



Water and Sanitation Program

An international partnership to help the poor gain sustained access to improved water supply and sanitation services

URBAN ENVIRONMENTAL SANITATION PLANNING:

Lessons from Bharatpur, Rajasthan, India

South Asia Region

INTRODUCTION

Through decentralization and directives such as the Supreme Court judgment on solid waste management, local bodies in India are taking on responsibility for an increasing range of basic services. This change brings with it a growing need for better planning to ensure that service delivery is appropriate and effective and to make best use of scarce local resources. This Field Note explains the environmental sanitation planning process undertaken in Bharatpur, the difficulties faced and some important lessons learned for developing viable sanitation services and infrastructure.

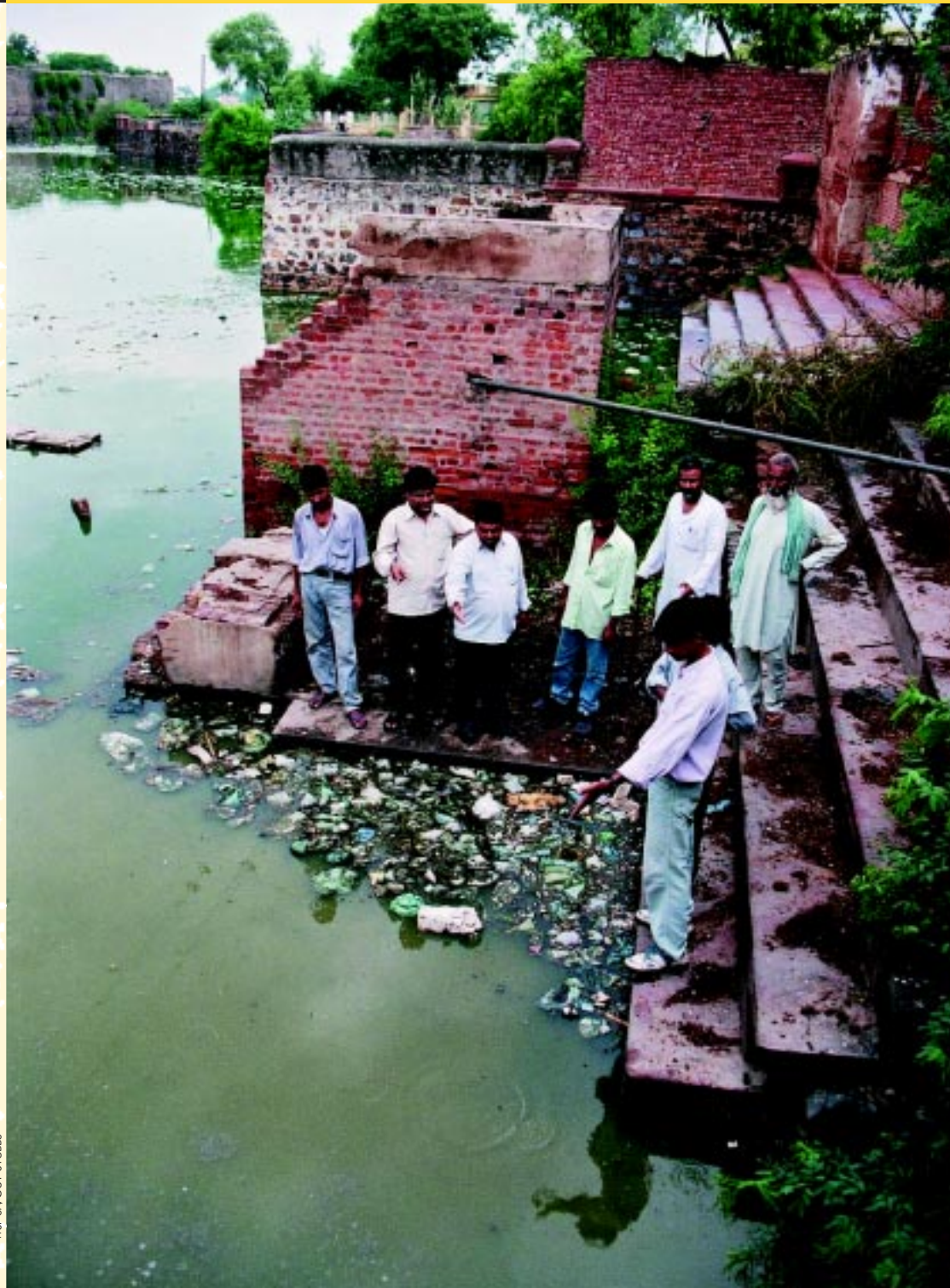
BHARATPUR FACT FILE

(approximate figures only)

