



Concept Note for Knowledge Product 2 Need to plan for innovative on-site sanitation solutions

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INNOVATIVE SANITATION SOLUTIONS

INTRODUCTION

More than 2.5 billion people – roughly 37 per cent of the world’s population lack what many of us take for granted: access to adequate sanitation.¹ 1.1 billion people, or 15 per cent of the global population, practice open defecation². The World Health Organization and United Nations Children’s Fund (UNICEF) estimate that there are more than 620 million people practicing open defecation in India - over 50 per cent of the population.³

Poor sanitation impairs the health of Indians, leading to frequent illness and productivity losses. Diarrheal diseases kill nearly 1,000 Indian children each day and leave many more physically stunted and mentally impaired. The poor bear the worst consequences of inadequate sanitation in the form of ailing children, uneducated girls and unproductive people, making these populations even more vulnerable.

The economic damage of poor sanitation is estimated to cost India a whopping INR 2.4 trillion (\$38.4 billion), or 6.4 per cent of India’s gross domestic product, according to the Water and Sanitation Programme.⁴

The Census of India 2011 results showed that less than half of Indian households had a toilet at home; there were more households with a mobile phone than with a toilet. -almost a billion mobile phone connections (74 connections per 100 people).⁵

There are large gaps in sanitation in urban India, especially in access to toilets and treatment of waste. Improved sanitation facilities (% of population with access) in India were last measured at 35.10 in 2011, according to the World Bank. Access to improved sanitation facilities refers to the percentage of the population with at least adequate access to excreta disposal facilities that can effectively prevent human, animal, and insect contact with excreta. Improved facilities range from simple but protected pit latrines to flush toilets with a sewerage connection. 37% of all wastewater generated is let into the environment untreated.⁶ To be effective, facilities must be correctly constructed and properly maintained.⁷

¹ Sanitation Drive to 2015 Planners’ Guide, UN-Water, August 2012

² <http://sanitationdrive2015.org/resources-2/fast-facts/> accessed on 2nd Dec 2014

³ <http://www.thehindu.com/sci-tech/health/policy-and-issues/half-of-indias-population-still-defecates-in-the-open/article5367467.ece>

⁴ <http://www.forbes.com/sites/ashoka/2014/11/17/waging-a-sanitation-battle-in-india-requires-new-campaign-approaches/>

⁵ <http://www.forbes.com/sites/ashoka/2014/11/17/waging-a-sanitation-battle-in-india-requires-new-campaign-approaches/>

⁶ Excreta Matters

⁷ <http://www.tradingeconomics.com/india/improved-sanitation-facilities-percent-of-population-with-access-wb-data.html>

State of Urban Sewerage and Sanitation

- 4861 out of the 5161 cities/towns in India do not have even a partial sewerage network
- About 18 per cent of urban households do not have access to any form of latrine facility and defecate in the open
- Less than 20 per cent of the road network is covered by storm water drains
- Only 21 per cent of the waste water generated is treated
- Of the 79 sewage treatment plants under state ownership reviewed in 2007, 46 were operating under very poor conditions

Source: Report on Indian Urban Infrastructure and Services, The High Powered Expert Committee (HPEC) for Estimating the Investment Requirements for Urban Infrastructure Services March 2011.

Sanitation brings the single greatest return on investment of any development intervention- for every \$1 spent on sanitation at least \$9 is saved in health, education and economic development. Despite this well established fact, in India this sector has remained neglected for most of its post-Independence history.⁸

The National Urban Sanitation Policy of 2008 has laid down the framework for addressing the challenge of city sanitation. The Policy emphasizes the need for spreading awareness about sanitation through an integrated city-wide approach, assigning institutional responsibilities and with due regard for demand and supply considerations, with special focus on the urban poor.

In a City Sanitation Study (2010a) conducted by the Ministry of Urban Development, none of the 423 cities was found to be 'healthy' and 'clean'. The Municipal Corporations of Chandigarh, Mysore, and Surat and the New Delhi Municipal Council were the only four ULBs that fared relatively better. Close to 190 cities in the study were rated to be in a state of emergency with respect to public health and the environment.

The Ministry of Urban Development, Government of India has prescribed service level benchmarks for a number of urban services, including sanitation. The benchmark set for sanitation is that all cities and 100 per cent collection and treatment of waste water. The Thirteenth Central Finance Commission has endorsed these benchmarks and has made compliance with them a necessary condition for urban local bodies (ULB) to obtain performance-linked grants. The HPEC estimates that the total investment required for a sewerage network in urban areas is Rs. 242688 Crore for the

period 2012-31⁹.

