

# Model Terms of Reference Planning Urban Sanitation and Wastewater Management Improvements



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## Model Terms of Reference

# Planning Urban Sanitation and Wastewater Management Improvements

### Abstract

ADB has produced an approach and methodology for planning urban sanitation and wastewater (WW) management improvements. The material is in the form of a consultant Terms of Reference (TOR) for a project preparation technical assistance (PPTA). The breadth of technical and institutional options is a standout feature of the TOR.

### BACKGROUND

Governments and city leaders tend to favor conventional sewerage systems. But these systems are expensive, technically and organizationally difficult to operate, and they rarely benefit the poor. Poorly planned and operated conventional sewerage damages the environment and misses the opportunity to recycle valuable nutrients and organics.

The TOR directs the project preparation consultant to review a comprehensive range of sanitation and wastewater management options, including

- conventional and low cost
- centralized and decentralized sewerage
- separate and combined industrial and municipal sewerage
- sewage treatment and effluent disposal options
- on-site sanitation options, separate programs for schools
- public toilets
- sanitation in slums
- community-based NGO-supported programs
- Consultants and governments are encouraged to consider where ecological sanitation (ecosan) should fit in the sanitation strategy.

### WHAT THE MODEL TOR OFFERS

The TOR for planning urban sanitation and wastewater management improvements offers a step-by-step guide for

- surveying the existing sanitation situation in the project city
- analyzing the survey results
- analyzing all the plausible technical and institutional options
- formulating responsive city government policy and ordinances
- setting project investment priorities

The material is work-in-progress and can be adapted for your particular project circumstances. It also includes lessons learned from ADB and the World Bank, some case studies, and urban sanitation references.

## A. Introduction

1. Urban sanitation and wastewater (WW) management project proposals from borrowing governments to ADB are rarely prepared with a full knowledge of the technical and institutional options available. Yet by the time a government submits a project concept it may already be fixed on a preferred approach and technology. In this common scenario it is essential that ADB encourages the government to take a step back and to fully consider the plausible sanitation options that may suit the city or town. This should happen during the ADB-funded Project Preparation Technical Assistance (PPTA).

2. It is conventional wisdom to plan of water supply and sanitation as though they can not be separated. But the reality is development priorities as expressed by the people, and as manifested in funds committed, put water supply far ahead of sanitation. The reasons for this are the high cost associated with sanitation in the form of conventional sewerage and sewage treatment plants and the unwillingness of people to pay for that service as many have on site services such as toilets with septic tanks or latrines. Furthermore such conventional sewerage and sewage treatment is often not working properly in developing countries. For want of 24 hour water supply to flush the sewers, and because solid waste is often added to sewage, sewers are often blocked, creating bigger environmental problems. Many sewage treatment plants do not function properly due to lack of expertise and cutting of operating costs.

3. But there are other reasons too. More and more people are becoming sensitive to environmental concerns associated with the outfalls of sewage and wastewaters whether treated or not. There are concerns about the volume of clean water used to flush excreta. There are concerns about not taking waste from one neighborhood to pollute another. There are concerns about the wisdom of mixing faeces with urine because, separated both can be used as fertilizers of soils. There are concerns about separating excreta from grey water as the latter can be treated close to home with wetlands. There are concerns about mixing industrial wastewater with domestic sewage because of the more difficult and higher treatment costs. This TOR structures an approach to urban sanitation

solutions in DMCs which tries to take into account this current predicament.

## B. Objective

4. The objective of this TOR is to plan and prepare urban sanitation improvements for a project proposal for ADB funding.

## C. Scope

5. The scope of this TOR is in four parts. The first is to establish what sanitation exists both nationally and in the given project city, in terms of facilities, in terms of institutions and in terms of the people's perspectives. The second is to analyze the pros and cons of the existing system and identify real need in terms of priorities. The third is to identify what options are available for practicable solutions, drawing on lessons learned from the past. The fourth and last is to develop policy and a short term proposal that would be appropriate for implementation under the project, but which also fits into a longer term masterplan for development and management of urban sanitation.

## D. Analytical Framework

6. The goal of the project is to improve sanitation and therefore quality of life for people and by so doing reduce poverty in the subject city. Quality of life includes health, dignity, privacy, convenience and employment.

7. The Objective of the Project is to rehabilitate and maintain existing infrastructure and services, construct more sanitation facilities and services as chosen by the people, and provide institutional support for the long term sustainability of all.

8. Selection Criteria for Project Components will be based on the following four main criteria: (i) Use of Existing Facilities and Services (ii) Addressing the Sanitation Needs of the Urban Poor and Schools, (iii) An Options Analysis and (iv) Stakeholder Preferences.

9. Options Analysis will consider (i) unit cost per beneficiary, (ii) maximizing both human and environmental benefits, (iii) sustainability, (iv) a

long term plan, (v) government policy including land use zoning, (vi) piloting new approaches, (vii) beneficiary participation, (viii) wastewater as a resource, (ix) lessons learned from the past and (x) political commitment.

10. Policy Formulation through stakeholder consultation will provide the foundation for the sanitation project and other sanitation developments and management. It is the glue which holds all together and must have government endorsement as well as an informed civil society to monitor its implementation.

## E. The Process - Ten Steps in Urban Sanitation Planning

11. The following ten step process in urban sanitation planning may help in preparing ADB projects in sanitation. It was developed by Water and Engineering in Developing Countries (WEDC) attached to Loughborough University in UK.

- (i) Request for assistance (Is this top down or bottom up?)
- (ii) A stakeholder consultation to agree on the process to be followed.
- (iii) Assessment of current status
- (iv) Assessment of user priorities
- (v) Identification of options
- (vi) Evaluation of feasible service combinations
- (vii) Preparation of consolidated sanitation plans for project area
- (viii) Finalization of sanitation plans at stakeholder workshop
- (ix) Monitoring, evaluation and feedback. Identify indicators to be used.
- (x) Implementation.

## Part 1 – Existing Sanitation

### 12. National Review

- (i) Ascertain national policies and plans on sanitation including service levels, coverage, cost recovery and subsidies.
- (ii) Review relevant legislation
- (iii) Ascertain what institutions are responsible for sanitation.
- (iv) Ascertain facts about existing national coverage in terms of facilities.

- (v) What is the national development budget for sanitation?
- (vi) What is national O&M budget for sanitation?
- (vii) What are ongoing projects and which donors are assisting in the sector?
- (viii) Make a summary of findings with conclusions regarding strengths and weaknesses. The purpose of the national review is to put the new project in context of the “big picture” and to consider the institutional framework.

