

Sanitation Planning – A Tool to Achieve Sustainable Sanitation?

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Abstract

The global sanitation crisis and its importance to the Millennium Development Goals (MDGs) is reflected in the specific sanitation target adopted in 2002. An enormous amount of funds will need to be invested in sanitation over the coming years in order to meet the MDGs. It is important that these funds are invested in sustainable sanitation systems, since providing sanitation systems that are not sustained is a very costly short-term solution that may contribute to long-term problems. The authors strongly believe that sanitation planning is one key to sustainable sanitation. Recent planning frameworks for sustainable sanitation systems suggest the utilization of a number of steps: (i) recognizing the existence of different domains across the city, (ii) analysis of the interests driving desire for the sanitation system and services for the stakeholders across the domains, (iii) analysis of external drivers and context that impact behaviour in each domain (iv) analysis of technical options, in relation to findings on context and criteria, (v) analysis of management requirements for proposed technical options, (vi) critical assessment whether the proposed system is fit for the purpose. This paper will discuss the merits and challenges of these planning methodologies in reference to experience from West Africa and Sweden. The intent is to illustrate the potential of these methods for increasing sustainable sanitation, but also to raise some key questions that may be missing from the frameworks.

Introduction

Improvement in sanitation coverage has been targeted by the United Nations Millennium Development Goals (MDGs) because of its strong link to issues of environmental and public health, economy, and human dignity. Achieving the goal of halving the percent of people without access to sanitation by 2015 will require a dramatic increase in investment and efficiency of bringing sanitation systems to scale. Yet, the challenge of the MDGs is not only to achieve statistical improvements on paper, but to do it in a sustainable manner that will lead to lasting positive change in the field. Sustainable sanitation systems can be defined as those that protect and promote human

health, do not contribute to environmental degradation or depletion of the resource base, are technically and institutionally appropriate, economically viable and socially acceptable (Bracken et al, 2005).

The pressure for increased construction must be balanced against the lessons learned from past interventions. Historically, international water and sanitation projects have had low sustainability rates. Of the water supply and sanitation projects evaluated by the World Bank in 2001, only 50-66% was deemed to be satisfactory and less than half were rated likely to be sustainable (World Bank, 2003). Project assessments consistently report cultural constraints, behavioural change, prohibitive costs, lack of political and managerial support, or low community demand as reasons for failure. These constraints span a wide range of political, cultural, and economic issues that need to be overcome if sanitation is to be brought to scale in a sustainable manner.

Participatory and holistic approaches to sanitation planning can increase the potential for a sustainable system through better management of the numerous risk-factors and capacity development within the local domains for successful operation and maintenance of the systems. In recognition of this a number of organizations have developed/are promoting planning frameworks for sanitation based on the assessment of user priorities at different levels of decision-making within the urban environment (Eawag, 2005; IWA, 2006; Kvarnström and af Petersens, 2004). Users of these methods can then select appropriate technology that will satisfy the functional requirement of the various stakeholders. This paper will highlight the similarities between several of these frameworks and their application in case studies taken from Sweden and Ghana. The intent is to illustrate the potential of these methods for increasing sustainable sanitation, but also to identify the challenges of using these frameworks alone or in combination with other development tools.

Planning Frameworks

There have been numerous support tools and frameworks designed to aid in planning processes for sanitation/wastewater planning and management. While methodologies vary in their emphasis on top-down or bottom-up planning techniques, there is a growing consensus on the need to include stakeholder opinions. One such framework is the Open Planning of Sanitation Systems that is recommended by the EcoSanRes Programme (Kvarnström and af Petersens, 2004) and is based on the Open Comparative Consequence Analysis (OCCA) methodology that was developed in Sweden by WRS Uppsala AB (Ridderstolpe, 2000). This planning process is performed in five steps: (i) Problem identification, (ii) Identification of boundary conditions, (iii) Terms of requirement, (iv) Analysis of possible solutions, and (v) Choice of the most appropriate solution. The first step requires identification of the stakeholder groups and their roles. Sanitation is an issue that by its diverse nature demands cross-disciplinary work between administrations within the municipality. This process does not happen by itself, and the identification of stakeholders and their involvement in the planning process is one way of achieving the necessary cross-disciplinary work within the municipality.