Area	50 km ²
Population	200,000
No. of households	30,000
Household latrine coverage	60%
Household water connections	61%
Population reliant on standposts/non-PHED water	39%
Households covered by solid waste management service (secondary collection)	65%

DFID

Department for International Development



The town of Bharatpur, Rajasthan, is predominantly an administrative and service center serving surrounding agricultural districts. It also has an important seasonal tourist trade thanks to its famous bird sanctuary which attracts visitors from all over the world. Originally a fort, it was built on low-lying ground so that two defensive moats around it would flood during the annual rains (officials describe the local topography as saucer-shaped). A town gradually built up around the fort, houses were built over drainage lines, and channels that previously carried fresh water into the inner moat became open sewers. Today the town has a population of 200,000 and Sujan Ganga, the inner moat, is grossly polluted with sewage and garbage, making it a powerful symbol of poor sanitation in the town. Flooding also remains a problem and in some years causes serious damage, especially to the homes of the poor, many of whom live on the most flood-prone land.

In 1998, Bharatpur Municipal Council realized the need for concerted action and decided to develop a strategic plan that would lead to a cleaner environment and

sustainable sanitation services. Sanitation here meant not only private and public toilets but also solid waste management, drainage and sewerage.

The Water and Sanitation Program - South Asia (WSP) in partnership with GHK Research and Training (a British consulting company) agreed to support the municipality in this endeavor through technical advice, training and small-scale funding for pilot projects. This support was funded by the Department for International Development of the British Government and lasted for two years. In early 2000, a Sanitation Development Plan was completed and adopted by the municipal council.

Sanitation Services in Bharatpur

Prior to the planning project, the municipality had no defined strategy for meeting the sanitation needs of the town. There were,

of course, established services such as secondary waste collection, but in the case of drainage, actions were largely ad hoc. Drain cleaning, for example, was generally unplanned and carried out in response to crises as they arose; there was no concerted effort to tackle underlying problems of long-term neglect. This was partly due to the unpredictable nature of government funding; municipal officials never knew the total resources they would receive in a year and when funds arrived, tended to spend them on immediate problems.

A lack of clear priorities was also evident in staff deployment. While the solid waste management service had some 700 sanitation workers (more than double the standard number for a town of this size) there were no staff dedicated to maintaining the problematic drainage network. Similarly, no staff had special responsibility for household and public latrines, even though 4,000 had been constructed over the previous 12 years under a government scheme.

Latrines

There is no water-borne sewerage in Bharatpur; not only cost but also an inadequate water supply and unhelpful gradients would make its introduction very difficult. As a result, only on-plot technologies such as pit latrines and septic tanks can provide safe excreta disposal. Household latrine coverage at the start of the planning project was estimated as follows:

LATRINE TYPE	% OF POPULATION
Twin-Pit Pour-Flush	15
Septic Tank	52
Service Latrine* or Nothing	33
Total	100

* A service latrine is a simple, dry latrine in which feces are deposited onto the ground beneath a squatting hole for daily removal by a sweeper.



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The municipality was in the process of handing over the management of its public toilets to a national NGO to be run in a pay-and-use basis. These toilets served both public areas such as bus stands, and a number of slum communities with small plots. Additionally, the municipality had since the mid-1980s been implementing the Government of India Low-cost Sanitation and Liberation of Scavengers Scheme. This aimed to eradicate ‘scavenging’ (the daily removal and disposal of feces from dry latrines) through the provision of twin-pit pour-flush latrines. In practice, latrines were also provided for households with no latrine at all. Promotion and construction were contracted out to a national NGO.