### 13. Project Area

- (i) **Undertake a sanitation audit** in the project area. This includes a survey of the utility or local government responsible for sanitation. It also includes a 5% sample survey of all residents and other water users such as industry in the city. The ADB Water Audit Toolkit contains two questionnaires specifically on sanitation aspects, one focusing on the institution and the other on the people. The main purpose of the audit is to estimate coverage with different service levels and sewage/wastewater treatment capacity and ascertain the perception of the people regarding sanitation services.
- (ii) **Survey the management and staff of the institutions responsible for sanitation.** What qualifications and experience do they have? Is there a local masterplan for sanitation development? When was it prepared? Is it being implemented? What is the policy on combined or separate sewers? What locations have priorities for sewerage? What is the connection fee for sewerage? Does this discourage people connecting? Discuss maintenance issues. Do sewers get blocked frequently? Are the sewage treatment plants operating to capacity? Any problems? The purpose of this is to see when designing the new project what problems need to be addressed.
- (iii) **Survey local authorities for attitudes, perceptions and priorities.** Discuss implementation of building regulations with inspectors. Discuss land use planning and zoning of industry. Review local legislation. The reason for this is to look into what legal requirements must be met and if these are

not being implemented discover why and try to improve the situation in the new project.

- (iv) **Survey five different industries** re wastewater minimization, treatment and disposal vis a vis regulations. Describe the nature, extent and location of industry in the city, including any industrial parks or industrial zoning. It is important to listen to the managers of these industries and ascertain what they would like to see happening in the future and how it might be done.
- (v) **Obtain maps and plans of existing systems.** Assess the age and condition of existing facilities. If necessary excavate to uncover the sewers in some locations. Explore frequency and extent of flooding in the project area. Document on map. Look at housing and sanitation in low-lying areas. What are people saying? The reason for this task is to examine the efficiency of the existing system and see if improvements can be made to extend services or lower operating costs.
- (vi) **Survey on-site sanitation facilities in at least five areas.** Document type of facility, people's satisfaction, maintenance, cost. Consider odors, aesthetics and health hazards. Survey septic tank de-sludging services. Is there a treatment facility? It is important to fully understand the existing services and how they work before considering improvements or new services.
- (vii) **Discuss past or ongoing sanitation projects in city.** How many people benefited? Rich or poor? How much monies were spent? This gives an idea of advocacy (or lack of it) for sanitation. If it only benefited the rich then more advocacy will be required now to benefit the poor.
- (viii) **Document health statistics regarding water borne or water related diseases.** Are these increasing or decreasing? What is awareness about hygiene? Is there a critical time each year? Most sanitation projects are justified on health benefits. A baseline is needed at the start of every project to measure health improvements.
- (ix) **Assess school sanitation facilities.** Is piped water available? What is perception and awareness of school children about hygiene and sanitation. Is gender an issue for privacy considerations? Discover the reasons why schools did not have proper sanitation and address these issues.
- (x) **Sample wastewater quality** from industries and from domestic residential as well as at outfalls (treated) and outfalls (untreated). What is the chemical (including heavy metal) make up of wastewaters? What is the COD and BOD of receiving waters? The purpose of this is to discover how bad the pollution is now and consider the ways and means and cost of effecting an improvement. Consider also upstream pollution.
- (xi) **Sample groundwater for pollution** of faecal origin and chemical (industrial) origin. Is groundwater used for water supplies? Can this pollution be traced to a given industry? Facts from the field lead to discussion and analysis and may result in new policy.
- (xii) **Survey extent and quality of public toilets.** Are there enough? Are they well used? Are they adequately maintained? Is there cost recovery? Who is responsible? What is the perception of the public about public toilets? In terms of greatest benefit for minimal cost, a good network of clean public toilets is a top priority. Private sector or NGO involvement is needed.
- (xiii) **Review solid waste disposal.** Is this a problem in drains and sewers? What is the answer? Who is responsible for solid waste disposal?
- (xiv) **Summarize results and analyze in a report (see below)** for a stakeholder consultation. Publish a summary in local newspaper and on Internet for any public comment.
- (xv) **Convene stakeholder consultation.** Include a good representation of residents with and without formal sanitation, NGOs, academics, journalists, local councilors, industry owners, institutional staff, consultants, representative of private sector desludging services, water utility, government environmental and health authorities, school teachers and contractors.

Discuss findings, listen to views, **introduce options for consideration** (see below), formulate policy <sup>1</sup>, prioritize sanitation improvements for the project.

- (xvi) **Discuss findings with mayor of city and record views.** Political commitment is important. If this is not strong in certain areas (e.g. poverty reduction) it may need enhancement as part of the project preparation.
- (xvii) **Establish a website.** Work with local government and/or utility to establish a comprehensive Internet website on the existing water supply and sanitation services in the city including the above findings. [There are good examples from Indian cities].

## **Part 2 – Analysis of Existing Sanitation**

14. The purpose of this analysis is to ensure that all the main aspects of the existing sanitation in the city are reviewed when considering the scope or priorities of the new project. This analysis must therefore include a review of the physical facilities, the comments of the users and those without facilities, and a review of the institution or institutions responsible for the facilities. The sanitation audit questionnaire for the utility/local government and for the consumer will provide answers. This analysis must answer the questions of what existing facilities or services can be improved and where new options are needed. Which are top priority and which can be implemented over the longer term?

15. **Physical Facilities – On-Site** Is on-site sanitation working? Is it acceptable to people? Is it properly designed and constructed and maintained? What is the overall coverage? Is desludging adequate? Are the facilities replicable elsewhere?

16. **Physical Facilities – Septage Collection and Treatment** – Extent of services? Who does this now? What is the cost? Are services only called when septic tank is overflowing with sludge? Where is the sludge taken? Is there treatment of sludge? Where could this be done?

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<sup>1</sup> Since policy formulation is lengthy, it may overlap with project design and implementation.

17. **Physical Facilities – Sewerage and Open Drains** – What is the length, sizes, age, condition and location of sewers? Number of sewer connections? How much is this increasing each year?

18. **Physical Facilities – Treatment Plants and Outfall-** Number, location and capacity of treatment plants? Number of pumping stations? Are they all working? If not, why?

19. **Physical Facilities – Schools & Public Places -** What is the coverage with sanitation facilities? What is the quality of these services?

20. **People's Comments – Existing System** – Is it working? What are the problems? How to do better? This is perhaps the most important part of the PPTA research because sanitation is about behavior.

21. **People's Answers – No facilities** – How many have no formal sanitation facilities in the city? What would they like to have? Who should provide it? Who will maintain it? These are the most needy and for them there will be a choice of new facilities similar to existing facilities elsewhere or maybe new options to consider.

22. **People's Perceptions – About sanitation and hygiene** – Where does it rank? For what reasons is it important? Whose responsibility? What can be done? How does this differ for those with or without existing facilities? How strong is the perceived need?

23. **Industry Comments – Existing System** - Is it working? How to do better? What about pre-treatment? Compliance with regulations? Recycling and reuse of water? Belief in polluter pays principle? Are there land use plans and zoning that dictate where industry can locate? Is this being followed? This is one of the most important aspects of sanitation in a city so top priority should be given to addressing this matter.

24. **Institutional Arrangement – Staffing, Organization & Competence** – What is wrong? What can be done to correct it? Is there a champion of the cause? Is the organization over staffed? Does it have the required skills? Is organization development needed? Does the

institution have autonomy to manage its own affairs?