The problem identification process can then be performed using participative methods such as the Participatory Hygiene And Sanitation Transformation (PHAST). Identification of the boundary conditions should define the technical limits of the sanitation system (geographical limits, communities served, links to water supply and agriculture), but also potentially limiting socio-economic patterns, natural environments, and political conditions. After the first two steps, planners and stakeholders should be able to develop the terms of requirement (ToR) (i.e. criteria or functions the sanitation system shall comply to) for the sanitation system. The ToR should be comprehensive and include factors on health, water and natural resource protection, costs, technical reliability, user satisfaction, and management issues. The analysis of possible solutions is then based on how well potential technologies meet the ToR. At least three options should be presented to the stakeholders for evaluation and selection of the most appropriate solution.

Another bottom-up planning approach to sanitation is Household-Centred Environmental Sanitation (HCES), which has been developed by the Swiss Federal Institute of Aquatic Science and Technology (Eawag, 2005). HCES recognizes the importance of management zones and different stakeholder domains within the urban environment. The ten step HCES process follows a project cycle framework, from project identification, pre-planning and preparation, to implementation and monitoring. The process is built on identification and assessment of sanitation needs by the local stakeholders. Steps 1-4 establish the participatory communication channels and define local sanitation priorities based on an understanding of the current situation and system boundaries. Steps 5-6 identify and assess the feasibility of a wide range of technologies, as well as, the institutions and financial arrangements for providing these technologies. The final steps of the HCES process involve the stakeholder in the selection of appropriate solutions and the development of an implementation program, complete with methods for monitoring and evaluation. Eawag also emphasizes that the successful application of this planning approach is dependent on the preconditions of an enabling environment which includes government support, a legal framework, institutional arrangements, effective training and communication, credit and other financial arrangements, and a system for information and knowledge management.

More recently, the International Water Association specialist group, Sanitation 21, has incorporated many of these ideas into developing their own framework for the analysis and selection of appropriate sanitation systems (IWA, 2006). This framework defines three parts to effective sanitation planning: (i) defining the context, (ii) identifying technical options, and (iii) determining the feasibility of the options. Analysis of the context recognizes that different domains exist within a city and that the stakeholders in each of these domains will have different objectives with regards to sanitation. The domains can be broken down into household, neighbourhood, district, city, and beyond city. The context within each domain will include a set of interests, external drivers, and management capacity that are identified through a participatory process with the stakeholders. During the second step, a range of technical options is identified and listed according to their treatment capacity and level of management required. At this stage a generic list of sanitation system types can be used that include both on-site and centralized systems. The purpose here is more to look at the

functionality, operation, maintenance, and basic management requirement of the systems than to outline specific costs and design requirements. The key step in the framework is finally to select a system based on its ability to meet the objectives and management capacity defined by the stakeholders. At this stage the important questions are to determine if the management requirements match the community capacity; basically will the system work? It is important to realize that it is possible to apply different technical options at different domains within the city in order to adequately meet the needs and institutional realities of everyone.

Table 1: Common steps in the planning frameworks and specific recommended actions within each framework.

Common Step	Open Planning	HCES	IWA Sanitation 21
Recognition of Planning Domains	<ul style="list-style-type: none"> • Identification of affected stakeholders 	<ul style="list-style-type: none"> • Differentiate zones within urban environment • Problems should be solved close to their source 	<ul style="list-style-type: none"> • Identify key actors in each decision-making domain
Analysis of Objectives/Interests	<ul style="list-style-type: none"> • Stakeholder participation in problem identification • Terms of Requirement 	<ul style="list-style-type: none"> • Stakeholder participation in determination of needs and priorities 	<ul style="list-style-type: none"> • Identify the interests of key groups
Analysis of External Drivers	<ul style="list-style-type: none"> • Identification of boundary conditions 	<ul style="list-style-type: none"> • Assessment of current situation • Enabling environment 	<ul style="list-style-type: none"> • Understand external factors
Analysis of Technical Options	<ul style="list-style-type: none"> • Define sanitation system boundaries • Terms of Requirement 	<ul style="list-style-type: none"> • Define system boundaries and current capacities • Identify a wider range of options 	<ul style="list-style-type: none"> • Analysis of existing systems and new systems
Assessment of Management Requirements	<ul style="list-style-type: none"> • Terms of Requirement 	<ul style="list-style-type: none"> • Assess current capacities and responsibilities of organizations • Need to ensure support from municipalities 	<ul style="list-style-type: none"> • Identify the capacities within each domain for implementation and long-term management of a system • Identify the management requirements for the technical systems
Critical Assessment of Feasibility	<ul style="list-style-type: none"> • Choice of most appropriate solution based on Terms of Requirement (Stakeholder participation) 	<ul style="list-style-type: none"> • Evaluation of feasibility of service combinations (Stakeholder participation) 	<ul style="list-style-type: none"> • Assess whether systems meet the objectives in each domain • Assess whether systems can be managed in each domain

