

**'Sanitation – a problem of scale'**

by

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## Background

The number of people lacking access to sanitation services has been increasing over the past decade and stands at 2.4 billion people, more than double the 1.1 billion lacking access to safe water. However, following the recent World Summit on Sustainable Development, there is now a global commitment to halve by 2015 that number not having access to adequate sanitation.

The challenge is to ensure the sustainability of effective, efficient and equitable sanitation services. This requires the development of:

- effective policy supported by appropriate regulation;
- programmes and strategies that address institutional arrangements;
- financial resource allocation and advocacy; and
- implementation strategies that take full account of hygiene and water needs, sustainable technologies and appropriate training of decision-makers and field staff.

## Water, sanitation and health

The safe disposal of human excreta, coupled with basic hygiene practices such as handwashing with soap are key to breaking the cycle of disease transmission for diarrhoea, which is a major cause of death and illness, particularly amongst children under five. Diarrhoeal illness is responsible for over 3 million deaths each year, whereas around 3000 people annually die from cholera. In general, for reducing water- and sanitation-related diseases, good sanitation and the availability of an adequate quantity of water for washing, bathing and cooking are more important than the quality of drinking water.

## Why is sanitation such a problem ?

Good sanitation can be achieved remarkably simply; for example, the basic pit latrine comprises a pit, a cover slab, and some form of superstructure for privacy. It is hardly rocket science. So why is it that we have such an alarming lack of success in global terms? The following are contributory factors.

***Demand*** for sanitation is much less clearly expressed than for other services such as water and power - to the extent that the level of demand for the latter can be quantified. Peoples' awareness of the importance of sanitation can be very low.

***It's not just physical infrastructure*** which delivers the benefits of sanitation. There are key software supporting interventions in relation to hygiene behaviours without which there will be little, if any, health benefit. Sanitation has important social, cultural and religious dimensions which have to be taken fully into account.

***Institutional problems*** abound, largely because there is rarely a clear 'institutional home' for sanitation; this leads to difficulties with policy development, programming, and implementation. An important consequence is that even where demand is created, problems can arise in ensuring that there are adequate supply side mechanisms (for example, in relation to micro-finance, technology, appropriate levels of support) to respond to the demand.

***The household is at the centre.*** The focus has been unbalanced, with too much emphasis on the infrastructural issues – such as mains sewerage. Policies and programmes need to focus on the household in relation to the articulation of latent demand and in looking for affordable solutions. This accords with the current thinking on the need to put consumers at the centre of decision making.

## National policy for sanitation

## **The current state of policy**

Sanitation has been given low priority during the formation of national policy, often neglected by governments in favour of focusing efforts in addressing national water supply needs. A recent desk review carried out by the Water and Sanitation Programme of the World Bank, Nairobi, of Poverty Reduction Strategy Papers (PRSPs) covers 10 countries in Sub-Saharan Africa. Of these, 7 countries make no reference at all to sanitation in interim PRSP documents, and only 3 countries make limited reference as follows:

- Kenya –action plans for rural sanitation;
- Rwanda – capacity building of local authorities for urban sanitation; and
- Uganda – development and implementation of a national strategy in hygiene, sanitation and communication in the country’s Poverty Reduction Support Credit.

A general review of national policies (EHP, 1999; Elledge et al, 2002) has identified that countries, such as South Africa, that have developed strong national sanitation policy, are very few in number (see Government of South Africa, 2001). Even as other countries undergo sector reform, sanitation remains a low priority in the overall process.

In global terms, there is a clear gap here. National policies are a tool for both articulating need and identifying the importance of that need. They can also be mechanisms to stimulate action at national and local levels, helping to define priorities and objectives that lead to action. Without a supportive policy framework, successful activities cannot be readily scaled-up to meet the much broader needs in the country as a whole.

## **Knowledge gaps**

There is little empirical evidence of the success of national policies; consolidating information on the following would be relevant both nationally and globally.

- Where and how is sanitation addressed in a nation’s policy framework?
- Does the policy identify a lead agency / lead agencies to act as the “institutional home”?
- Does it account for the range of sectors (including water, health, housing and education) that impact in the water and sanitation sector ?
- Does it consider the budgetary implications and legal framework required to support the policy?
- What and where are the levels of support to implement the requirements of the policy?
- Are matters of health, environment, gender, children, people with disabilities, etc. considered in the policy?
- Is the role of regulation and monitoring identified within the policy?