Solid Waste Management

A municipal refuse collection service was provided but considerable amounts of waste were left uncollected, especially from narrow lanes where vehicles could not pass, and there was widespread indiscriminate dumping. Up to one-third of households received no service, and much waste ended up in the drains and in the Sujan Ganga where hundreds of plastic bags could be seen floating in the stagnant water. There was no official dumping site (land had been identified but not yet purchased) and collected waste was dumped at two temporary sites, one of them next to the bus station.

The solid waste management service was handled by 700 municipal sanitary workers or ‘sweepers’, of whom 280 were permanent staff and a further 420 worked on a contract basis. There were a further 200 permanent posts to be filled. There were both male and female sweepers, with roughly equal numbers of each.

“There is no maintenance-free option for sanitation”

Water Supply

There were more than 16,000 legal house connections in Bharatpur (61% of households) and 75 standposts. There were also some 1,500 illegal connections. No attempt was made to regularize them, though notices had been served for their removal. Though the officially stated provision was 79 lpcd, most households received much less due to low pressure and an intermittent supply, which operated for just a few hours each day. Moreover, the supply was at risk of contamination through poor maintenance and the laying of pipelines in open drains containing raw sewage. (Acute contamination in several locations was later confirmed through independent tests as part of the project.) Unaccounted for water was estimated at 40% and there was considerable leakage from the main supply line. Low tariffs and poor collection meant that only 30% of the funds needed for maintenance costs were recovered — not even enough to cover the wages bill.

The Planning Process

Three factors influenced the project throughout:

1. Municipal sanitation services and a substantial amount of infrastructure already existed in Bharatpur but were not functioning effectively. Solving the town’s sanitation problems depended on improving these services, as well as developing more.

2. Collaborative planning, whereby all stakeholders work together, was an unfamiliar practice and it took time for both government and NGO players to adjust to the new approach. Until explicit endorsement was received from the state, some officials regarded the process as a

purely voluntary activity and declined to take part.

3. Municipal capacity to deliver effective sanitation services was low even though Bharatpur had nearly three times the standard number of sanitation staff for a town of this size. The capacity-building needs were substantial.

The planning process began with a situation analysis involving stakeholders from government agencies, local NGOs and the community. Regarding the latter, a consultation exercise by local NGOs revealed that:

- Bharatpur residents were not satisfied with current municipal services
- many regarded water supply and toilets as their main problems, not the polluted moat
- people were willing to accept some responsibility for street cleanliness
- many people in middle-income areas would be willing to contribute to better services, either through increased charges (middle-income areas) or labor (low-income areas).

The situation analysis culminated in a planning workshop in which sanitation problems and their root causes were analyzed. Participants concluded that the root cause of the town’s problems lay not so much in a lack of funds as in poor planning and management. The analysis also showed that the various components of sanitation are interconnected, with deficiencies in one area having a knock-on effect on the others. Pollution of the Sujan Ganga resulted from poor solid waste management and unsafe excreta disposal; uncollected domestic waste and human excrement was deposited in open drains, causing blockages and ultimately entering the moat. This pollution needed to be controlled at source through greater use of sanitary latrines and more efficient waste collection. Repairs and improvements to the drainage network were also needed, along with better systems for routine maintenance and cleansing. The municipality struggled with

the last issue, being reluctant to recognize that there is no maintenance-free option for sanitation.

These city-wide problems could only be resolved through a city-wide strategy that took into account all aspects of sanitation and harnessed the resources of every stakeholder, including service users.

Key Outcomes of the Planning Workshop

1. Sanitation Co-ordination Committee

A Committee was established with representatives from the municipality, line departments and two local NGOs to oversee the production of the sanitation plan, and co-ordinate the inputs of each participating agency. The Committee met regularly throughout the planning process and continues to do so; it has proved to be an effective vehicle for the co-ordination of sanitation services.