Comparison of these frameworks yields a number of common steps: (i) recognizing the existence of different domains across the city, (ii) analysis of the interests driving desire for the sanitation system and services for the stakeholders across the

domains, (iii) analysis of external drivers and context that impact behaviour in each domain (iv) analysis of technical options, in relation to findings on context and criteria, (v) analysis of management requirements for proposed technical options, (vi) critical assessment whether the proposed system is fit for the purpose. Table 1 shows the common themes in each of these planning frameworks and the terminology used in each specific framework. The frameworks highlight the need for inclusion of a variety of stakeholders in the planning process, as well as a focus on the technical and managerial requirements of the systems. In each framework, the planners recognize that different zones of interest groups or economic domains may exist within the planning area. Stakeholder input is then solicited through surveys, interviews, or other participatory tools. Through recognition of different stakeholder and planning zones, the frameworks emphasize that successful sanitation strategies may have to apply different technologies at different levels within the city.

All of these frameworks also recognize the need to consider a wide range of possible solutions to sanitation problems. The focus of all these frameworks is on functionality and managerial requirements for sanitation systems instead on purely on the technology itself. This approach allows decision-makers the flexibility to consider many options that have the potential to meet the requirements defined by the stakeholders. The wider perspectives provided through the application of these frameworks can lead to innovative solutions to the complexities of insuring proper sanitation coverage.

Swedish Case Study: The Island of Lambarö

A case study from Sweden illustrates how use of the Open Planning of Sanitation Systems framework led the municipality to explore a wider range of solutions to problems with the water supply and sanitation services in a small area within Stockholm municipality. Lambarö is an island located in Lake Mälaren just offshore (175 m) from mainland Stockholm. The 57 households (17 for year-round residency and 40 summer houses) currently rely on on-site water and sanitation facilities. Forty-seven households have in-house water connections, either using non-treated groundwater (9 households) or non-treated lake water. The households without groundwater connections haul drinking water from a Stockholm Water Company standpipe on the main land and use water from the lake for other purposes. Both the well water and the lake water have shown quality problems. All 57 households rely on on-site sanitation, seven households using water closets and the remaining 50 households using dry sanitation. Only 13 of the 57 of households have a permit for their on-site sanitation. The local environmental authority demanded improvement in the sanitation situation on Lambarö. Since the island was not included in the jurisdiction of the Stockholm Water Company, a consultant was engaged to investigate a number of different options to improve on the water and sanitation situation for the inhabitants.

The Open Planning process requires the involvement of authorities, service providers and users to identify sanitary options that fulfil their needs. The project management group was lead by the local environmental and public health authority

within the municipality. The other municipal bodies within the project management group were the land development department, the city planning department, the district council, and the solid waste department. The stakeholder group also included a user representative group of ten people and the Stockholm Water Company. The group participated in several meetings, with the consultant guiding the process. As a result of these meetings, the following terms of requirement/criteria/functions for any future water and sanitation system were identified:

- The sanitation system shall comply with treatment requirements as stated by Swedish EPA for on-site sanitation located in environmentally sensitive areas.
- The sanitation system shall be economically sustainable, with O&M costs that are reasonable in comparison to treatment level achieved by the system.
- The water supply shall be of high quality.
- The water supply shall satisfy the current water demand and that of the projected future growth.
- Other criteria that were considered include flexibility, site-specific adaptation, nutrient recirculation, reliability and robustness, user aspects, environmental consideration, organizational and legal issues.