## **Institutional frameworks**

Lack of sound institutional frameworks is the root cause of many failures in service delivery – and a major cause of failed sanitation provision. Such institutional weakness often results from the lack of a clear institutional “home” for planning and management, together with limited capacity within institutions to co-ordinate and manage initiatives. The problem is illustrated by the not-atypical case of Guyana (Box 1), a country with a relatively small population of less than 1 million. With weak frameworks and poor management co-ordination, declining services result in poor cost recovery. With limited resources to maintain and improve services, investments ultimately fail to address current and future demand (WELL, 1998).

With no clear “home” for responsibility for implementing initiatives, accountability and regulation is difficult to establish and monitor. With current trends to promote decentralised approaches and maximise demand responsive approaches, support is required at all levels to identify roles and responsibilities within the new organisational

structures. As the role of government moves from being the implementer (provider) of services to that of facilitator of an ‘enabling environment’, NGOs and other organisations take on the role of intermediary between the government and community (Saywell and Cotton, 1998). For such an enabling environment to be effective requires a high level of commitment (including personal interest) of government officials, supported by appropriate guidelines and advocacy tools for all government staff. A clear institutional framework enables positive lessons to be adopted into practise, rather than remaining isolated occurrences.

### **Box 1. Roles and responsibilities for sanitation in Guyana**

- Ministry of Housing and Water (MoHW) is responsible, through Georgetown Water and Sewerage Corporation (GWSC) and Guyana Water Authority (GUYWA) for water supply. GWSC is responsible for the sewerage system in Georgetown. GUYWA is responsible for sanitation outside of Georgetown but the utility focuses entirely on water supply. The MoHW is also responsible, through the Central Planning and Housing Authority (which includes the Squatter Regularisation Unit), for aspects of planning and environmental sanitation.
- Ministry of Local Government and Regional Development is responsible, through municipalities, Regional and Neighbourhood District Councils, for land use planning, maintenance of non-agricultural drains, sanitation and solid waste disposal.
- Ministry of Health (MoH) is responsible for monitoring the quality of drinking water and regulating the construction of sanitary facilities for new housing developments, through the Central Board of Health. The MoH’s Environmental Health Unit carries out limited on-site sanitation promotion in the hinterland and Environmental Health Officers in the Regions are responsible for advising on and regulating private on-site sanitation facilities and other environmental sanitation issues. The Health Education Unit is responsible for health education and hygiene promotion activities.
- Ministry of Education is responsible for school sanitation.

(WELL, 2000)

### **Knowledge gaps**

There are many examples of poor, fragmented institutional arrangements and unfortunately few cases where the successful “institutionalisation” of sanitation exist. Where substantial progress has been made to this effect, such as in South Africa, is it important that lessons are learned from experience and applied to other such initiatives – both within the country and beyond its borders.

### **Programmes and impact**

One of the key problems is that we know very little about how to set up effective programmes for sanitation – as evidenced by the notable lack of programmes worldwide which have delivered sustainable sanitation improvements on other than a pilot scale. Different approaches to sanitation provision have been developed, tried, tested and modified over the years. Yet the basic problem still remains; very few sanitation programmes have achieved any sense of “going to scale”. While a vast number of individual projects and small-scale programmes may have each resulted in the construction of hundreds of latrines, very few have achieved the construction of the thousands, let alone millions, of latrines needed to address the global problem. Exceptions would include the Orangi Pilot Project in Karachi and the Mozambique National Programme for Low-cost Sanitation. The latter resulted in the construction of 230,000 improved latrines from the early 1980’s to late 1990’s (Saywell and Hunt, 1999).

Policies guide the development of programmes and therefore need to be translated into a set of effective procedures and rules which can be applied at the local level. Programme development also depends on adopting a sound approach to planning, which needs to be:

- Strategic – sector-wide and inter-sectoral planning, integrating institutions with technology and considering environmental implications.
- Co-ordinated - considering incentives linked to the quality of service, and realising that sanitation also impinges on different sectors including health and education.
- Demand-responsive – involving beneficiaries, paying particular attention to women and marginalized groups, and allocating sufficient time to effect this. Issues of demand generation are considered later.

This is extraordinarily difficult to achieve. Suitable planning tools and knowledge of appropriate technologies is essential for success, but is largely missing.