**25. Institutional Arrangement – Legislation, Regulation & Implementation** – Is this adequate and appropriate now? Is it being implemented? Are new subdivisions constructed according to sanitation by-laws? Are new regulations needed?

**26. Institutional Arrangement – Project Implementation** – How has the institution performed on past capital works/donor funded projects? What were the issues? What should be done different?

**27. Institutional Arrangement – Policies and Plans** – Do they exist? Are they being followed? What are the constraints? Does civil society know about them? Are new policies needed? Discuss with NGOs these matters.

**28. Institutional Reporting** – Is there an annual report on sanitation operations and development? Is this available to the public? Does it compare past years too? Does it cover the right indicators? Is there a website for the public?

**29. Health Situation – Statistics and Anecdotal Comment** – Is this a mortality or morbidity concern based on local statistics? Do people perceive that their poor or lack of sanitation contributes to the ill health of their families?

**30. Environmental Situation – Local and Downstream and Groundwater** – Assessment of what damage has been done?. What are the benefits of intervention? What is at risk for the future? What is out of control upstream? What is the nature of the risk from groundwater pollution?

**31. Cost Recovery–Policy–Tariffs–Collections–Budget Transfers.** What are constraints of current cost recovery? What does it inhibit from happening? What would be better done? Is there a clear policy? Do the people know about it? Is there a water surcharge for sanitation or for the environment? Does sanitation revenue go into O&M of sanitation? What is the collection efficiency? Are revenues and expenditures connected?

**32. Rehabilitation** – To what extent can existing facilities be rehabilitated? What are the reasons

facilities need to be rehabilitated? Can these past mistakes be avoided in the future? What should be abandoned?

### Part 3 – Options Analysis

**33. Consider the “do nothing” option.** Look at population increases and locations including formal development (subdivision) requirements. Are there any special programs for the poor or in slums? What are the predictions regarding effects on rich and poor? What are the public health and environmental implications?

**34. What are the expectations of the people? Have they asked for sanitation?** Is this a top down project? Who is asking for the project? How many perceive a real need? Is awareness or lack of it an issue? What is the status of hygiene education? What are their top priorities and for what reasons?

**35. Sanitation management must solve three problems:**

- (i) Upstream improvement of household conditions
- (ii) In neighborhoods improvement of healthiness and urban hygiene
- (iii) Downstream prevention of environmental degradation.

**36. Poverty elimination.** For sanitation to succeed in today's developing world it must be directly linked to poverty elimination. So sanitation for the urban poor must be tackled early in a project.

**37. Guiding Principles Based On Lessons Learned from the Past (See Attachments).** The following guiding principles are taken from many sources. Some are even conflicting with one another and some are impossible to follow in some circumstances. In looking at new options it is nevertheless important to consider how many of these guiding principles could be met.

**(i) Government and Institutional**

- Get political commitment and find a champion of the cause to cut red tape.
- Interagency collaboration and coordination is important.
- Land use zoning especially for industry is critical.
- Upstream financing by the people. Downstream by the government.
- A government sanitation policy monitored by civil society helps

- Use a sanitation coordination committee and build a strong institution
- The major constraint is not funds always. It is poor planning and management.
- Aim to connect all polluters
- Cost recovery with appropriate incentives to achieve policy objectives.
- There is no maintenance free option
- Support project implementation strongly

## (ii) Technologies

- Consider pilot projects to try new options
- Consider wastewater as a resource (fertilizer in agriculture and in aquaculture)
- Consider wastewater reuse and recycling
- Minimize the quantity of waste.
- Don't mix urine and faeces – separated they can both be used as fertilizer
- Don't mix excreta and grey water – the latter can be treated in wetlands
- Waste should be managed as close as possible to its source.

## (iii) People and Environment

- Consider both human and environmental needs
- Promote locally based solutions at household or neighborhood level
- Participation of users and involvement of formal and informal private sector
- Financial and economic analysis should show consequences of sub-optimal development especially regarding downstream environmental damage
- Long term goal in short steps. One objective to eliminate open defecation.
- Incorporate the existing system. Accept the ideal solution may not be possible.
- Sanitation is about behavior. Listen to the people. Address the unserved poor first.
- Schools and school children as first priority.
- Involve NGOs
- Stimulate demand – then time is of the essence
- Conventional sewerage philosophy has been “pipe it away first, then think about what comes next”. Combining all kinds of wastewaters and stormwater leads to a highly complex mixture of a wide variety of pollutants fluctuating greatly in composition and concentration making removal of pollutants very difficult. Wastewater and removed sludge contain

components such as phosphorus which could be used as a fertilizer if not spoiled by problematic substances such as heavy metals. The new philosophy is that wastewater should be treated (and reused if possible) as close to where it is generated as possible.

- The various disadvantages of centralized sewerage systems as noted from the lessons learned are: (i) takes nearly 10 years to build, (ii) inadequate capacity for O&M and breaks down quickly, (iii) sustainability threatened by ability of utility to charge and collect, (iv) reluctance of people to connect, which jeopardizes technical and financial sustainability and (v) environmental situation is worse when it breaks down.

## The Options

### 38. Centralized sewerage and sewage treatment.

- Advantages include better health and better downstream environment (if properly operated and maintained), may be part of existing and long term plan and probably has political commitment.
- Disadvantages include high unit cost per beneficiary, does not normally include beneficiary participation, reluctance to connect and poor cost recovery can jeopardize sustainability, will take a long time to build, is at risk because of its linear design (any part fails and the lot fails) and subject to control of solid waste disposal.
- Best used where there is a high level of existing sewerage and sewage treatment coverage.

### 39. Decentralized sewerage and sewage treatment

- Advantages include community decision making and participation in construction and O&M, benefits both people and environment, can be implemented quite quickly and will probably be sustainable.
- Disadvantages are for some people near treatment facility and any pumping station (noise and smell), relies on water to transport, unit cost is relatively high and benefits mostly upper and middle classes.
- Best used where implemented by strong NGO to get community cooperation.

**40. Combined domestic and industrial wastewater collection and treatment**

- (i) Advantages are convenience and minimizing of capital costs.
- (ii) Disadvantages are higher operating costs and higher risk of environmental damage downstream of treatment as composition and concentration of pollutants can vary greatly.
- (iii) Commonly used in highly industrialized cities (China)

**41. Combined stormwater and sewage/wastewater sewers**

- (i) Advantages are that one pipe system handles both services.
- (ii) Disadvantages are that pipe sizes are larger and system will carry all pollutants untreated through treatment plant at times of high rainfall. Operating costs are higher.
- (iii) Best used where a combined system is already built and operated.

**42. Separate domestic sewers**

- (i) Advantages are lower volume of wastewater to be treated and smaller sewer sizes needed which can be useful in densely populated areas.
- (ii) Disadvantages are that storm water has still to be addressed somehow.
- (iii) Best used in new development of high density living.

**43. Low cost "settled sewerage" also known as small bore or solids free sewerage**

- (i) Advantages are that it complements on-site sanitation options such as septic tanks.
- (ii) Disadvantages are that it may become blocked (solid waste) and it still requires treatment. Septic tanks need desludging and treatment of septage.
- (iii) Best used to improve downstream environment where septic tanks already exist and piped water is connected.