According to phase four of the planning framework, the following technical options were evaluated for their ability to meet the criteria defined by the stakeholders:

1. On-site water and sanitation, using lake water/private wells and urine diverting dry toilets.
2. On-site water and sanitation, using lake water/private wells and water closets.
3. Municipal water and sanitation, by establishing a community-owned network for water and wastewater for the island with connection to closest connection point within existing water and wastewater jurisdiction (on the main land).
4. Municipal water and sanitation, through enlargement of the Stockholm municipal water and wastewater jurisdiction to serve the island.

The project management group recommended that alternative 4 was best able to fulfil the criteria stated above. This recommendation was based heavily on the wishes and concerns expressed by the user representative group among the stakeholders. The environmental authority officially approved the results of the study, and the recommendations has passed through the Environmental and Health Committee and will now be considered in the municipal council who will decide whether Stockholm Water Company will extend its water and wastewater jurisdiction to include Lambarö. The motivation from the environmental authority was based on (i) the recommendation from the users in the stakeholder group, (ii) the difficulty of on-site sanitation systems to meet the high effluent standards needed in the given setting (rocky terrain and limited areas available for wastewater infiltration and recirculation of nutrients), (iii) low willingness from the households to run a semi-decentralized wastewater collection system for the island, and (iv) the difficulty to find reliable on-site water supply.

Stockholm Water Company, on the other hand, remain in favour of a community-owned and operated water and wastewater network on the island (alternative 3), which could be connected to the closest connection point available within the existing water and wastewater jurisdiction. This view was expressed officially from Stockholm Water Company in their reply to the circulation round for comments by concerned parties, which precedes the decision in the question by the municipal council. The motivation from Stockholm Water to recommend this approach is that alternative 3 represents praxis for other small islands in Sweden, and that it allows for a more flexible approach for connection to the system time-wise than would be the case if the water and wastewater jurisdiction was enlarged. Stockholm Water Company has decided that it will execute its rights to charge a higher connection cost to Lambarö residents, if the water and wastewater jurisdiction is enlarged. If the enlargement is executed, the connection cost for those on Lambarö will be more than double the connection costs to the system for those already within the water and wastewater jurisdiction. This was communicated to the Lambarö population during the commentary period and was not well received by the user group. A decision will be taken by the municipal council during the fall of 2007.

Use of the Open Planning process did not manage to arrive at a consensus among all stakeholders on the issue as of date. However, the involvement of the users, the municipal departments involved in sanitation issues, and service providers in such a cooperative process has provided insights on the situation that will facilitate the final decision making. The users, the project management group, and the environmental authority have expressed their view in favour of enlargement water and wastewater jurisdiction. Although they are not happy with the corresponding increased connection cost, the users have a greater understanding of the consequences of their decision through this participatory process than would have been the case if they had not been involved in the decision making. It is also possible, that when faced with the doubling of connection costs (information available only after the proposal was passed through the environmental and health committee), that the users will instead opt for alternative 3 as proposed by Stockholm Water. This situation highlights the necessity of having all relevant information on the table during the planning process, but also the potential need for iteration of the process prior to decision-making.

Although Stockholm Water Company does not agree with the conclusions of the environmental authority, they stressed during an interview, that they still believe the participatory approaches to be very useful in decision-making, and welcome the use of processes such as the Open Planning of Sanitation Systems. The process as such, inducing cooperation between the municipal departments, serves as a mean to address general service delivery questions (roads, electricity, school transportation, etc.) in an integrated way for inhabitants in areas outside the detailed plan. This is especially important in areas of urban sprawl, where increasing populations (e.g. the development of old summerhouse areas into year-round housing around cities in Sweden) and corresponding increases in demand for infrastructural and service delivery are occurring in areas outside the detailed plan.

Challenges for Planning Frameworks

Although planning frameworks can yield useful insights and increase the likelihood for sustainable solutions, there are still a few challenges to overcome. The inclusion of stakeholder perspectives and focus on functionality provides additional insights, but planners must still define how the process and information gathered are to be used. There remains the question of who is using these tools, what they get out of the process and in what context it is applied. In the Lambarö case, the main objective of the planning process was to gather more information for the decision-making process and to foster mutual understanding between stakeholders in a difficult planning situation. However, in some situations (particularly international development work) participatory planning tools are also promoted as a means to achieve a more democratic process through changing roles in planning and decision-making.

