for the 34th WEDC Conference, May 2009.
- Friedmann, J., 1992. *Empowerment – the politics of alternative development*. Cambridge: Blackwell.
- Hamdi, N. and Goethert, R., 1997. *Action planning for cities – a guide to community practice*. New York: Wiley & Sons.
- Kar, K., 2005. *Practical guide to triggering community-led total sanitation (CLTS)*. Brighton, UK: Institute of Development Studies, University of Sussex.
- Kar, K., 2006. *Community led total sanitation in slums of Kalyani municipality under Kolkata urban services for the poor (KUSP)*. Lessons learnt and outcomes of the sharing workshop on CLTS held on the 26th May 2006 at Kalyani.
- Kar, K. and Chambers, R., 2008. *Handbook on community-led total sanitation*. UK: Institute of Development Studies at the University of Sussex and Plan.
- Koné, D., et al., 2007. Helminth eggs inactivation efficiency by faecal sludge dewatering and co-composting in tropical climates. *Water research*, 41 (19), 4397–4402.
- Kvarnström, E. and McConville, J., 2007. Sanitation planning – a tool to achieve sustainable sanitation? *In: Proceedings of the International Symposium on*

- Water Supply and Sanitation For All*, 27–28 September 2007, Berching, Germany.
- Lüthi, C., et al., 2009. *People's choice first – a 4-country comparative validation of the HCES planning approach for environmental sanitation*. Bern: NCCR dialogue, Nr. 22.
- Lüthi, C., Schertenleib, R., and Tilley, E., 2007. HCES: a new approach to environmental sanitation planning. *Waterlines*, 12, 2–4.
- Mara, D. and Alabaster, G., 2008. A new paradigm for low-cost urban water supplies and sanitation in developing countries. *Water policy*, 10 (2), 119–129.
- MoLG, 2005. *National sanitation strategy Bangladesh*. Bangladesh: Ministry of Local Government.
- Morel, A. and Diener, S., 2006. *Greywater management in low and middle-income countries, review of different treatment systems for households or neighbourhoods*. Dübendorf, Switzerland: Swiss Federal Institute of Aquatic Science and Technology (Eawag).
- Murray, A., 2009. *Don't think of wastewater: evaluation and planning tools for reuse-oriented sanitation infrastructure*. Thesis (PhD). University of California, Berkeley, USA.
- Netssaf, 2008. *Netssaf – participatory planning approach. A guideline for sustainable sanitation planning* [online]. Available from: <http://www.netssaf.net/111.0.html> [Accessed 2 February 2010].
- Pronk, W., et al., 2007. Pilot experiments with electro-dialysis and ozonation for the production of a fertilizer from urine. *Water science and technology*, 56 (5), 219–227.
- Ravaillon, M., Chen, S., and Sangraula, P., 2007. *New evidence on the urbanization of global poverty*. World Bank Policy Research Working Paper No. 4199, Washington, DC.
- Rosemarin, A., et al., 2008. *Pathways for sustainable sanitation: achieving the millennium development goals*. Stockholm: IWA Publishing, EcoSanRes Programme, Stockholm Environment Institute.
- [SEI] Stockholm Environment Institute, 2008. *Proceedings from SEI/EcoSanRes2 workshop: planning and implementation of sustainable sanitation in peri/semi-urban settings – a need for development of existing tools?* 25–26 August 2008, Stockholm.
- SuSanA, 2008a. *Planning for sustainable sanitation in cities* [online]. Factsheet Sustainable Sanitation Alliance. Available from: <http://www.susana.org/lang-en/working-groups/wg06> [Accessed 2 February 2010].
- SuSanA, 2008b. *Sustainable sanitation for cities, thematic paper version 1.2* [online]. Sustainable Sanitation Alliance. Available from: <http://www.susana.org/lang-en/working-groups/wg06> [Accessed 2 February 2010].
- Tilley, E., Atwater, J., and Mavinic, D., 2008a. Recovery of struvite from stored human urine. *Environmental technology*, 29 (7), 807–816.
- Tilley, E., et al., 2008b. *Compendium of sanitation systems and technologies*. Switzerland: Water Supply & Sanitation Collaborative Council (WSSCC) and Swiss Federal Institute of Aquatic Science and Technology (Eawag).
- UNFPA, 2007. *State of the world population 2007*. New York, USA: United Nations Population Fund.
- UN-Habitat, 2008. *State of the world's cities 2008/2009*. London, UK: Earthscan.
- UN JMP, 2008. *Progress on drinking water and sanitation – special focus on sanitation*. Joint Monitoring Programme for Water Supply and Sanitation, Geneva.
- WSP, 2007. *From burden to communal responsibility. A success story from southern region in Ethiopia*. Water & Sanitation Programme (WSP) Field Note, January 2007.
- WSSCC Working Group Environmental Sanitation, 2000. *The Bellagio statement* [online]. Available from: <http://www.sandec.ch/sesp> [Accessed 2 February 2010].
- WSSCC, 2009. *Public funding for sanitation – the many faces of sanitation subsidies*. Geneva: Water Supply & Sanitation Collaborative Council (WSSCC).