**44. Low cost "simplified sewerage" also known as condominial or in-block sewerage**

- (i) Advantages are lower cost and community participation
- (ii) Disadvantages are maintenance and downstream sewerage and treatment.

- (iii) Best used to cut local costs where septic tanks are not in use but piped water is available.

**45. Eco-san and wetlands on plot for middle/upper class subdivisions**

- (i) Advantages are lower capital and operating costs and resource reuse.
- (ii) Disadvantages are marketing for technology change
- (iii) Best used in new developments and could be supported by subsidies

**46. Eco-san for dry faeces and use in biogas digester**

- (i) Advantages are minimizes pollution and resource reuse
- (ii) Disadvantages are marketing of technology
- (iii) Best used in slum or squatter environment

**47. Septic tank and drains**

- (i) Advantages are it is a cheap on-site solution with cost to owner
- (ii) Disadvantages are that effluent disposal by percolation to soils is seldom possible
- (iii) Best used in dense low income housing areas in conjunction with surface drains

**48. On-site latrine (dry pit or leaching pit)**

- (i) Advantages are all costs to user
- (ii) Disadvantages are low-lying locations or low soil absorptivity.
- (iii) Best used for low-income where on plot land is suitable and available

**49. Biogas for community waste including solid waste and excreta**

- (i) Advantages are reuse of resources
- (ii) Disadvantages are needs community participation
- (iii) Best used in dense low- income living.

**50. Blackwater for biogas and greywater for wetlands**

- (i) Advantages are reuse of resources
- (ii) Disadvantages are collection and space
- (iii) Best used where land is available to create wetlands

**51. Public toilets in shopping centers and bus / ferry terminals**

- (i) Advantages are convenience especially for women

- (ii) Disadvantages are it must be pay for use and well maintained
- (iii) This is an essential service which must always be provided if necessary by the private sector for profit.

#### 52. Community toilets in slum locations.

- (i) Advantages are quality control on disposal
- (ii) Disadvantages are inconvenience especially during rain or night
- (iii) In high density low-income areas this is the preferred solution.

#### 53. School toilets

- (i) Advantages are that school children can change parents in sanitation
- (ii) Disadvantages are high cost and who maintains and pays?
- (iii) Another must service. All schools must be given priority of service.

#### 54. Sewage Treatment Options include:

- (i) Lagoons or waste stabilization ponds. (Use a lot of land area which also means high cost to get sewage transported there). The quality of effluent from these ponds can be greatly improved by use of vetiver grass in pontoons on surface and then discharge to a vetiver grass wetlands. Vetiver grass absorbs the high nutrient load from the wastewater.
- (ii) Upflow anaerobic sludge blanket reactors (more costly but use less land and have nuisance factor in built up areas)
- (iii) Constructed wetlands or reed beds.
- (iv) Chemically enhanced primary treatment is the coagulation/flocculation of raw wastewaters with lime or aluminium sulphate or ferric chloride or sulphate followed by primary sedimentation.

#### 55. NGO Implement of Sanitation is an Option – Some Examples

- (i) **Dian Desa (Indonesia)** – Community Sewerage with Underground Treatment Plant
- (ii) **Sulabh (India)** – Flush compost toilets/ Biogas/ Duckweed/Thermophilic aerobic Composting/ Public pay toilets/ Mobile toilets/Involving women
- (iii) **SPARC (India)** – Government funded community toilets (Pune example).
- (iv) **Orangi Pilot Project (Pakistan)** for condominal sewerage

- (v) **Environment and Public Health Organization (Nepal)**– Have working models and training in full ecological sanitation services (all in one house) including rainwater harvesting, eco-san toilet, greywater treatment in reedbeds and use of urine and faces as fertilizer.

### Part 4 – Policy and Project Priorities

56. The government policy statement emanating from a stakeholder consultation should cover the following main points:

#### 57. Institutional Responsibility

- (i) The responsibility for sewerage and sewage treatment will rest with (the utility)
- (ii) The responsibility for on-site sanitation facilities and public and school facilities will rest with (the local government).
- (iii) The responsibility for monitoring and control of pollution will rest with (the environmental regulatory authority).
- (iv) The responsibility for community sanitation facilities will rest with (the concerned NGO or CBO).
- (v) Institutions will be required to undertake continual organization development
- (vi) Institutions will be guaranteed long term and autonomous management
- (vii) Institutions will be responsible for promotion of sanitation and hygiene education
- (viii) Private sector, NGOs or CBOs may construct and manage their own sanitation facilities with the approval of the local government and in accordance with local government by-laws and regulations.
- (ix) Institutions responsible for sanitation must prepare an annual report for public consumption on operations and development of sanitation

#### 58. Service Levels

- (i) On-site latrine sanitation will be provided under what circumstances?
- (ii) On-site septic tank sanitation will be provided under what circumstances?
- (iii) Sewerage will be provided under what circumstances?
- (iv) Community toilets will be provided under what circumstances?
- (v) Eco-san toilets will be provided under what circumstances?

- (vi) On-site wetlands treatment of greywater will be provided under what circumstances?
- (vii) Other sanitation options will be piloted with incentive subsidies and approval of stakeholders

#### 59. Cost Recovery

- (i) Construction of on-site facilities will be funded by (owner/tenant)
- (ii) Maintenance of on-site facilities (desludging) will be funded by (owner/tenant)
- (iii) Construction of drains, sewers, pumping stations and treatment facilities for septic tank sludge and sewage will be funded as grant by government.
- (iv) Maintenance of drains, sewers, pumping stations, and treatment plants will be funded by the beneficiaries (surcharge on water bill)
- (v) Connection fee for domestic sewerage will be amortized in total development.
- (vi) Connection fee for industry will be paid by industry up front
- (vii) Environmental fee will be paid by all water users to cover costs of monitoring and control of pollution.
- (viii) Public and community and school toilets will be maintained on a user pays basis.

#### 60. Development

- (i) Private sector will provide sanitation facilities in housing subdivisions for all inhabitants in accordance with local government by-laws and regulations. Such development will provide for all sanitation requirements (collection, treatment and disposal) within the confines of the subdivision.
- (ii) Government will undertake development of sanitation facilities elsewhere.
- (iii) Priority for sanitation facilities and services will be with unserved urban poor, with unserved schools and with provision of adequate facilities in public places. Next priority will be for rehabilitation of existing facilities and services.

#### 61. Project priorities for sanitation need to consider:

- (i) Serving the Unserved Urban Poor
- (ii) Serving the Unserved Schools
- (iii) Serving the Unserved Public Areas
- (iv) Institutional capacity building for sustainability and environmental monitoring

- (v) Grant elements for demonstration pilot projects for eco-sanitation (private developers)
- (vi) Rehabilitation of existing facilities.
- (vii) Improvement of existing sanitation (septic tank sludge and effluent treatment).
- (viii) Extension of existing sewerage and sewage treatment (as a last priority).