Even if the participatory planning process is strictly used to gather stakeholder input, the challenge remains on how to obtain this information. This can be especially difficult in areas with a long history of top-down decision-making. If stakeholders are not used to being consulted it can be difficult for them to express their opinions or offer constructive solutions. In general, people are good at identifying problems, but not as good at offering solutions. The democratic process of equal participation and discussion on ideas can also conflict with socio-cultural traditions and politics. In Mali, for example, soliciting stakeholder feedback during a town meeting can be difficult as it is considered impolite to criticize someone's ideas in public. Careful consideration of local customs and social structures is needed to insure that information gathered from stakeholders is relevant to the context. Fostering socio-cultural respect within the stakeholder group can also help all parties to understand the potential bias in the opinions of both stakeholders and planners.

Often the aim of participatory planning is to change the planning process itself through stakeholder ownership in the process. This in itself can increase the challenge. In practice, planning is generally performed by top-down management organizations rather than at a grass-roots level. In the experience of the authors top-down planning is the rule more than the exception, in both developed and developing countries. So, there is a paradox created between the desire for bottom-up, home-grown solutions to local problems, as advocated by the frameworks, and the traditional top-down decision-making processes that exist in most municipalities. In developing countries, the problem is accentuated where the local authorities lack the experience, resources, and manpower capacity for planning. In this situation the planning process is generally done with the help of outside consultants who are even further removed from the realities in the field than the municipal leaders. Therefore, in developing countries the challenge is not only to reform how planning is done, but to establish a functional planning system. Both reformation of the planning system and solicitation of stakeholder input can involve behavioural change on behalf of the participants.

Financing and managing participatory planning is another challenge. In the case of Lambarö the process was run by a consultant, and financed by the environmental

authority through access to an environmental fund (“The Environment Billion”) to improve the environment of Stockholm. If this type of planning processes is to be repeated on a large-scale, there will either have to be funds available within the municipal budgets to hire consultants to lead these processes, or the municipalities will have to develop their own capacity of running participatory planning processes. However, although these planning processes can be time and resource demanding, they can also be used to build local capacity and ownership in order to overcome other management and accountability problems that are inherent in many projects. It is possible to build the results of participatory planning processes into management systems of accountability that clearly defines the objectives and responsibilities that each party has for achieving results. Thus, the investment into a participatory sanitation planning process resulting in a sustained sanitation system with a high degree of ownership will most possibly prove to be, in the long run, cheaper than the traditional planning approach.

The common cause underlying all of these challenges is that planning for sanitation improvements requires behavioural changes in addition to infrastructure development. Traditional planning tools work well for infrastructure and urban development, but tackling behaviour change requires additional participatory tools and social marketing. Since many new planning frameworks are already encouraging participatory methods, it is interesting to explore how more of these tools could be utilised to overcome the challenges in sanitation planning. The next section will explore some of these methods and present a case study on how they can be integrated into an existing planning framework.

Participatory Tools

Since the 1980s, many international development organizations have embraced participatory methods for incorporating local knowledge and values into project planning and development. There are a range of methodologies based on a participatory approach to evaluate development needs; for example, Rapid Rural Appraisal (RRA), Participatory Rural Appraisal (PRA), and Participatory Analysis for Community Action (PACA). In general, they aim to identify community problems and to plan solutions with the active participation of the community members (Selener et al., 1999). A wide range of participatory training and advocacy materials exist to assist the locals in analyzing the characteristics of their community (community map, social calendars), identifying problems (problem lists, priority analysis), and developing possible solutions (solution brainstorming, feasibility matrix). Several of these tools have been specifically adapted for water and sanitation issues, such as the Participatory Health And Sanitation Training (PHAST). PHAST is a series of interactive activities designed to help villagers identify sanitation issues in their village. It mixes traditional needs assessment tools with educational information on waterborne disease and transmission routes. The activities are community directed and allow the participants to arrive at conclusions themselves.