There is an increasing recognition of the importance of sanitation by the new government. The famous "*pehle shauchalay, fir devalaya*" (toilets first, temples later) quote from the Prime Minister has now been captured in the new Swachh Bharat Mission for Urban Areas (SBMUA)¹⁰. The key goal of the mission is to eliminate open defecation over the next five years¹¹ 'Swachh Bharat' in the urban context is not just about toilets; it encompasses the full

⁸Squatting Rights - Access to toilets in Urban India, Dasra, Catalyst for Social Change, September 2012

⁹ Report on Indian Urban Infrastructure and Services, The High Powered Expert Committee (HPEC) for Estimating the Investment Requirements for Urban Infrastructure Services, March 2011.

¹⁰ *Swachh* Bharat is Hindi for 'clean India'.

¹¹ Press Information Bureau, Government of India 2014.

service chain of sanitation including collection/ storage, transport, treatment and disposal/ reuse of human waste, waste water and solid waste. Given the diversity of the country, this is a vast and complex exercise which requires sharing of knowledge, experience and successes among the various participants and stakeholders, as the mission progresses.

Proposed Topic/Product

In order to achieve total sanitation, it is imperative to promote pro-poor, affordable and sustainable sanitation initiatives with a focus on on-site and off-site disposal and wastewater and excreta treatment.

On-site disposal: On-site systems, e.g., latrines/toilets, store and/or treat excreta at the point of generation. They include ventilated improved pit latrines or toilets, pour-flush toilets and septic tanks. If designed, constructed, operated and maintained correctly will provide adequate service and health benefits when combined with good hygiene. Building and operating these systems is often much less expensive than off-site alternatives.

Off-site disposal: In off-site systems, e.g., sewerage, excreta is transported to another location for treatment, disposal or use. In more densely packed areas, sewerage systems are frequently used to transport waste off site to a location where it can be treated for disposal. This type of approach may work well in some circumstances but is impractical for many other locations. The cost of a sewerage system (which can be as much as 70 times more expensive than on-site alternatives (Carr and Strauss, 2001)) and its requirement of a piped water supply preclude its adoption in the many communities in countries that lack adequate sanitation (Francis, Pickford, & Reed, 1992). In specific circumstances, cost-effective alternatives to conventional sewerage systems have been developed including small diameter gravity sewers, vacuum and pressure sewers. Simplified sewer systems have been successfully used in Brazil, Ghana and other countries.

Waste-water and excreta treatment: Before it can be safely reused or disposed of, waste needs to be treated to remove or inactivate pathogens. Many on-site waste-disposal methods treat excreta by storing it for enough time to kill the pathogens. Most off-site strategies, and some on-site systems, require waste to be treated at a facility before it can be safely used or released into the environment.

Conventional centralized sewerage systems require an elaborate infrastructure and large amounts of water to carry the wastes away. The problem is that these conventional or mechanical processes are expensive to operate: they require energy, skilled labour, infrastructure and maintenance. While this system is applicable for metropolitan and large cities, smaller and/or less developed towns and peri-urban areas, alternate approaches are required.

Further reduction of the pathogens and nutrients requires additional processes, which pushes up the cost still further. In efforts to reduce the cost and complexity of waste treatment, experiments have been conducted with smaller decentralized treatment units.¹²

Decentralization means reaching more people – filling the lacuna wherever centralized services are unreachable, infeasible or unaffordable. Decentralized basic needs services are

¹² http://www.who.int/water_sanitation_health/sanitproblems/en/index4.html

not intended to replace but rather to complement centralized systems. To ensure the effectiveness of decentralized basic services, this approach must be incorporated into city or town planning. By intervening at the planning stage, adequate provisions for basic services can be provided to newly developing areas of the city. At-source treatment eliminates conveyance costs and results in reducing investments by local bodies for the provision of essential services to growing peripheral communities. Integration of decentralized systems at the planning stage ensures reduction of the load on centralized systems on the one hand, and urban local bodies could meet the demands for basic needs services on the other. In addition it keeps the cities' environment clean.

In order to convert all urban areas into open defecation free spaces and achieve the goal of total sanitation, in addition to expanding the coverage of off-site sanitation systems, there is a need to design, construct, operate and maintain the existing on-site sanitation systems and innovate affordable and environment-friendly options for to meet the various challenges.

Against this background, in the work plan for the South Asia Urban Knowledge Hub in India, the focus of objective two is "*To influence decision makers to plan for innovative onsite sanitation solutions as compared to conventional network using evidence from case studies of four urban areas.*" This will entail identification of implementation successes, challenges, and ways to overcome challenges in the four case studies. In addition, it will include relevant elements of good practices from other South Asian K-Hub partner countries (Bangladesh, Sri Lanka and Nepal) and/or provide existing situation in each country. The Knowledge Product will also identify guiding principles for implementing innovative onsite sanitation solutions in urban areas. An influencing strategy to promote innovative on-site sanitation solutions will also form part of the Knowledge Product to ensure evidence-based policy advocacy.