#### Appendixes

1. Lessons Learned – ADB
2. Lessons Learned – World Bank
3. Some Global Case Studies
4. Some References On Urban Sanitation

## Appendix 1

### LESSONS LEARNED FROM ADB SANITATION PROJECTS

1. Latrines (Sri Lanka) – Demand overestimated 6,127 out of 10,000.
2. Latrines- (Pakistan) Slum upgrading implemented except for pit latrines.
3. Sewerage – (Vietnam) Capacity for O&M is inadequate.
4. Sewerage (Karachi) – Sustainability can only be assured if utility is in good financial health.
5. Sewerage (Karachi) –STP only operating at 54% of capacity. O&M problems – only 5 out of 18 pumps operating. Revenues insufficient to cover costs.
6. Sewerage (Karachi) – Project objectives should be clear and monitorable not "to improve environmental sanitary conditions and alleviate pollution in coastal waters".
7. Sewerage (Rawalpindi) – Project took 9 years to complete.
8. Sewerage (Rawalpindi) – Trunk sewers largely remain unutilized due to absence of lateral or secondary sewers.
9. Sewerage (Pakistan)– Three sewage treatment plants as well as collector and secondary sewers were constructed but only about 20% of secondary sewers were provided due to unpopular connection charges.
10. Sewerage (Pakistan) – Only 622 connections made.
11. Sewerage (Pakistan) – A sewage treatment plant and trunk and secondary sewers were constructed but only 300 connections made as against 5000 envisaged.
12. Sewerage (Pakistan)– A sewage treatment plant and sewer network was constructed but only 1,600 connections out of envisaged 8,000 were constructed.
13. Sewerage (Pakistan)– No charges are collected for sewerage services.
14. Sewerage (Pakistan) - Project took almost 10 years to implement.
15. Wastewater Treatment (Anhui) – Most important factor for success was strong commitment from the Government institutions and excellent cost recovery.
16. Wastewater Treatment- (Fuzhou) Failure to increase water and wastewater tariffs could significantly jeopardize financial sustainability. More policy dialogue is needed.
17. Sewerage (Kathmandu)– Rehabilitation of sewage treatment plants and sewers needed.
18. Sewerage – (Colombo)- Rehabilitation of sewerage system needed.
19. Sewerage- (Bombay) – Sewerage services plus slum sanitation component.
20. Sewerage – Only 232 cities/towns out of 4700 in India have sewerage. Average coverage is 60%.
21. Sewerage (Wuhan) – Three wastewater treatment plants and 100km of sewers. Total investment of World Bank in wastewater treatment facilities in China is to top \$10billion over 5-10 years.
22. Sewerage (Shanghai) 50% of pop. Relied on daily collection of nightsoil. Less than 2/3 of wastewater collected is treated.
23. Sewerage (Wuhan) ADB Small-scale ADTA with objectives (i) improve public awareness among poor of benefits of connecting to sewer system (ii) improve sewer connection rates among poor and (iii) assess effects of awareness and connection rates on quality of life.
24. Sewerage and Sanitation (Madhya Pradesh) Project includes supply of equipment for septic tank and sewer cleaning, construction of community toilets, construction of sewerage networks and drainage improvements, construction of sewage treatment plants. Project includes water supply and solid waste components too.
25. Low Cost Sanitation, Community Awareness and Health Education(PNG) Project. Bucket system and simple pit latrines to be replaced with ventilated improved pit latrines.
26. Wastewater Management (Hebei) 300 km of sewers and treatment plants for 540,000m<sup>3</sup>/d combined domestic and industrial wastewater.

## Appendix 2

### LESSONS LEARNED -WORLD BANK SANITATION PROJECTS

1. Project design should incorporate institutional building, financial viability and poverty alleviation. Link revenue to expenditures. More user pays instead of municipal budget transfers.
2. It is important of all polluters connecting to the system both to expand coverage and increase numbers of paying customers. Political commitment is necessary with respect to pricing and enforcement of environmental standards.
3. Ongoing support for project preparation and implementation is important, including construction management, financial and institutional development as well as a technical review panel.
4. In Jakarta the Bank's advocacy of low cost sanitation against local advice caused the project to fail. The sewerage part of the project was scaled down due to slow progress and limitations on the capacity of the treatment pond. People rely on septic tanks and leaching pits, both improperly designed. Most of the 3000 planned leaching pits could not be built because of insufficient space or unsuitable soil conditions. Disposing of more liquid wastes from septic tanks and leaching pits into drains blocked with solid waste and brim full with stagnant sewage has only exacerbated already unacceptable environmental conditions. And shows how trying to solve one part of the problem has created others. Sewerage and sanitation projects require a comprehensive approach that takes into account the final disposal of waste. Open canals carrying raw sewage overflow onto the streets. One thousand cases of cholera per year.
5. In Manila the Bank nurtured a dialogue with receptive well run municipal agencies. Deteriorating sewerage system reached only about 17% of city dwellers. Lack of cost recovery means the rehabilitated trunk sewers are not being maintained. Small bore pipes connect septic tanks to drains which discharge to drainage canals but these are usually choked with garbage. Nevertheless health surveys reported significant improvement in local health by removing sewage from around houses. Now in Manila, World Bank are assisting the concessionaires with septic tank desludging equipment, with septage treatment facilities, and with package sewage treatment plants that treat the septic tank effluent. Conventional centralized sewerage works are too expensive.

## Appendix 3

### SOME GLOBAL CASE STUDIES

#### A. Introduction

1. There is no need to reinvent the wheel. There are enough both successful and unsuccessful examples around that give us the big picture on urban sanitation in developing countries. Here are some examples:

#### B. Urban Environmental Sanitation Planning Lessons from Bharatpur (pop. 200,000), India.

2. Planning process began with a Situation Analysis involving all stakeholders including NGOs. It culminated in a planning workshop in which sanitation problems and their root cause were examined. Conclusion was that the town's problems lay not so much with lack of funds as in poor planning and management.

3. The Guiding Principles of the Plan were:
  - (i) Improve environment (river) and social aspects (health) with more latrines and better SWM.
  - (ii) Long term goal to be achieved in small steps (3 year priorities).
  - (iii) Priority to be given to low income people where sanitation needs are the most acute (due to cost factor).
  - (iv) Great emphasis on improving existing O&M.
  - (v) Community participatory approach to be adopted.
  - (vi) Agencies to respect Plan through budget, staff, work plans.
4. Framework of Bharatpur Sanitation Development Plan
  - (i) Goals
  - (ii) Guiding Principles
  - (iii) Management and Coordination
  - (iv) Regulation and Enforcement
  - (v) Roles and Responsibilities
  - (vi) Financial Arrangements
  - (vii) Capacity Building Needs
  - (viii) Formal Status
5. Lessons Learned and Advice to other Municipalities
  - (i) Adopt city-wide strategic planning
  - (ii) Ensure collaboration between stakeholders and agree on process to be followed
  - (iii) Process must be made official
  - (iv) Consider pilot projects for service delivery
  - (v) Need for capacity building and awareness in (a) Government and (b) NGOs.
  - (vi) Use of Sanitation Coordination Committee is good.
  - (vii) Take small steps.
  - (viii) Incorporate existing schemes
  - (ix) Accept that ideal solution may not be available
  - (x) Recognize there is no maintenance free option
  - (xi) Recognize that sanitation is about behaviour