Another participatory sanitation tool is Community-Led Total Sanitation (CLTS), which was initiated in Bangladesh in 1999, as an innovative methodology for eliminating

open defecation (Kar, 2005). CLTS uses a participatory approach to empower local communities to stop open defecation and promote the building and use of latrines through community-lead action instead of subsidies. The program uses PRA tools to help community member analyze their own sanitation practices and the potential for spread of fecal-oral diseases within the village. The CLTS approach works through the creation of a sense of shame within the community, which triggers collective action to improve the sanitation situation. The idea is to use peer-pressure through public recognition of the problem to induce behavior change. Facilitators trained in the CLTS methodology guide a community through five roughly defined steps: (i) introduction/rapport building during which the facilitator physically examines the village, focusing on areas of open-defecation. (ii) participatory Analysis of sanitation habits in the community using PRA tools, (iii) ignition Movement, where the facilitator steps out of conversation and lets community self-motivate to change, (iv) action planning by community with a focus on immediate positive action, (v) follow-up, including the identification of leaders and advertising of results. The method has proved successful in Bangladesh and has since been applied in other South and Southeast Asian countries, as well as several African countries.

Programs such as CLTS recognize that achieving the behavior changes necessary for improved sanitation requires stimulating a demand and motivation for change. A useful tool to achieving these results is social marketing. Similar to modern advertising science, social marketing techniques use the approaches of economics to advance social change. This is accomplished by offering affordable technology, but also by increasing the social desirability of sanitation systems. Studies have shown that the reasons people want improved sanitation facilities are less for health concerns than for social status, privacy, comfort and convenience (WHO, 2000). It should therefore, be the goal of any sanitation program to foster these feelings to increase the social demand for sanitation. Since social status is one of the driving factors in demand, it is important to recruit prominent people and community leaders to the cause of sanitation. Sanitation promotion by these leaders will increase the acceptability of the sanitation solutions (Ikin, 1994). While the role of community leaders may be important, so is the participation of the average community member. Community-based efforts have been shown to be more effective than external intervention (WHO, 2000). Sanitation programs can learn much from a marketing approach that selects key populations within the community to act as agents of change and uses appropriate channels of communication to reach the target audience.

Another recommendation for increasing bottom-up development has been to use participatory methods in project evaluation. Participatory Monitoring and Evaluation (PM&E) is a tested participatory methodology that has been applied in development programmes in many parts of the world. It engages participants (citizens, communities, social groups) in monitoring and evaluation, and creates ownership over evaluation results and of development project interventions. Using PM&E approaches increases consensus on project goals, objectives and activities as well as providing timely, reliable, and valid information for management decision-making. Additionally, the use of PM&E contributes to increased learning, skills transfer and confidence of local groups in water

resources management and sanitation. This creates an atmosphere where local knowledge is better understood and utilized. Therefore, use of PM&E tools can increase project sustainability by improved management and accountability strategies.

West African Case study: Ghana Three Town Water Supply and Sanitation Project

The Three Town Water Supply and Sanitation Project in Ghana is presented here as one possible solution to overcoming challenges in planning frameworks by integrating methods used in rural development work and social marketing. Although the project is still in the planning phase without secured funding for implementation, it is interesting to look at because the consultants behind the project proposal are trying to draw on many popular themes in international development literature and merge them into a workable plan. In order to increase the sustainability of their efforts, the project planners are exploring innovative sanitation planning methods by combining sanitation planning frameworks with participatory learning activities.

The Ghana Three Town Water Supply and Sanitation Project was initiated in 2006 by the Ministry of Water Resources, Works and Housing. In addition to provide designs for upgrading in water supply, the project aims to make suggestions for improvement of the environmental sanitation conditions in three towns in northern Ghana (Wa, Damongo, and Yendi). Current sanitation conditions in these towns are cited as poor due to the high frequency of open defecation, lack of solid waste disposal, and dumping of greywater into the street. The objectives of the proposed 3-year sanitation project are (i) changed attitudes and behaviour among targeted population, (ii) improved sanitary and social environment in homes/households, and (iii) improved environment in public places.