## **Knowledge gaps**

Lessons from successful approaches that address the scale of the problem, such as those adopted in Mozambique, are poorly documented and not shared with the broad range of stakeholders. Overall, there is little understanding of how to incorporate initiatives at the household level into a wider planning and support framework. More specifically:

- What is the level of knowledge and understanding of different approaches to sanitation?
- Which approaches have been successful and which have failed?
- What lessons have been learned (from successes and failures) and how have they been applied? Have approaches been transferred from the rural context to the urban context or vice-versa?

## **Role of the private sector**

### **What form does this take ?**

Increased involvement of the private sector for sanitation service provision, particularly in urban environments is being widely advocated. We have to take care in drawing parallels with the water sector, particularly as sanitation tends to be bundled up with water when developing the possible options for PSP. The water supply sector has experience of private sector options ranging from contracting out, through to complex arrangements such as concessions. Where there are fully networked sewerage systems for sanitation, these contractual models can also be applied. However, this generally assumes a level of development more appropriate to a middle income country such as Argentina.

Technology issues arise and we need to distinguish between ‘networked’ services which require supporting infrastructure which is external to the household and ‘non-networked’ services which are located on the house plot. Systems of water supply distribution pipes are an example of networked infrastructure; the household septic tank for excreta and wastewater disposal is an example of on-plot or ‘non-networked’ infrastructure. For the majority of households in low income countries, the solutions to sanitation in both rural and urban areas are likely to be on-plot i.e. non-networked. This is quite different from urban water supply, where we are looking primarily towards networked supplies. Thus water supply and sanitation programmes are not necessarily comparable; there are implications about how we deal with this institutionally and in the context of involving the non-state sectors.

Thus, we need to recognise that sanitation is a service which is substantially non-networked and for which institutional responsibilities are largely fragmented and the involvement of the private sector, government and civil society needs to focus primarily on the household. This holds for both the urban and rural contexts; for example, the Indian city of Cuttack has a population in excess of 400,000, but in 1998 there were only 25 registered connections to the mains sewerage system. Even accounting for the many illegal connections, the majority of the city use non-networked sanitation such as septic tanks or pit latrines which they have constructed entirely from their own resources.

The picture of the private sector which emerges in support of the population is characterised by local masons and shops supplying sanitary ware and building materials. A further important implication is that artisans act as a key source of information for householders regarding the type and construction of their latrine. The Mvula trust in South Africa has recently recognised this through the production and dissemination of simple guidance aimed at artisans.

## Knowledge gaps

There is little information available on the *interface* between i) service providers (supply) and consumers (demand) and ii) different types of service providers operating within the same programme (e.g. local community groups, entrepreneurs and official providers).

- What options and arrangements for service delivery interface have been tried? What is the degree of success and what are the implications?
- Are appropriate guidelines and other “how-to” resources available?
- What opportunities are there for improving the quality and demand for training, to increase capacity in the sector?

## Role of NGOs and CBOs

Whilst there is widespread advocacy for the increased role of NGOs and CBOs generally, evaluation of successes and failures with respect to sanitation programmes is uncommon. As part of a wider consideration of the impact of their water and sanitation programmes, WaterAid has documented and evaluated experiences in Sierra Leone, Nepal, Kenya, Uganda, Ghana, South India, Tanzania, Ethiopia, Zambia, Bangladesh and Mozambique (WaterAid, 2001). They conclude that partnerships involving NGOs can be strengthened through involvement with local government - with accountability as the key concern.

There are reports of successful initiatives involving NGOs and local government. For example, in Pune, India, successful cooperation provided sanitation services in an urban settlement. Thirteen toilet blocks were constructed in 1999 with the active involvement of local residents in design, construction, provision for maintenance and incorporation of space for community activities. The difficulties encountered are typical, including the need to meet official implementation schedules and cope with bureaucratic delays while working for (and remaining acceptable to) local communities. Cotton, Sohail and Talyer (1998) report that a department of state government in Sindh, Pakistan with responsibility to regularise and upgrade slums (including provision of sewerage) initially entrusted implementation to urban government. Progress was slow, the quality of the work was poor and there were problems with cost escalation. Changes were instigated so that the local “street” sewers were financed and constructed by local people themselves with technical assistance from a NGO, the Orangi Pilot Project, who are paid for community organisation and technical guidance by the government department.

Other cases identify weaknesses; for example, owing to intensive pilot-type interventions, NGO initiatives may not always be replicable, and their role in empowering communities can also be limited. There is a conflict between achieving targets and adopting a process based and sustained approach and concerns have been expressed on the power-brokering role of NGOs.