### **C. Sanitation in Metro Manila (Manila Water)**

#### **6. Current Situation**

- (i) Polluted waterways
- (ii) Congested landscape
- (iii) Lack of planning of utilities
- (iv) No proper sanitation facilities
- (v) 70% pollution load is domestic sewage
- (vi) Majority of population use septic tanks
- (vii) Lack of septic tank services emptying, treatment, disposal
- (viii) Lack of properly planned sewerage systems

#### **7. Challenges to Sewerage Expansion**

- (i) Congestion (Land for STP and laying pipes)
- (ii) Acceptance (willingness to accept when compared to septic tanks)
- (iii) Sewer rates (50% add on water)
- (iv) Wastewater regulations (legal / community)

#### **8. Alternatives to the Sewerage Approach**

- (i) Package Sewage Treatment systems (utilize existing septic tanks & sewers)
- (ii) STP constructed underground with community consultation. Costs around \$25,000 for 900 Households / Capacity 900 m3/d
- (iii) Septic tank emptying and septage treatment offered
- (iv) Community Sanitation Projects
- (v) Use of bio-solids and septage as soil conditioner

### **D. WSP Study Philippines**

- (i) In the past 30 years investments in sanitation in the Philippines totals only 1.5% of that spent on urban water supply. At least 14 sewerage feasibility studies prepared in recent years and none implemented.
- (ii) Coverage with sewerage is low. Only 8% in Manila and 1-3% in other cities.
- (iii) Urban poor remain excluded with unsanitary toilets or defecate in open. Top priority is to provide sanitation services to disadvantaged urban poor. Most of this must come from communal toilets as space and lack of water prohibits on-site solutions.
- (iv) Private septic tanks are usually small single chamber tanks which provide minimal treatment and limited sludge storage. They seldom use effluent disposal systems as regulated and are seldom desludged.
- (v) Most urban households in Philippines prefer to pipe their effluent directly to a nearby drain, canal or water course.
- (vi) It will require substantive evidence of environmental health risks associated with current septic tank systems to pave the way for enforceable sanctions against the discharge of inadequately treated effluent.
- (vii) Begin charging septic tank users (polluter pays) and then use this for sludge and effluent collection and treatment facilities. A 10% environmental tax added to water bill will allow free septic tank desludging.
- (viii) Local governments should not be service providers but monitor and regulate.

- (ix) The development of technologies capable of upgrading septic tank systems and incorporating them into low cost sewer networks will enable more neighborhoods to opt for this sort of improved sanitation.
- (x) Urban households appear reluctant to pay for public sanitation services when there seems little wrong with their private facilities.
- (xi) Independent sewerage systems and communal toilets are viable options for urban sanitation on a smaller scale provided demand is genuine.
- (xii) Government funding is essential, notably for the provision of sanitation services to the urban poor who remain excluded from public sanitation services and unable to develop private alternatives. Political support is essential to financing new sanitation facilities and their sustainability.
- (xiii) Key Constraints are:
  - Limited demand for alternatives to septic tanks
  - Shortage of financially viable options
  - Low awareness of environmental health risks
  - Ineffective enforcement of regulations and user charges
  - Competition from water supply for resources and politics
- (xiv) Inflexible government financing rules give Water Districts few incentives to invest in sanitation services or infrastructure in low income areas.
- (xv) Urban households using septic tanks are generally very satisfied, noting that facilities are reliable and almost maintenance free, whereas sewer connections were perceived to be expensive and require frequent maintenance.
- (xvi) Only one case study out of seven in Philippines (Zamboanga) had full O&M cost recovery.

**E. Another Look At Urban Sanitation**  
**Lessons Learned From 20 Research/Pilots In Africa**  
**(PS EAU- France)**

9. "The basic goal of Sanitation is the control of the advance of used waters, excreta and other liquid wastes produced by human activity, domestic or economic, so that the contained pollution, bacteriological and physico-chemical, do not spread infection risks for human health and deterioration of the environment."

- (i) When associated with public health & hygiene there are not enough financial resources and know-how for large scale programs. But in association with water supply, yes. The again sewerage networks are not necessarily good.
- (ii) With the rapid growth of African cities autonomous forms of sanitation will become the predominant response at the disposal of the people. They are the only ones which meet the policy objectives.
- (iii) Sanitation management must solve these three problems:
  - Upstream improvement of household sanitation conditions
  - In Neighborhoods improvement of healthiness and urban hygiene
  - Downstream prevention of environmental degradation
- (iv) Two problems with sewerage networks. (i) Delays in connecting mean not a high degree of sanitation is achieved. (ii) Lack of information, education and communication mean people don't know how to use it properly and can revert to autonomous systems.
- (v) There are five types of domestic installations:
  - external, mere hole, no flush, no roof, dry pit, no cesspit

- external, mere hole, no flush, dry pit
  - Mere hole, roof, covered pit
  - Turkish (?), flush, roof, covered pit
  - Internal, washbasin, flush, septic tank, cesspit.
- (vi) Mechanical (pump) emptying of cesspits most common but manual still frequent.
- (vii) The setting up of mini-sewerage networks to which may be connected some types of already established autonomous installations may help to clean up a neighborhood whose housing densification has saturated the physical environment.
- (viii) The private sector is at times capable of proposing sustainable technical and financial solutions (for instance the profitable artificial lagoon for the processing of wastes of the company Sibeau in Cotonou, Republic of Benin, whose services are paid by the inhabitants).
- (ix) Thanks to their rudimentary maintenance needs, the only purification stations that work sustainably in Sub-Saharan Africa are the artificial lagoons for the purification of wastes.
- (x) Recent anthropological studies have shown that “shame” in the neighborhood is a major factor in the motivations and strategies for equipping households. The logic of hygiene plays a lesser role than the social logic (reputation or honor) or the moral logic (shame).
- (xi) Burkino Faso Water and Sanitation Board established in 1985 a 5% sanitation tax on the water bill. It recognized that in the short term the access of urban dwellers to sanitation will require the use of over 90% autonomous systems. Through 5% water tax for sanitation and  $\frac{3}{4}$  financial investment provided by the people, Burkino Faso has shown it is possible to finance progressively the entire upstream link of sanitation without international intervention.
- (xii) Research has shown the threshold of domestic recurrent expenditures on sanitation to be about 1% (water 5-10%) and this is limited to the emptying of cesspits. But this puts the market at one million Euros for every one million inhabitants and all without public intervention or incentives, so the market is considerable.
- (xiii) The primary and secondary parts of the network system require heavy and costly infrastructure, which need is generally linked to political image of city and therefore financing may be negotiated in the political arena. Financing of the upstream links including emptying of cesspits and septic tanks is better by inhabitants because they are more explicit.
- (xiv) Technicians provide information but it is not always understood. Likewise people express themselves about services and how to live but technicians don't understand.
- (xv) There is a good example in Tanzania (Moshi) of a sewerage success based on the executive committee having tariff autonomy. Still even there 85% of people rely on autonomous systems.