The project proposes the application of the IWA Sanitation 21 framework throughout the project, but complimented with participatory tools and social marketing (Table 2). It is envisaged that the sanitation project is implemented in four phases, as follows:

- (i) Strategic project planning
- (ii) Initial advocacy and social marketing
- (iii) Capacity development, demonstration and mid term evaluation
- (iv) Scaling-up throughout the three towns & final evaluation

The strategic planning phase will be completed over a 3-day workshop using LFA as a management tool. The project will solicit the involvement of individuals, groups, and institution with interest in the sanitation project. These stakeholders will offer their analysis of the problem and the specific project objectives to be achieved. Additional PRA activities and tools will be used during the workshop to facilitate the discussion and generate information for a SWOT analysis. Following the definition of objectives and strategic planning phase, the initial advocacy and marketing phase will lay the foundation

for subsequent work to reach the set goals of the sanitation project. A number of social marketing campaigns will be undertaken in order to stress the need for communal responsibility and to encourage citizens to evaluate their immediate environment in order to identify and take action in areas of poor sanitation and hygiene.

Based on the interest generated through sanitation advocacy, the third phase will implement a program for capacity development and refinement of the planning process through use of demonstration projects (initially serving 2.5% of the population in each town). The aim of this phase is to test the appropriateness of proposed planning methodologies and technical interventions, continue promotion of behavioural change, and increase management capacity that will sustain the system. The capacity development will be geared towards local authorities, local artisans, entrepreneurs, trainers, and planners. A PM&E procedure will be used to collect feedback from the demonstration areas throughout this phase, and the information will be used to inform decisions on the final phase of scaling-up (where 25% of the population in each town will be addressed). The feedback loops during the last two phases will be connected to local and regional Learning Alliances. Such alliances aim to break down barriers to both horizontal and vertical learning and information sharing through partnerships between organizations with complementary capabilities in such areas as implementation, regulation, policy and legislation, research, learning, documentation and dissemination. Through collective information sharing this project envisions impacting sanitation development beyond the three towns.

Table 2: Ghana Three Town Sanitation Plan

	Assessment	IWA Sanitation 21		Additional Tools
Awareness Raising	Demand Creation	0	---	Adapted-CLTS, PHAST, and social-marketing
Context Definition	Institutional Mapping	1	Identify the Key Actors in each Domain	PRA tools: community/social mapping, stakeholder analysis
	Interests/ Objectives	2	Identify the interests of the key groups	PRA tools, problem analysis through stakeholder consultation, workshops, questionnaires
	External Factors	3	Understand the external factors driving decisions on sanitation	LFA, SWOT
	Capacity	4	Identify the capacities which exist for implementation and long-term management of any system	Demonstration planning areas, institutional surveys, survey of existing systems management
Sanitation System	Sanitation Elements	5	Analysis of existing systems and potential new systems	Survey of existing systems and management practices
	Management	6	Identify in detail the management requirements for the systems	User and experts consultations
Decision-making	Does it meet Objectives?	7	Assess whether the proposed/existing system meets the objectives in each domain	User consultations, discussion groups, demonstration sites
	Do Management requirements match?	8	Assess whether the system can be managed based on the capacities of each domain	User consultations, discussion groups, demonstration sites
	Will it work?	9	Taking into account all the previous steps and technical considerations, ask the question 'will it work?'	User consultations, discussion groups, demonstration sites
Implementation	System costing, design and construction	-	---	User consultations in design stage, demonstration sites
	Management & Accountability	-	---	PM&E

Some initial information available from the project planning phase has helped in the identification of risk-factors and challenges to be addressed during project implementation. The most important external issues contributing to poor sanitation in the towns are:

- *Attitudes leading to widespread open defecation*
- *Poor hygienic behaviour*
- *Traditional beliefs regarding use of public toilets*
- *Sanitary functions performed by the Assemblies are sometimes sabotaged by citizens for political reasons*
- *Perception that sanitation shall be provided for the citizens by the Assembly or central government.*

Since many of these issues will require attitude and behavioural changes, it has been suggested that social marketing tools be employed in conjunction with the planning process.