COMMITTEE MEMBERS

President,
Municipal Council
Municipal Health Officer
Two local NGOs
(ACORD and Lupin)
Deputy Town Planner
Superintending Engineer,
PHED

2. High Priority Tasks

At the first planning workshop, eight key tasks were assigned to specific agencies. The purpose of these tasks was to help the Committee analyze specific sanitation problems and begin piloting new and improved methods of service delivery. A sanitation development plan could then

TABLE 1: INITIAL TASKS

Drainage:	1) Comprehensive survey of the town to check levels
	2) Thorough cleansing of main drains
Solid Waste Management:	3) Review of the existing solid waste management system in one colony
Latrines:	4) Technical and social review of the existing low-cost sanitation scheme in one or more colonies
	5) Introduce promotion of low-cost sanitation, including hygiene education
Community Involvement:	6) Social/technical mapping of the city to identify areas where the sanitation needs are greatest
	7) Develop proposals for community involvement for a future comprehensive sanitation program
Finance:	8) Start collecting user contributions for a low-cost sanitation scheme in accordance with the state policy

be developed on the basis of sound, tested approaches. The full list of tasks is shown in Table 1; some of the more notable activities are discussed here.

Drainage Survey

A basic constraint was inadequate management information — especially reliable maps. Various maps were held by different government agencies but none gave reliable information on the drainage network and levels, which was essential for assessing rehabilitation needs. A local contractor was therefore hired to survey the town and produce a full set of accurate maps.

Review of the Low-cost Sanitation and Liberation of Scavengers Scheme

This scheme was operated in a supply-driven manner, with the NGO contractor

THE VALUE OF PILOTING

It would be a mistake to make city-wide changes in services without testing them first to see if they will work, are affordable, and that sufficient skilled staff are available for their delivery. Piloting on a small scale (for example, one or two wards) is therefore advisable.

Through intensive monitoring and by learning from mistakes, a design or approach can be gradually modified to make it more effective. Piloting can thus prevent money being wasted on large-scale systems that do not work.

GUIDING PRINCIPLES OF THE SANITATION DEVELOPMENT PLAN

- ▶ Pollution of Sujan Ganga can only be reduced, and public health improved, through increased use of sanitary latrines and better solid waste management. Without this the city drainage network cannot be revitalized.
- ▶ The achievement of a clean and healthy environment is a long-term goal that can only be achieved in **small steps**. The plan therefore identifies priorities for action over the next three years to work towards that goal.
- ▶ Since resources are limited, priority will initially be given to low-income wards where sanitation problems are most acute and community needs greatest. Criteria will therefore be adopted for the prioritization of wards on the basis of both social and technical factors.
- ▶ Since many sanitation problems result not from deficiencies in management and maintenance, great emphasis is placed on the operation and maintenance of services that already exist.
- ▶ The municipality will seek the co-operation and support of Bharatpur residents through a more participatory approach to service planning and delivery. NGOs will play a key role in facilitating this.
- ▶ All agencies concerned with sanitation and water supply in Bharatpur should respect the framework and priorities established by the plan, and reflect this in budgets, workplans and staffing arrangements.

working through a list of houses 'needing' a sanitary latrine. The contract sanctioned by the state did not require a substantial promotional component nor any hygiene education, and users received little advice on operation and maintenance requirements. Also, despite state rules requiring a user contribution, the latrines were provided free to users apart from a token payment; the contractor even dug the pits.

The latrine design had sealed pit walls due to the fear of pit collapse in sandy soils, but this minimized the infiltration of wastewater into the ground. Many users in any case converted their latrines into quasi-septic tanks without drainage fields or used both pits simultaneously, while some built no superstructure and left the latrine unused. Open defecation remained widespread — especially by children.

The municipality did not monitor implementation closely, partly because it felt limited ownership of the scheme, which operates under state rules, though the municipality entered into a contract directly with the implementing NGO. Following a review (which involved the contractor), it was agreed to adopt an

improved design (with honeycombed brick walls) for the next phase of work, to pay greater attention to supervision and to begin in one ward only so that an effective approach could be developed with greater user participation.

Solid Waste Management Pilot

A review by the NGO ACORD revealed a demand for primary collection services, that is, collection direct from the house. Following the release of a Supreme Court judgment, this became an obligation for all Class 1 towns in India (meaning towns with a population of more than 100,000). In response, the Sanitation Committee launched a pilot project in one ward, with the objective of developing a primary collection service that was paid for by the users and fully integrated with the municipal secondary collection and disposal service. It would also include local composting of organic waste. ACORD and the municipality worked together to develop the pilot, which proved a great challenge due to demands from private sweepers for fees considerably higher than users were willing to pay.