Whilst successes in implementation are important, a key issue is the sustainability of benefits. In a report on the operation, maintenance and sustainability of services to poor urban communities in South Asia (which includes sanitation), Sohail and Cotton (2002) note that difficult questions remain about whether the scaling up of community based approaches (including cases with NGO support) are realistic. There are numerous isolated examples of good practice where community groups are maintaining the services in their neighbourhood (although often in response to a crisis resulting from a malfunction), but there was no evidence of community based approaches for O&M being taken into the mainstream and rolled out across a city. However, the report notes that at the household level, users were making small repairs as there is a strong incentive to rectify faults to on-plot facilities. This is significant, as we note that on-plot solutions to sanitation provision are likely to provide the solution for the majority.

## Knowledge gaps

The key issue is that there is a lack of evidence as to how to develop successful programmes on a large scale in partnership with NGOs, because there are so few sanitation programmes which have achieved widespread coverage (whether involving NGOs or not). Attention needs to be paid to the nature of NGO involvement, as this varies from

facilitating and supporting households and communities to improve their sanitation, to acting as contractors for direct construction of latrines.

## Stimulating demand

For many years, supply-driven sanitation programmes have left communities with unwanted or unsustainable facilities, though a lack of consultation with users. These facilities can become at best abandoned structures, but at worst sources of additional health risks and a constant reminder of unfulfilled expectations.

A demand-responsive approach is seen as a vital element to success in water and sanitation service provision. However, the demand for sanitation services is generally less than that for water. Even where demand does exist, it is not always clearly expressed – it may be latent or uninformed. People do not necessarily associate adequate sanitation and improved hygiene practices with health benefits. In some cases, health is very low on the list of reasons people give for desiring improved sanitation, ranking lower than privacy, status and safety for women.

This lack of explicit demand may be a contributory factor to the marked lack of success of many supply-driven sanitation projects and programmes which have relied to a greater or lesser extent on the use of across-the-board subsidies. One of the main problems with these approaches is that large numbers of latrines which are provided are neither used nor maintained. Relatively little is known about the best ways in which to stimulate demand which leads to sustainable outcomes.

There is currently considerable interest in social marketing approaches which put people at the centre of sanitation provision, as consumers. Carefully defined target audiences are given targeted messages, to market a product or behaviour.

- Marketing a product is generally used in sanitation promotion programmes, to market say latrines or components (e.g. ventilation pipes) and services (e.g. pit emptying).
- Marketing a behaviour is used in hygiene promotion, to encourage safer practices (e.g. handwashing).

Social marketing combines both approaches to create and satisfy a demand, through the provision of adequate services and appropriate hygiene practices.

### Box 2. Sanitation promotion in India

During six months in 1997-98, WaterAid India's rural sanitation programme underwent a significant change in demand for latrines, following the adoption of sanitation marketing and hygiene promotion initiatives. The result was a 20-fold increase in the demand for latrines to be built, compared with earlier years.

*From WSP/WaterAid Field Note, Marketing Sanitation in Rural India, WSP, March 2000*

There remains very limited experience of the use of social marketing for sanitation promotion with little documented evidence of its success. Social marketing needs to address different market segments, by nature being very audience- (and therefore location) -specific. Any approach taken needs to be adaptive, not prescriptive to account for differences in practices relating to culture, religious belief, and so on.

### Box 3. About toilets and televisions.

What's the difference between sanitation systems and a television ?! Apart from the obvious, they are conceived and designed in totally different ways.

Televisions are designed and *marketed to a price*; the designers and manufacturers understand precisely the market for particular models of their product. Cheap ones, expensive ones - they design and produce televisions to suit particular segments of the market.

On the other hand, sanitation systems are *designed to a specification*; public health engineers decide what is needed, specify the requirements and then obtain the price through a competitive bidding process. This ensures the best value for money, but it has not taken account of what the user can afford or is prepared to pay.

So whilst we may get a very competitive price for a sewerage system, sewerage is very expensive and its price may be unaffordable to the potential users. The actual costs to the users may be so great that only the very well-off can afford to connect to the system. If we want to bring basic sanitation in to the realm of the poorer in society we have to design sanitation systems with a price in mind, not a specification.

