Decentralised wastewater treatment systems (DEWATS) and sanitation in developing countries: a practical guide

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The profile of each CBS (Community-Based Sanitation) programme has to be country, site and situation specific. Nevertheless, in this chapter we will introduce the core elements of successful CBS implementation. The outlined programme-implementation steps are based on the project experience of "good practice" examples and guide the reader through his or her own programme and project development.

The institutional background has a significant impact on programme initiation. While organisations experienced in infrastructural development in poor areas might be able to develop institutional capacities fairly rapidly, other organisations might depend on the collaboration with other institutional players. In such a case, the greatest challenge will be to streamline the process and contributions of all partners.

The goal of any sanitation programme should be long-term sustainability with maximum positive impact. From the preliminary needs assessment in the very early stage of a programme, up to the disposal and treatment of sludge, a multitude of tasks have to be completed. The efficient setting-up and implementation of such a programme requires early identification of the different necessary tasks and who is responsible for carrying them out.

5.1 Stakeholders in CBS programmes

Sustainable infrastructure development and sanitation programmes must coordinate and streamline a multitude of stakeholders and resources. The active participation of different parties should span the entire development process, from the preparation phase, to planning, implementation, monitoring, and final evaluation. Participation improves the sustainability and performance of the project. Ownership ensures stakeholder commitment and participation, thereby reducing supervision costs.

Efficient, cost-effective and sustainable implementation requires systematic involvement of different stakeholder groups:

- Primary stakeholders – residents and direct users of the implemented measures
- Secondary stakeholders – groups with a direct or indirect responsibility in the programme. These include the leading agencies (public, NGOs, etc.), planning authorities, and health and environmental departments
- Tertiary stakeholders – providers of special services for construction, maintenance and sludge management
5.2 Responding to basic needs – active involvement of beneficiaries and residents

CBS programmes respond to the needs of residents in a given area. In most cases, the programmes target residents of poorer areas to provide them with improved in-house toilets or with additional sanitation services, such as toilets, showers or washrooms in Community Sanitation Centres.

The active involvement of communities in the planning and implementation process is crucial to the success of a sanitation programme because the residents:
• will use the sanitation facility – the facilities must fit their needs and practices
• have to contribute significantly to the system – financially or in kind
• may have an important role in the operation and maintenance of the sanitation and wastewater-treatment facilities

Picture 5.1: CBS programmes should respond to resident needs
Picture 5.2: Sanitation programmes should offer different options for improved sanitation facilities – here a pour-flush toilet
To ensure that poor residents are actively involved, the following factors are important:

- Sanitation programmes should be accompanied by health and hygiene awareness-raising campaigns
- Programme acceptance by local leaders helps to avoid unnecessary interference with social hierarchies
- Social-settlement structure and stratification, sanitation practices, informal land-holding customs, and reservations about infrastructure implementation should be understood and taken into account
- Women are often the household decision-makers with regard to domestic sanitation and sanitation practice. Therefore, they must be actively involved in determining problems, identifying underlying causes, recommending possible solutions and, ultimately, making decisions to solve the problems

Developed over recent years, “demand-responsive approaches” have become the conceptual framework of sustainable sanitation programmes. The approach treats users as clients, who express their needs, but must provide contributions in monetary terms or in kind.

Neither “demand” nor “willingness to pay” are easily measurable. Comprehensive methods have been developed to cater to users’ needs: “informed choice” generates indicators for communities’ and individuals’ willingness to participate in the project. “Contingent valuation” (CV) provides information on potential demand and willingness to pay for different sanitation options.29

Depending on the location, “demand-responsive approaches” can result in quite different technical solutions and management configurations:

- In most parts of Eastern Java, coherent social structures mean there is a high capacity for community self-organisation and management. Decision-making processes, concerning the choice of sanitation facilities and the layout of the DEWATS, can be initiated by external facilitators and tend to run smoothly. On the whole the community manages cost recovery, operation and maintenance. Only desludging is organised by an external service provider.

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29 See: UNDP, Willing to pay but unable to charge, 1999
• In Tangerang, Indonesia, the involvement of future users in the planning process showed not only the residents’ interest in improved sanitation but also in shower and laundry facilities. As the residents are mainly migrant workers, social structures are rather weak. To ensure sustainable management of the sanitation project, it was decided that BEST, a local NGO, should function as service provider. BEST ensures daily operation, maintenance and desludging of the system. The costs are covered by a fee that residents pay when they use the facility.

• In Ullalu Upanagara, Bangalore, a slum with inherent social frictions, an operation and maintenance system run by the community, was set up. The Community-Based Sanitation programme was facilitated by the local NGO. Strong emphasis was put on the involvement of women in the awareness-building process for sanitation demand. One of the women groups later took over the operation and maintenance of the Sanitation Centre. Users pay a fee per use. Desludging is organised in co-operation with local government.