## **F. Down To Earth – Eco-Sanitation V Sewerage**

- (i) The discharge of domestic sewage is leading to heavy pollution of rivers and urban groundwater aquifers requiring a huge investment in river clean up. We divert sewage to treatment facilities, but this sewage comes from the rich not the poor. The more water we use the more investment is needed to clean it up. The political economy of sewer systems is atrocious for developing countries. Hardly any poor city can recover its investments in sewer systems. Users get subsidies.

The users are the rich. Delhi's sewers are choked and silted. Roman aqueducts are not a symbol of intelligence. They are a symbol of great environmental stupidity. Sewage treatment plants when built often lie idle. Sewer systems are built to protect the public health but badly managed systems become a hazard to health. The risks include river pollution from sewage outfalls, groundwater contamination, piped water contamination, sewage backflows (plastic bags) and overflowing sewers causing people to raise the floor level of their houses at great cost. About 80% of the pollution of Indian rivers is from domestic sewage, yet the sewers in Delhi have also lost 80% of their capacity due to age and poor maintenance.

- (ii) There is a growing concern for ecological sanitation and this is giving rise to innovations from the concept of sewerless cities using new technological systems which use extremely low or even no water at all and in which all the wastewaters and the solid wastes are recycled. This must be developed for the rich because it is the rich persons flush that is the biggest environmental culprit today. The objective is the safe disposal of human waste yet flush toilets and sewerage transfer the problem elsewhere. They are complicated ways of spreading pathogens away from the user to the public at large. A family of five using a water toilet contaminates more than 150,000 liters of water in order to transport just 250 liters of excrement in one year.
- (iii) Water is a precious resource and should not be used to transport faeces. Waste should be managed as close as possible to its source. Also faeces and urine should be considered as resources not waste products. We eat plants that get nutrients from the soil. We urinate and defecate and return nutrients to the soil.
- (iv) Clivus Multrum is a single vault composting toilet used in Sweden, where urine, faeces and organic household wastes are combined and processed together. The heap decomposes reducing to less than 10% of original volume and gradually forms humus which is used as fertilizer and soil conditioner.
- (v) Some developments for consideration are:
  - Condominial sewerage (Orangi Pilot Project)
  - Decentralized effluent treatment
  - Use vacuum based sewerage (Germany)
  - Use black water to produce biogas and grey water treat with reed beds
  - Electric incinerator toilets
  - Eco-san toilet in Kerala (Paul Calvert) Don't mix faeces, urine and water. If two (urine and faeces) are separated urine can be used directly as a fertilizer while faeces can be sanitized and then used as a soil conditioner.
- (vi) China has a large ongoing eco-san program. Faeces are dried in toilets and are collected and used in three ways.
  - biogas digester for lighting and cooking
  - left over sludge applied to fields as soil conditioner (urine too)
  - faecal sludge used in aquaculture industry.

**G. South Asian Ministerial Conference On Sanitation  
( Background Paper Dhaka Oct. 2003)**

- (i) Purpose of conference was to (a) raise the profile of sanitation, (b) generate political commitments, (c) strengthen advocacy and leadership and (d) assess the state of sanitation and hygiene

- (ii) **Sanitation Policies.** Several Asian countries have recently developed sanitation policies. USAID issued a guide to sanitation policy development. Policies often refer to
  - (iii) Decentralization to local government level
  - (iv) Allocation of ministerial responsibility
  - (v) Technology selection
  - (vi) Regulations and by-laws
  - (vii) School sanitation
  - (viii) Subsidies on new construction
  - (ix) Emphasis on poverty elimination now so sanitation policy should be compatible
  - (x) The most obvious impacts of sanitation and hygiene are in terms of improved health and environmental protection, but economic productivity, education, empowerment of women and basic human dignity are all powerful arguments that need to be better articulated.
- (xi) **Institutional Arrangements**
  - (xii) Governments increasingly seen as facilitators not drivers
  - (xiii) Lack of appropriate legislation and regulations
  - (xiv) Severe institutional fragmentation
- (xv) **Finance, Economics and Equity**
  - (xvi) Where can the resources for sanitation and hygiene promotion be found?
  - (xvii) Subsidies, demand responsive approaches and decentralized government finances.
- (xviii) **Demand and Choice**
  - (xix) Demand for sanitation may exist but it is limited
  - (xx) It is well established that health is rarely the main reason why people build latrines or connect to sewers. Social and cultural reasons dominate such as privacy, dignity, convenience, freedom from smell, a cleaner household and immediate environment.
- (xxi) Sanitation in West Bengal improved dramatically when households reduced their costs by buying only the most basic components to build their own latrines.
- (xxii) Hygiene improvement and social marketing need attention.
- (xxiii) **Advocacy, Communication and Mobilization**
  - (xxiv) Stakeholder analysis involves identifying the types of audiences/ groups to be involved and determining how to approach them. Effective policy discussion can help legitimize the process and the result.
  - (xxv) Involvement of government remains critical.
  - (xxvi) Sanitation and hygiene have been dominated for too long by technical professionals without skills of political advocacy and public communications.
  - (xxvii) We need more conferences just on sanitation.

## H. Listening - WSS Collaborative Council

### (i). Sheela Patel – SPARC/Mahala Milan/ NSDF Alliance (India)

10. In cities across India, communities working with this alliance have delivered sanitation facilities that are properly thought through, well built and efficiently run. Unlike government latrines, community toilets are clean, bright, and well ventilated. They have a good supply of water for flushing, hand washing and maintenance. They have separate areas for men and women and special latrines for children. Each block is operated by a management committee and its running costs are paid by the purchase of a family toilet pass that costs 20 rupees per month. The building of a toilet is also an opportunity to show the city authorities that given the

chance and the support, the inhabitants of slums are able and willing to solve many of their own problems.

(ii). **Jockin Arputham (National Slum Dwellers Federation- India)**

11. We come to help them get together, identify a problem, and tackle it today- using their own knowledge, their own talents and their own money. – The people are the greatest resource for their own development. – It is my experience that savings schemes are the best way to spark a movement of self help in a poor community. Pitch the idea to a group that is predominantly women. Sanitation is a very good place to start. If a community savings group approaches the Federation with a request for sanitation, we are able to help them through the process of planning and designing a toilet block, hiring contractors and builders and developing a system that will pay for the running and maintenance of the facilities. The NSDF is now completing the construction of 280 community toilets that were funded with money that the Mumbai City Corporation received from the World Bank. With an average of 20 seats per block this program is providing safe sanitation and clean water to half a million people every day.