A local NGO set up a solid waste primary collection pilot project.

Despite the many setbacks, the pilot succeeded in developing a viable model for primary collection; in addition, a new handcart design was adopted with separate containers for organic, inorganic and hazardous waste, and educational materials were developed for promoting responsible waste disposal. It appears that a neighboring ward is now interested in replicating the scheme.

Review of Municipal Staffing Arrangements

The municipality agreed to revise the deployment of sanitation staff to reflect the sanitation needs of the town. No new staff were required, rather the responsibilities of existing sanitation workers were rationalized and clarified, with the full approval of both, the state government and the municipal council. The new structure would include:

1. A drainage team to monitor the performance of the drainage network; implement an annual program of planned maintenance (using contractors where necessary); identify problems and ensure rapid resolution; and oversee a major program of repairs and rehabilitation.
2. A low-cost sanitation team to co-ordinate the planning and implementation of the next contract for latrine promotion and construction.

The Sanitation Development Plan


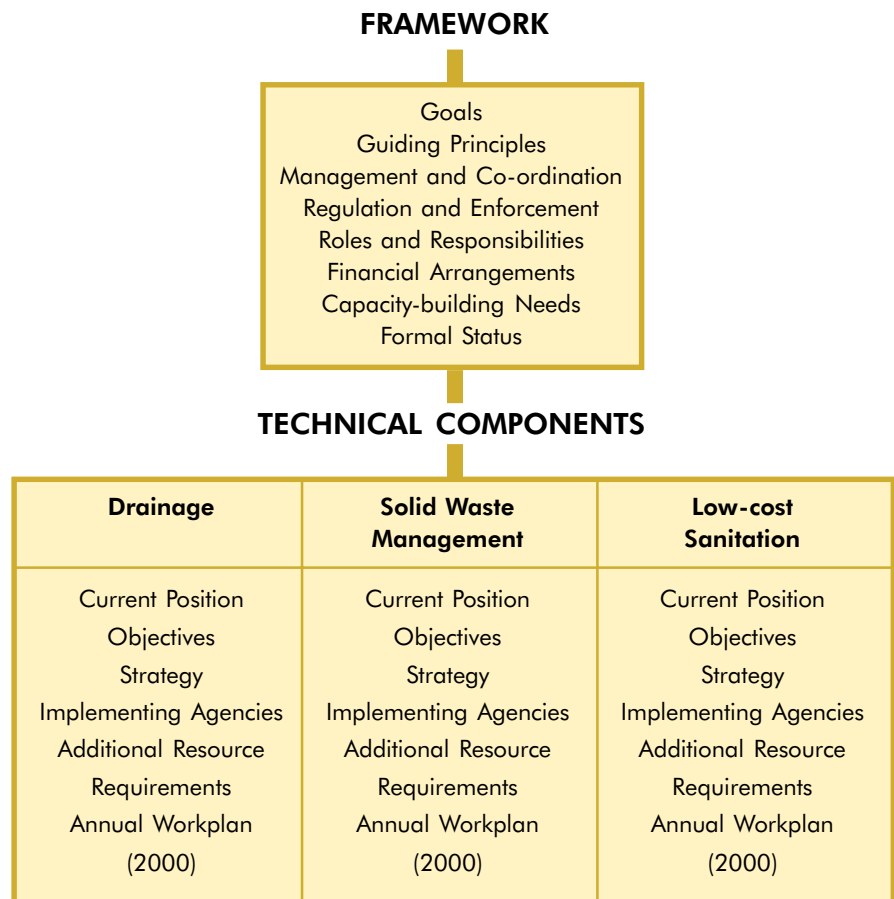
 A Sanitation Development Plan for Bharatpur was completed in early 2000 and has been formally adopted by the municipality, which is currently seeking funding for components that cannot be financed from existing resources. The structure of the plan is illustrated in Figure 1. Note that *it is not simply a list of engineering works*; rather it establishes a framework for


FIGURE 1: BHARATPUR SANITATION DEVELOPMENT PLAN 2000-2003



service delivery that sets out the roles and responsibilities of all players. It not only lists what will be done but *how*, and aims to ensure proper co-ordination of the inputs of each player.