## Knowledge gaps

Further information and experience to support promotional activities is required that considers mechanisms for encouraging behaviour change as well as procedures for consultation and decision-making. There is only limited information that addresses:

- What sanitation promotion initiatives have been used and with what degree of success?
- How have issues such as the high cost of promotion initiatives and the need for situation- / location-specific initiatives been addressed?
- What “selling points” have been successful, e.g. implications for safety, privacy etc ?
- As promotional approaches to sanitation generally target the individual or family group to stimulate behavioural change, lessons can be learned from the success of promotional approaches used in relation to health and hygiene.

## Supporting demand

Where demand is created, raised, or made explicit as a result of a sanitation promotion programme, it is essential that the supply side is geared up to satisfy the demand. This means that appropriate technical options need to be available at the right price with associated access to finance or credit.

## Cost recovery and access to finance

An important constraint to the householder is access to affordable finance. Poor households do not generally have access to finance through standard commercial means, so identifying appropriate and innovative methods of ensuring fair and sustainable access to finance is key to overcoming this.

### Box 4. Micro-financing sanitation provision

#### General rules of micro-financing

- Financing scheme is based on local demand, with appropriate systems in place that match understanding and capabilities.
- Cost recovery is essential for sustainability.
- Aims of the financing organisation must be clearly defined.
- Keep administration and collection systems simple!
- Regulation should be in place – ideally through government agencies.

*Adapted from WELL Fact Sheet, Micro-credit for sanitation, WELL website, [www.lboro.ac.uk/well](http://www.lboro.ac.uk/well)*

Financial constraints of an intervention are a more common cause of failure than a break-down in the installed technology. To achieve full sustainability, it is often argued that all costs should be recovered from users. This is not the goal of demand-responsive approaches – which do however seek to ensure financial sustainability for services provided. Plans should seek the recovery of operation and maintenance (O&M) costs from users as a minimum, ensuring the responsible institution has the strength to carry out this role. Options for capital financing include loans, grants, taxes, user contributions and the private sector. Financing for O&M is often neglected, generally coming from user payments in cash or kind. Past experiences of cost recovery have been mostly unsuccessful – particularly in the area of urban environmental sanitation provision (Kalbermatten, 2000).

The affordability of an intervention needs to be assessed for each case, taking into account capital and recurrent costs, levels of willingness and ability to pay, poverty levels and any existing subsidy policy. Achieving cost-recovery, while protecting the poor and most vulnerable, is a major challenge facing project sustainability. Mechanisms that provide support to the poor include initiatives such as micro-financing, savings clubs and revolving loans.

Cost recovery mechanisms may include cross-subsidies, external subsidies or incentives<sup>1</sup>. There are problems associated with all mechanisms, which are generally hindered by unreliable billing and collection, and little use of effective sanctions for non-payment (Kalbermatten, 2000).

So what should be subsidised? Whilst this remains a subject for debate; as a general principle for sanitation, it is advisable only to subsidise that for which nobody else will pay. This means that the cost of demand generation (marketing), hygiene promotion and other support mechanisms should receive subsidies ahead of payments made to cover a proportion of the cost of latrine components.

### **Knowledge gaps**

The full costs borne by poor households to support sanitation interventions are not well understood. Contributions are made not only in money, but also through supply of labour and materials. Accessing finance is a major barrier to user participation in cost-sharing initiatives.

Areas of finance that remain poorly documented and understood include:

- What are the experiences of supporting user/community access to funds – through initiatives such as revolving funds, savings clubs, material loans, micro-financing and credit schemes?
- What innovative measures to ensure fair and sustainable access to finance are available?
- What are the cost saving associated with demand responsive approaches? Do householders feel the benefits and what is an acceptable level of financial benefit versus the need for other inputs (labour, management responsibility, other time inputs)?
- How effective and sustainable are national subsidies – both in the rural and urban context? How can / should they be applied at the local level? Do people receive the funds allocated?

### **Sustainable technology**

An appropriate technology is based on the provision of an effective, equitable, sustainable, efficient and replicable service. There is a high risk that a programme may become unaffordable through insistence on standards which have little bearing on the actual performance of the sanitation system. A good example of this is the latrine superstructure, which need not be built to the high standard required by some programmes. Tools to help with technology selection do exist. However, where these are available, they are commonly aimed at an audience of engineers, planners and designers, not at the user.

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<sup>1</sup> Use of incentives may involve the government financing service providers for achieving wider national objectives such as environmental protection, increased tourism, etc.

Most on-plot systems have the advantage of being relatively simple; the householder is also responsible for operation and maintenance and there are few residual responsibilities for local institutions, as compared with networked infrastructure.

