A tale of clean cities: Insights for planning urban sanitation from Ghana, India and the Philippines

Annexes

Annex 1: Summary of urban sanitation planning approaches

Planning approach, Developer, Date	Key novel principles or criteria introduced by the approach
Kalbermatten's 'Revolution', Kalbermatten & the World Bank (1980s)	. Identify solutions ensuring max. health benefits. . A range of technologies to maximise coverage. . Promote inclusive, multidisciplinary (avoid top-down techno-centred) planning. . Engage the community through an iterative planning process.
Strategic Sanitation Approach, WSP (1989)	. Same principles as Kalbermatten's Revolution, plus: demand-responsiveness and whole sanitation value chain approach. Understanding stakeholders' interests throughout the value chain may result in various service models coexisting in the same city.
Household Centred Envir. Sanitation (HCES), WSSCC & EAWAG (2000)	. Operationalise the Bellagio Principles1 through a ten-step planning process. . Recommends a stakeholder engagement process moving from household level to neighbourhood level, to town and upper levels of government. . Stresses the importance of having a conducive enabling environment.
EcoSan GTZ (now GIZ) (2003)	. EcoSan 'waste as a resource' principle linked and adapted to the HCES approach. . A ten-step model and toolbox to help meet the Bellagio Principles.**Error! Bookmark not defined.**
Citywide Sanitation Strategy (CWSS) WSP (2010)	A strategy to implement City Sanitation Plans in Indonesia including the following principles: . Enhance synergy among sanitation stakeholders; incentivize private sector participation and promote community-based services. . Seek universal coverage; prioritise poor areas; raise health and hygiene awareness.

[1] Human dignity, quality of life and environmental security should be at the centre of urban sanitation planning; decision making should involve participation of all stakeholders; waste should be considered as a resource and should form part of an integrated water resources and waste management process; and that environmental sanitation problems should be resolved at as low a level as possible.

Community-led Urban Envir. Sanitation (CLUES) EAWAG (2011)	. A seven-step process building on HCES: demand creation, inception, situational analysis, problem prioritisation, identification of service options, design of action plan, and implementation. Cross-cutting: communications, capacity development and monitoring and evaluation. . Include water, solid waste management and storm drainage in addition to sanitation.
Whole System Approach (WSA) IRC (2014)	. A three-phased process: 1) Initiating change (assessments, planning, partnership building); 2) Learning & testing (research and piloting, capacity building); and 3) Replicating & scaling up (systematic changes without external support, monitoring). . Sanitation is about service delivery; it involves cooperation at different levels. . Strong government leadership is needed for systematic change to occur. . Continuous monitoring of sanitation services and the sector is critical.
City Sanitation Plans - recent	. Strategic planning processes for citywide service development. Draw on core principles of earlier planning approaches and address both technical (e.g. services) and non-technical (e.g. institutional capacity) aspects. . In-depth guidelines and strategies (developed by several supporting orgs, e.g. WSPs CWSS – see above). . Some countries (e.g. India) have linked production of City Sanitation Plans to financial incentives.
Citywide Approach to Sanitation, USAID and Susana (2015)	. A nine-step process: 1) Assess existing services; 2) Assess sanitation socio-economic context; 3) Map stakeholders; 4) Clarify roles and responsibilities; 5) Build consensus; 6) Disseminate assessment findings; 7) Develop and implement a Near Term Faecal Sludge Management Plan 8) Develop a mid- and long-term investment plan; 9) Mobilise investment for sanitation infrastructure.
Sanitation Safety Planning (SSP) Guide, WHO (2015)	. A risk-based management tool for sanitation systems. . Step-by-step guidance to assist in the implementation of the 2006 WHO Guidelines for safe use of wastewater, excreta and greywater in agriculture & aquaculture: 1) Prepare for SSP; 2) Describe the sanitation system; 3) Assess hazardous events, control measures and exposure risks; 4) Develop and implement an incremental improvement plan; 5) Monitoring control measures and verify performance.