The project planning phase also yielded some insights into the terms of requirement/criteria/function for a new sanitation system. A group of invited stakeholders in one workshop identified the following preferences:

- *For location: accessibility is the most highly regarded criteria.*
- *For construction: good ventilation, affordability, lighted, easy to construct/well constructed, disability-friendly, gender-based and absence of flies.*
- *For function: hygienic, clean, odor-free, safe and easy to use.*
- *For operation and maintenance: easy to desludge, easy to manage and maintain.*

This ambitious approach to sanitation planning and implementation will be a challenge in itself. However, the authors believe that this kind of merged approach, where more traditional sanitation planning is coupled with participatory approaches, is one key to achieve the implementation of more sustainable sanitation systems in the future. Another challenge is the funding for implementation of this project and its replicability in the Ghanaian context. The project proposal is constructed with the aim that on-site systems will be financed by the house owners. Nevertheless, as the number of household sanitation facilities increases, financing will also be necessary to meet the demand for management of faecal sludge and other end-products generated by the systems (services that are malfunctioning or non-existing in all three towns today). According to the National Environmental Sanitation Policy the responsibility for such waste management systems falls upon the district/municipal assembly. It is reasonable to assume that O&M of the sanitation management system could be covered through emptying fees and/or surcharges on the water bill. However, it is equally reasonable to recognize, in analogy with the investments in water supply systems, that full cost-recovery of hardware investments (such as faecal sludge treatment plants, suction trucks etc for the sanitation case) will be more difficult to address through fees/surcharges, and thus will need external national or international funding.

Conclusions

Sanitation planning frameworks developed for use by municipal authorities often overlook important issues within the household domain (affordability, comfort, prestige), as well as fail to address issues of low demand for sanitation in general. However, many participatory rural development tools are designed to work in areas without centralized regulations on health and the environment. Neither set of tools can truly stand alone when addressing the sanitation needs to meet the MDGs. This paper suggests that a combination of planning frameworks, participatory rural appraisal, and social marketing as one method for improving the sustainability of sanitation intervention. Yet, even with improved sanitation planning methods, the challenges of financing and capacity development necessary for execution of these plans remain. The authors recognize that the discipline of sanitation planning is evolving and intimately connected with a variety of cross-disciplinary issues. New planning methods need testing and critical evaluation so that continued progress can be made. The entire process of planning and management needs to remain flexible so that changes and improvements can be made as new information becomes available. One way of doing so is to focus the planning process on terms of requirements/criteria/function of the sanitation system rather than on technologies. Sanitation planners need to start experimenting with different methodologies and critically evaluating them to find out what works in their specific setting.

References

- Bracken, P., Kvarnström, E., Ysunza, A., Kärrman, E., Finnson, A., and Saywell, D. (2005). Making sustainable choices – development and use of sustainability oriented criteria in sanitary decision-making. *In Ecological Sanitation: A Sustainable, Integrated Solution, Conference Document*. 3rd International Ecological Sanitation Conference, pp. 486-494, Durban, South Africa.
- Eawag: Swiss Federal Institute of Aquatic Science and Technology. (2005). *Household-Centred Environmental Sanitation: Implementing the Bellagio Principles in Urban Environmental Sanitation*. Duebendorf, Switzerland: Eawag
- Ikin, D.O. (1994). *Demand creation and affordable sanitation and water*. Switzerland: WEDC.
- International Water Association (IWA). (2006). *Sanitation 21: Simple Approaches to Complex Sanitation, a Draft Framework for Analysis*. London: International Water Association.
- Kar, K. (2005). *Practical Guide to Triggering Community-Led Total Sanitation (CLTS)*. Institute of Development Studies, University of Sussex, Brighton, UK.
- Kvarnström, E. and af Petersens, E. (2004). *Open Planning of Sanitation Systems*. Stockholm: EcoSanRes Programme and the Stockholm Environment Institute.
- Ridderstolpe, P. (2000). *Comparing Consequences Analysis – a Practical Method to Find the Right Solution for Wastewater Treatment*.
http://www.iees.ch/EcoEng001/EcoEng001_R4.html

- Selener, D., Endara, N., and Carvajal, J. (1999). *Participatory Rural Appraisal and Planning*. International Institute for Rural Reconstruction (IIRR).
- World Health Organization (WHO), United Nations Children's Emergency Fund and Water Supply and Sanitation Collaborative Council. (2000). *Global water supply and sanitation assessment report 2000*. WHO, Geneva, Switzerland and UNICEF, New York, USA.
- World Bank. (2003). *Efficient, Sustainable Service for All? An OED Review of the World Bank's Assistance to Water Supply and Sanitation*. Operations Evaluation Department, The World Bank, Report No. 26443.