Demand for sanitation may be suppressed by concerns over costs of available technologies. These concerns can be founded on a limited choice being made available, or from incorrect information and perceptions, which prevents people from making informed choices (Saywell and Cotton, 1998). Knowledge is lacking not only in relation to the range of technologies available in general, but also in relation to what *lower cost* technologies are available – including options for refurbishment and upgrading of existing facilities. A next-step technology approach to sanitation improvement needs to be more widely adopted, to encourage maximum informed choice.

#### **Box 5. Limited technology choice in Mozambique**

The National Programme for Low-cost Sanitation in Mozambique of the 1990's adopted the technology of a domed slab placed over a pit for peri-urban sanitation provision and a small square slab to upgrade traditional rural latrines. While the limited technology options enabled rapid, well managed construction of latrine components, the restriction limited options for up-grading existing and new latrines in a demand-responsive manner.

*Saywell and Hunt, 1999*

Key technology issues in relation to programme development include:

- Do policies require the adoption and application of appropriate levels of service?
- Are standards adapted to suit the local situation?
- Are available technologies appropriate to user needs, considering affordability, needs of special groups, maintenance requirements, customs etc?

#### **Knowledge gaps**

While many options for sanitation interventions are available, known to sector specialists and well documented – from latrine slabs to innovative urban sewerage systems – dissemination to the various target audiences including decision makers, planners and householders is badly lacking. Information on technology options should deal with the implications for overall cost, appropriate management arrangements, gender and cultural aspects, operation and maintenance needs, and environmental impacts. A subsidiary issue relates to assessing the risks associated with different technologies, for example excreta reuse and composting.

#### **Participatory approaches**

User participation is an essential element for supporting a demand-responsive approach. Supported by an enabling environment, participation enables accountability of all stakeholders and greater sustainability of sanitation initiatives.

Whereas for water supply schemes a participatory approach needs to focus at the community level, participation in sanitation provision needs to address the household as a key unit of participation. A careful balance is needed between sufficient participation to encourage buy-in and ownership by households, while avoiding placing excessive burdens on individuals. Alongside this, transparency in the programme is required to avoid manipulation or dominance by elite groups that may exist in the community.

Participation is aided by the communication of clear information and messages, based on an understanding of user perceptions. For example, users may want to see immediate benefits before being willing to participate.

#### **Concluding remarks: questions of capacity**

Lack of capacity may turn out to be one of the largest stumbling blocks in the way of achieving the Millennium Development Goal for sanitation. The widespread advocacy of alternative approaches involving, for example, decentralisation, becoming demand responsive etc raises questions as to how soon capacity can be developed to support

governments to operate with the flexibility, transparency, partnership-approach and degree of knowledge required for success. There is a strong need for effective and appropriate capacity development, both addressing the needs of existing decision-makers through supportive training and ensuring the effective education of soon-to-be planners, technicians, and other decision-makers through appropriate curricula development.

Moves towards increasingly decentralised delivery of both water and sanitation services create new challenges and difficulties which need to be addressed both at policy and programme level. In some cases local government has neither the authority nor the capacity to undertake fundamental management tasks. For example: there are situations where local districts are unable to issue the simplest of contracts to NGOs; and we encounter proposals for complex contractual mechanisms in relation even to small rural districts and municipalities.

Capacity development has turned out to be a key issue in the Indian state of Kerala, where a decentralised development process has been underway for some years; this includes devolution of budgets previously held by central line departments down to local government bodies. Some of the elements of success are due in part to what is perhaps a unique system whereby retired professionals are brought in as local expert advisers on a voluntary basis. This complements a system where basic training is rolled out from state level to the panchayats – but not yet at the scale required.

## Knowledge gaps

In effect, all of the knowledge gaps previously identified are relevant here, and until we have a better understanding of the implication of knowledge gaps in the areas of policy and programme development, it will be difficult to clearly define and roll out capacity development on the scale required. Setting up and strengthening of national and regional resource centres with expertise in sanitation programme development and implementation is of great importance. This is necessary in order to provide support to both government and NGOs on, for example

- technical options for sanitation;
- applying demand based techniques such as social marketing;
- hygiene promotion; and
- credit and micro finance.

The advent of decentralised approaches brings even more demands, as the support structures have to be defined at both central and local district levels. The extent of this has already been illustrated by the inability to let simple contracts at local level.

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