Within an agreed operating framework, the plan sets out objectives and strategies for each aspect of sanitation, and allows for the production of new workplans each year. The plan has a three-year vision, but this does not imply that the sanitation needs of the town could all be met in such a short period. Planning is a continuous process and the document should be reviewed and updated regularly, since needs and priorities may change as the town moves closer to its goal of a clean and healthy living environment.

Lessons Learned

 The Bharatpur pilot has shown the value of city-wide strategic planning, collaboration between all stakeholders and the use of pilots to develop effective approaches to service delivery. Such a process is, however, quite different to standard municipal practice and for widespread adoption state governments need to incorporate such practices into municipal routines. Unless the process is made official, some departments may not take part.

The pilot also highlighted the acute need for capacity-building of government staff if they are to fulfil the managerial



A consultative meeting in progress.

and technical responsibilities that come with decentralization. The challenge of developing good urban sanitation is enormous and the scale of the problems overwhelmed some officers in Bharatpur. NGO skills, too, need strengthening if they are to become effective partners in service delivery. Not only do they need skills in community mobilization, they also need to understand the systems under which municipal services operate.

The Sanitation Co-ordination Committee proved a valuable mechanism for co-ordination, developing productive working relationships between agencies and linking community-level initiatives to city planning. Through the Committee, Bharatpur began to make better use of its limited resources. Recognition of the Committee's role was, however, dependent on linking it formally to the established municipal structure. Eventually it was given a role as advisor to the statutory sanitation committee.

Lastly, the pilot showed that sanitation development could only be achieved in small steps, since local capacity was limited and the solutions to some problems were not obvious.

The challenge now is for Bharatpur to implement the development plan. For this it will need to find some additional resources, though most of the necessary



work is already funded. However, much of the activity in the plan can be funded from existing budgets and ongoing government schemes; only the rehabilitation of the drainage network needs substantial new funding.

Advice to Other Municipalities

1. Establish a framework for collaborative planning

Bring together all relevant agencies to agree on a common agenda; harness the

resources within a common structure such as a Sanitation Co-ordination Committee.

2. Agree on the process to be followed

The process followed in Bharatpur can be summarized simply as:

**understand problems -
develop solutions -
plan city-wide**

This agenda is not as obvious as it first appears. Municipalities tend to start their planning at the third stage, simply making a 'wish list' of desired works. It is, however, vitally important to understand the causes



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of sanitation problems, and develop viable solutions *before* producing a development plan.

3. Incorporate existing government schemes and make best use of them

There are several government schemes supporting urban sanitation and infrastructure development. These include the Swarna Jayanti Shaharni Rojgar Yojana, the National Slum Development Program, the Low-cost Sanitation and Liberation of Scavengers Scheme and the Accelerated Urban Water Supply Program. They operate under government rules but can nevertheless be brought under the umbrella of a city-wide strategy; the resources they offer will help the municipality achieve its own goals.

4. Accept that the ideal solution may not be available

It may not be possible — for both technical and financial reasons — to provide the ‘ideal’ infrastructure or services such as water-borne sewerage. This does not, however, mean that the

municipality can do nothing. Following the small steps approach, intermediate solutions can be developed (such as on-plot latrines) that will move the town closer to the ideal solution. Modest investments now do not preclude further investments in the future.

5. Recognize that there is no maintenance-free option

Sanitation infrastructure needs regular maintenance. This should be reflected in budgets, operational systems and staff deployment.

6. Recognize that sanitation is also about behavior

Sanitation services can do little to improve the local environment or protect health unless people use them responsibly and adopt basic standards of hygiene.

Basic hygiene education is therefore essential. Latrine construction, in particular, should be accompanied by the promotion of latrine use and hand-washing and education in latrine maintenance.

It may be necessary to look outside government for agencies with appropriate knowledge and skills in this area.

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