Rationale

The National Urban Sanitation policy (2008) and the most recent Swachh Bharat Mission for Urban Areas (SBMUA) launched in October 2014, point to the fact that India has initiated a strong policy framework to tackle the sanitation challenge. However, it has not been able to translate into improved coverage in the entire country. The inter - and intra-state inequity in coverage and access indicates that there are serious requirements for improved knowledge sharing and knowledge management. There is also potential for better documentation, dissemination and learning between cities in different States on effective approaches and for capacity building at all levels. There is a clear need to move from the current focus on hardware, subsidies and household toilets towards a sustainable service delivery approach for sanitation. Under the sustainable sanitation service delivery approach, good quality documentation, knowledge sharing and joint learning are important elements of improved knowledge management in the sector. Communities of Practice, on the job coaching, twinning, exchange visits and learning and sharing workshop are possible solutions.

This Knowledge product will help demonstrate that well designed, maintained and regulated on-site and/or decentralized basic needs services complement centralized systems to achieve total sanitation. By taking up case studies where implementation has begun it will bring out the recurring barriers in implementation. The examples of how the

barriers are being overcome in India as well as in other partner South Asian countries will help highlight areas that need further attention by policy makers.

METHODOLOGY

The main steps in undertaking the research and developing the knowledge product will involve the following:

Step 1: Selection of four cities in India for study on practices in on-site and off-site sanitation.

The cities growing at a medium pace have been taken up for study. For this a filter has been used. The first filter involves elimination of all class I cities with population growth rate more than 75% in the last decade (2001 -2011). This is because most of such cities have aspired for a completely sewered system. For this, they are in a better position to garner funds from various sources. Cities with population growth of less than 5% (2001-2011) have also been excluded because of the very slow pace of growth.

Within these cities where efforts on ground have been initiated with respect to improvement of on-site sanitation systems that are affordable, effective and convenient have been chosen.

Attempt has been made to select cases from different regions and States in the country

These cities are Agra in Uttar Pradesh in the north, Kolhapur in Maharashtra (west), and Kochi in Kerala (south). City Sanitation Plans for these cities are available. Another city, Tiruchirapalli (or Trichy) in Tamil Nadu has been chosen to get an alternative perspective, where a different sanitation technology i.e. eco-san toilet system has been initiated at scale.

Step 2: The next steps will involve a literature survey based on secondary information about the sanitation situation in the chosen cities. This will help to understand and analyze the challenges, barriers and opportunities.

Step 3: Stakeholders meeting and formulation of a working groups on various aspects of innovative on-site sanitation solutions (e.g. sanitation systems and technology, institutional and capacity development, finance and economics etc.) with members drawn from the Government, academic and research institutions, multi-lateral and bi-lateral development agencies, NGOs and civil society, sector specialists and consultants. The concept note for the knowledge product will be shared with the working group who can help review the same and provide inputs and guidance required for the study.

Step 4: Further a City-wise diagnostic report on implementation successes, challenges, and ways to overcome challenges would be prepared. Each report will be prepared based on visits to the city and with consultation from stakeholders in each city.

Step 5: Moving ahead, the report will also be supplemented by a brief on the existing situation in each country. Good practices from other South Asian K hub partner countries (Sri Lanka, Bangladesh and Nepal) would be included. This will be done with inputs from all K-Hub teams.

Step 6: Finally, a Knowledge Product on need, ways and means to plan for innovative on-site sanitation solutions, would be prepared, based on the results of study of four cities.

AUDIENCE

The audience for the knowledge product is policy makers and practitioners. The idea has been confirmed with policy makers at the national level (i.e. the Ministry of Urban Development, Government of India) through discussions. It will be confirmed with the practitioners - particularly the four city and State officials after completing step 1 (secondary literature survey).

PEER REVIEW

It will be peer reviewed by ADB and other members of the K-Hub.

REGIONAL PERSPECTIVE

Other K Hub countries will have to contribute the following:

- What is the sanitation situation - in terms of on-site and off-site sanitation systems - coverage with sewerage network and others
- Are there any good practices with respect to on-site sanitation systems?
- If no, why.
- If yes, how successful is it?

The information on the good practice will include the following: Brief profile and context and need of the initiative, before and after situation, timelines (time taken, delays if any and reasons), Project cycle (inception, implementation, post implementation), replicability, scalability and sustainability, peoples participation and institutional structure involved at all stages and lessons learnt.