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Annex 2: Methodology

A three-phase approach was followed: a **desk-based analysis** informed **case study research**, and a **synthesis phase** saw the integration of the findings from both processes. An Advisory Group was constituted, formed by a team of experts with different perspectives on city sanitation planning – they provided valuable multi-disciplinary insights and guidance throughout the research process.

The desk-based work entailed the review of 64 articles, semi-structured conversations with 12 key urban sanitation sector stakeholders, and email exchanges with additional experts. The literature review centred on liquid sanitation, with a focus on household-level services and particular emphasis on the poorest and hardest to reach. Comparatively lower attention was paid to institutional sanitation (e.g. schools, health centres). The selected pool of informants allowed insights to be gained from varied contexts, geographic regions and perspectives. INGOs, academia and external support agencies were relatively well represented, compared with city-level actors.

Early data collection informed the selection of eight cities for deeper review. Chosen on the basis of their exposure to sanitation planning processes or programmes, they mainly consisted of large urban centres: Belo Horizonte (Brazil), Maputo (Mozambique), Hanoi (Vietnam), Durban (South Africa), Santa Cruz (Bolivia), Kochi (India), Dakar (Senegal), Indonesia (overview). Their experiences with sanitation planning have often been documented more extensively.

Table 1: Initial list of cities explored

City – country	Pop.	Sanitation situation
Belo Horizonte – Brazil	2.5M	92% of population have sewerage connection
Maputo - Mozambique	1.9M	90% of population use onsite sanitation
Hanoi – Vietnam	7.0M	>90% of population use flush toilets to septic tanks
Durban – South Africa	3.7M*	92% have access to basic sanitation
Santa Cruz – Bolivia	1.7M	60% of population use onsite sanitation
Kochi – India	2.1M	95% of population use onsite sanitation
Dakar – Senegal	2.7M	73% of population use onsite sanitation
Indonesia (overview)	245M	72% of urban population have ‘improved’ sanitation

* The eThekwini Water and Sanitation unit have a customer base of 3.7 million.

Findings from the desk-based work and inputs from the Advisory Group informed the design of the analytical framework used for the case-study research. Three cities were identified: San Fernando, la Union (The Philippines), Visakhapatnam (India) and Kumasi (Ghana). This selection responded to the need to learn from high-performing cities presenting complementary profiles in terms of geographic location,

demography, sanitation systems, key drivers underlying sanitation development, and the type of support received from external development agencies.

Table 2: Summary profile of the three cities selected as case studies

City/ region/population	Awards (sample)	Distinctive drivers (sample)
San Fernando, The Philippines, South East Asia, Pop: 115,000	Cleanest Greenest and Safest City Regional Finalist (2007); Best Zero Waste Mgmt. Project Implementer on Zero-Basura (2010)	Mayor's push for environ-mentally friendly development support from development Agencies.
Visakhapatnam, India, South Asia, Pop: 2.1M	3rd Cleanest City under Swachh Bharat (Clean India) Mission (2016); Top 20 city under Smart Cities Mission (2016).	Water scarcity; national flagship programmes; strong state and city leadership.
Kumasi, Ghana, West Africa, Pop: 2.4 M	Cleanest City Ghana 2014.	Economic and housing context; PPPs; support from development agencies.

One-week visits to San Fernando, Visakhapatnam, and Kumasi were conducted in March and April 2016. For each city, the lead consultant teamed up with one or two local consultants familiar with the city context and sanitation issues. The local consultants provided key support to the design of the field research, as well as data collection and analysis. Each time, a joint documentation review was followed by a set of site visits and interviews with key informants through face-to-face meetings and focus-group discussions. The last day of each visit systematically saw the research team lead a stakeholder feedback meeting to validate and refine the preliminary findings.

Annex 3: Draft municipal functions templates

Table 3 reflects an initial attempt at breaking down planning aspects into municipal functions addressing specific aspects of the sanitation chain. The example provided below focuses on household on-site sanitation, yet similar 'municipal function tables' can be developed for shared toilets (onsite sanitation); public toilets (onsite sanitation); and sewered sanitation. Indeed, the roles of municipal officials in land acquisition, contracting, etc., are likely to be markedly different for public toilets than for household arrangements.