(iii). **Ratnakar Gaikwad (Former Municipal Commissioner of Pune)**

12. This is an example of a Champion of the Cause. Sanitation has to be the city's first priority. He built 10,000 toilet seats in 400 blocks of community toilets in just three years. The City paid for the capital works but the people for the O&M. "In order to keep the program on track I took personal responsibility for supervising the key players. Every Wednesday they were asked to come to my office; NGO leaders, engineers, accountants and women from the slums sat at the table for a serious businesslike review of progress. I looked at how far we'd gone and told people where I wanted them to be by next week. Procedures were simplified, decisions were taken, obstacles were cleared. The drawn out process of awarding contracts for example was radically altered allowing some 200 work orders to be issued in the space of three or four days. The procedure for releasing money to NGOs was also adjusted to ensure prompt payment at every stage of construction. The Wednesday meetings were critical to success because they cut out the hierarchies, the parasites and the red tape which can easily ruin a good program"..

(iv). **Rehmatbi Qamar Ahmed (Mahila Milan – Women Together) – Contractor**

13. When the community has worked out the design of their toilet block, decided where they are going to put it and got the Corporation to agree to pay for it, they are going to need some technical help with the job of actually building the toilet. That's where I come in. I've been the contractor for five sites in Mumbai and I've now got my own contacts with people who supply materials and labor at fair rates. There is no shirking and no cutting corners when I'm on site. And that's the point. I am on site all day every day. I do this because I earn good money (and people appreciate what she does).

(v). **Surjya Kanta Mishra (Minister for Health and Family Development – West Bengal)**

14. Sanitation as A Way of Life. That phrase implies a psychological adjustment that will lead not just to the use of latrines but also the washing of hands, the cutting of nails, the safe preparation of food, the refusal to spit in public places and the vigilant protection of local water bodies from all sources of contamination. This attitude of mind – not building toilets will lead to the really dramatic improvement in public health. The solution depends on the participation of

the people. That is being generated by a range of strategies that appeal to the need for privacy, to the economic benefits of hygiene to the social stigma of open defecation.

(vi). **Sait Damodaran (Gramalaya an Indian NGO – Tamil Nadu)**

15. I would advocate a campaign led by communities, civil society and NGOs to make the people aware of the initiatives being promised by their government. If a community group has never heard of the Total Sanitation Campaign, how can they ask their representatives why nothing is happening? Clearly there is a place for local media in raising public awareness. If local authorities are to be held accountable then the community must be in a position to question their methods and practices. Slum residents must have the confidence to challenge local politicians and engineers. This confidence depends on communities having a sound grasp of the new policies and having technical capacity to act as watchdog during implementation. NGOs can help.

(vii). **Bindeshwar Pathak (founder of Sulabh International Social Service Organization)**

16. Sulabh is not an NGO that builds toilets. It is not a local charity that depends on government grants to finance one off projects of water and sanitation. It is a self sufficient movement employing some 50,000 dedicated staff who work day in and day out right across the country to promote the cause of sanitation as a means to eradicate poverty, disease and social injustice. The right to cleanliness, privacy and dignity can be used to rid India of a tradition which for centuries has sentenced people by their birth to the lifelong task of carrying away other people's excreta. We've managed to build over a million latrines but in India there are something like 120 million families who have no toilet at all. Sulabh charges both governments and users in order to maintain their high quality services. Sulabh has innovated technological solutions for the design of toilets, for the treatment of wastewaters, and even for the creation of biogas and fertilizers from human excreta.

(viii). **Kamal Kar (Social and Participatory Specialist – Bangladesh)**

17. The practice of open defecation is a deeply ingrained habit of mind and body. It cannot be reversed by offering subsidies. Human shit will find its way into people's mouths. Community Led Total Sanitation (CLTS) is bringing 100% sanitation to rural villages and has as its main objective the elimination of open defecation. Local people know how to market sanitation.

(ix). **Dipak Gyawali (Former Minister of Water Resources in Nepal)**

18. It is the task of all 'social auditors' to speak out against the inefficiency and self interest of donor bureaucracies. Social auditors may include academics, students, investigative journalists, activist NGOs, public interest lawyers or simply concerned individuals. If these people collaborate across the North-South divide then they do have the power to influence both national and global policy. [This is a lesson that if ADB is going to help governments deliver sanitation to the people in developing countries it must be efficient. When demand for sanitation is raised but not efficiently met then this does much harm. It is also a lesson for governments that once a policy is declared social auditors are necessary to monitor the policy and ensure it is indeed implemented – ACM]

(x). **Umesh Pandey (Founder of the NGO NEWAH in Nepal)**

19. Sanitation and hygiene have been neglected because professionals are not trained in the social and cultural side of their work. They give no thought to the idea of community or local knowledge or social dynamics. This is a failure of the education system. --- If they speak out loudly civil society and the media can make a huge impact on public policy. Civil society is complicit in what amounts to an unforgivable neglect. There are a lot of good ideas being tried out in Nepal. Eco-san toilets for example and CLTS. NEWAH has developed a sophisticated strategy for identifying different levels of poverty and is already using this to provide differentiated subsidies to the very poor. But these kind of forward policies are not being addressed at the national level.

(xi). **Ravi Narayan CEO of NGO WATERAID**

20. The ability to develop local solutions in response to specific circumstances is the one universal hallmark of successful interventions and it is also why no particular model can be accepted as policy or replicated nationwide. But municipal governments do not have the kind of skills and understanding demanded by the new approach. Very often they are untrained, unfamiliar and even unwilling to work alongside communities in the pursuit of people led, locally specific solutions. So training and motivation of these people is needed.

(xii). **Sandy Cairncross (Professor at London School of Hygiene and Tropical Medicine)**

21. Creation of demand for sanitation requires social marketing. Instead of leaving that job to NGOs governments should be thinking about how they can put their own resources into creating a marketing strategy on a national scale. It might mean diverting resources toward promotion rather than production of latrines. A more agile approach would be to rely on the involvement of small-scale private sector producers. Municipal centers for social marketing could be linked to centers that stimulate production, train masons, develop technologies, promote a range of models, act as brokers between client and producers and regulate the work of hardware manufacturers.

**Appendix 4****SOME REFERENCES ON URBAN SANITATION**

- |                                                                                       |                              |
|---------------------------------------------------------------------------------------|------------------------------|
| 1. Low-Cost Sanitation                                                                | John Pickford                |
| 2. Sanitation Connection                                                              | Internet Site                |
| 3. Asian Water Supplies (ADB)                                                         | Arthur McIntosh              |
| 4. Urban Environmental Planning                                                       | WSP India                    |
| 5. Sanitation in Metro Manila                                                         | Manila Water                 |
| 6. Sanitation in the Philippines                                                      | WSP Philippines              |
| 7. Another Look at Urban Sanitation (Africa)                                          | PS EAU –( France)            |
| 8. Down to Earth – Eco Sanitation v Sewerage                                          | Internet Eco-Sanitation Site |
| 9. EcoSanRes Publication Series Reports                                               | Stockholm Env. Institute     |
| 10. The Challenge of Financing Sanitation for Meeting the Millenium Development Goals | WSP Africa 2004              |
| 11. Listening - WASH                                                                  | WSSCC                        |