• Although categories like “available income”, “existing sanitation facilities” and “hygienic behaviour” are important parameters for a comprehensive assessment, “willingness to pay” is one of the strongest indicators. In a slum area of Mysore, India, a range of low-budget sanitation options were discussed with the residents. The potential users were only willing to pay a very small amount for the most-desired facility, a 20-toilet sanitation centre. It was only through the intervention of an experienced facilitator that it became clear that the residents had a long-term vision – for each house to be supplied with an in-house toilet. Although this was a very expensive option, they were prepared to contribute much more towards this solution. The sanitation centre would probably not have been acceptable in the long term.
CBS programme planning and implementation

The following suggestions may help successful collaboration in poorer residential areas:

- Residents must contribute to the programme financially or in kind. However, there is no blueprint for how much must be contributed to a CBS programme. The “contribution profile” must be developed in accordance with the local social situation and the interests of the residents.

- Participation needs time and resources; it is essentially a process with no guaranteed outcome. For these reasons, the financial cost of participation has to be carefully weighed against its benefits. A reasonable balance between input and output should be achieved.

- CBS may interfere with the social structures of a community. Under certain conditions, participation can have a destabilising effect by creating an imbalance in existing socio-political relationships. Participatory approaches can result in conflict because existing power relationships are threatened. A sensitive approach is vital to avoid worsening the position of those who are already marginalised.

- A fact-driven approach is suggested. Although the residents of poor areas must be provided with basic-needs services, an exaggerated emphatic approach may result in skewed perception of ground realities and a CBS programme with too much “wishful thinking.”

Picture 5.3: In Tangerang, residents have to pay the equivalent of 0.07 US$ for each time they use the facility. The service provider employs one operator, who ensures operation and maintenance.

Picture 5.4: In Ullalu Upanagara, local women were trained to ensure continuous operation.
5.3 Local government and municipality bodies

Local public bodies play a pivotal role in successful sanitation and wastewater-treatment projects. Although the specific responsibilities of a body may vary from country to country, it is the local government (or municipality) that is usually accountable for providing sanitation and wastewater-treatment services. Furthermore, it is also responsible for promoting health and hygiene awareness, to ensure the health of its communities and to monitor the environmental impacts.

Local government and municipalities should formulate and implement a policy addressing the sanitation backlog and water-pollution problems. They are responsible for driving the local processes set out in its policy. They must create an enabling regulatory environment through municipal by-laws – and ensure both appropriate and affordable service implementation. Furthermore, the local government must ensure that environmental standards are met, including the establishment of a system for sludge removal, treatment and disposal.

In an ideal world, local-government agencies would integrate sanitation and wastewater strategies into their local development plans and take the lead in implementing them. In the real world, different stakeholders may take the initiative to provide sanitation services, particularly to the poor. Beside public bodies, international agencies, NGOs and Community-Based Organisations may be active. In such cases, a co-ordinated strategic alliance between different stakeholders can create a greater drive for the implementation of efficient sanitation and wastewater-treatment options. Nevertheless, local government and municipalities must be fully involved.
To assist the implementation of wastewater-treatment infrastructure, the relevant bodies should:

- create a demand for sanitation improvement through health and hygiene-awareness programmes
- respond to this demand by identifying appropriate sanitation options
- prioritise these options
- integrate these working results into a planning process
- allocate funds to achieve the planned objectives
- ensure there are enough appropriately skilled people to carry out the plan
- implement the plan
- monitor and report on the results and
- ensure sustainability
5.4 Non-governmental organisations

A number of NGOs have launched CBS programmes and/or have become programme partners to government bodies. Which roles NGOs play within CBS programmes depends mainly on their competencies and the local situation.

NGOs can play a leading role in CBS programmes. As specialists in poverty alleviation and environmental protection, many NGOs have in-depth knowledge about the low-income groups with whom they work. They know about local sanitation practices, decision-making processes within the communities, income and expenditure patterns, and other factors, crucial to successful sanitation programme implementation.

Furthermore, many NGOs have good working relationships with the communities. So they can facilitate awareness-raising campaigns, decision-making processes or other forms of communication.

Over time, many NGOs have developed competencies as service providers. Some are active in the fields of solid-waste management, environmental counselling and/or urban planning. Other NGOs have the capacity to set up and run complete sanitation and wastewater-treatment projects, including the provision of operation and maintenance services.

5.5 Private sector

In most cases, the private sector can and should cover important CBS programme tasks. The private sector may:

• plan, design and construct sanitation infrastructure
• plan, design and construct wastewater-treatment infrastructure
• manufacture equipment
• ensure operation and maintenance of the overall scheme
• operate desludging and sludge-treatment facilities

These services may be provided on a contractual basis. Close quality monitoring of the delivered services is crucial to the sustainability of the programme.