The first column lists each municipal function without following any chronological sequence as most cities presumably do not operate in such a step-by-step way. The second column describes the key challenges associated with the fulfilment of the function. The following columns present for each segment of the sanitation chain of services the key requirements or aspects to consider in order to fulfil each function.

In the view of the research team such municipal function tables could typically be by-products of the successful implementation of (portions of) a city sanitation plan. As a municipality successfully mainstreams the implementation of certain services (e.g. on-site household toilets or public toilets), it reaches a point where the different processes and tasks conducted by the various departments have been sufficiently refined to be formalised. The challenges, implications, requirements and other aspects related to the fulfilment of each function are described in greater details by distinguishing the various segments of the chain of service.

The research team is not aware of such information being captured in the sector. The value of such a tool is that it formalises a know-how that often remains hard to access, scattered among departments and at risk of being lost. It also provides a basis for improving efficiency within and across departments. Developing such tools for a representative sample of high-performing cities in a given country (e.g. a set of cities of different sizes, geographies, range of sanitation services) would provide other cities progressing in the development of their sanitation services with great guidance on how to mainstream the implementation of their particular combination of services.

The tool can further be enhanced by determining questions for each box to help understand the delegated authority as well as gaps and weaknesses in specific contexts. An overlay could be applied with a particular city case study to see where external support would be most beneficial in unlocking gaps. These gaps may ultimately have little to do directly with sanitation (like land acquisition for transfer stations for sludge) and thereby may require a different response from what most external agencies focused on sanitation are used to doing.

Table 3: Example of draft municipal function table for on-site household sanitation

Stage of san chain Govt. function	Challenges	Behaviour change	Toilet construction	Emptying	Transport (traffic congestion, health risk, etc.)	Disposal	Reuse
Planning Office / City Development Office / Asset registry	Planning highly politicised. Inadequate data. Static master plans. Under-resourced.	Regarding dumping	Data regarding need/access	Regulations for access for emptiers	Quantity of vehicles needed to manage expected volumes. Sanctioned tanker/transport routes. Planning for transfer sites.	Planning for waste sites. Data on space requirements.	
Land registry	Control of land devolved to local authorities? Lack of slum recognition.	Regarding illegal dumping	Relationship to / requirements of landlords	Regulations for access for emptiers	Land acquisition and allocation for transfer sites	Land acquisition and allocation for waste sites	
Legal services						Public liability of municipality	Public liability of municipality
Municipal Budgeting Office	Financial autonomy		Subsidies?	Subsidies?	Subsidies?	Allocation of funds for disposal sites	Incentives for reuse?
Building inspectors			Regulations and standards	Regulations for access for emptiers			Safe facilities for reuse initiatives

Stage of san chain Govt. function	Challenges	Behaviour change	Toilet construction	Emptying	Transport (traffic congestion, health risk, etc.)	Disposal	Reuse
Environmental Health Office	Low capacity for monitoring and enforcement. Role covers other public health needs.	Technology choice?	Construction standards. Leachate standards.	Design and enforcement of Health and Safety Standards (inc. hospitals, etc.)	Tanker/vehicle safety	Monitoring of dumping sites	Health and safety of resale products
Business licensing	Insufficient links to EHO? Informal SMEs unwilling to register.		Provider as formal or informal?	Providers as formal or informal? Liaise with Envir. Health Office re: health and safety.	Vehicle licenses		Licensing for commercial resale?
Housing Office	Slum upgrading. Political interference.		Rules on toilet provision (for non-public housing). Location of public housing. Technology choice for public housing. Housing finance support.			Health and safety of housing near waste sites	
Drainage	Not present or poor quality			Grey water / storm water capacity		Drainage channels (constructing, clearing etc.)	
[Solid] Waste Authority				Role in relation to emptying	Vehicle allocations	Planning for and management of waste sites	Links to other recycling initiatives (funding, etc)