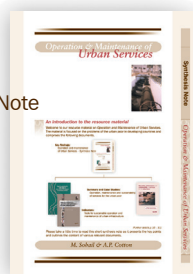# *Operation & Maintenance of* Urban Services

An introduction to the resource material

Welcome to our resource material on *Operation and Maintenance of Urban Services.* The material is focused on the problems of the urban poor in developing countries and comprises the following documents.
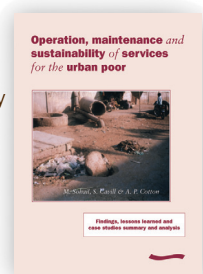
Key findings:
Operation and maintenance of Urban Services – Synthesis Note

Summary and Case Studies:
Operation, maintenance and sustainability of services for the urban poor

Indicators:
Tools for sustainable operation and maintenance of urban infrastructure

(Further details p.10 - 11)

Please take a little time to read this short synthesis note as it presents the key points and outlines the content of various relevant documents.

M. Sohail & A.P. Cotton

Above all, it is important to treat the materials as a set of working documents. They are not books to be read from cover to cover and by no means all of the material will be either relevant or useful. This is because the local context is so important to what can be achieved and to the way in which urban upgrading is carried out. Use your discretion to select and use that which you believe to be appropriate to the local situation.

Who should read this?

The resource material we have developed is targeted at:

- policy-makers (including staff of international development agencies) who need to optimize the investments in services for the urban poor by developing improved management strategies which give a higher profile to operation and maintenance;

- professional staff employed in public utilities, urban local government and non-governmental organizations (NGOs) who are involved in the development of programmes to improve O&M of urban services.

Why this work was done

The key question we have addressed is ***how to improve the performance and sustainability of the O&M services for the urban poor***. Many urban services improvement projects promote community participation in the planning, implementation and management of these services. Increased participation in operation and maintenance (O&M) is assumed, but is yet unproved. It is essential to review both consumer (urban poor) perceptions and municipal performance of O&M, including the sustainability of community-based processes. The actual and potential roles and responsibilities for O&M between communities, municipalities and intermediaries have to be more clearly understood in order to develop sound guidance for programmes leading to sustainable services. Otherwise, investments in capital infrastructure and community development will not realise the anticipated benefits.

We have therefore explored a range of cases in India, Pakistan and Sri Lanka, looking at perspectives of both local communities and of institutions including line agencies and municipalities. The scope of the work has encompassed the following services:

- Water supply

- Sanitation

- Drainage

- Access

- Street lighting

- Solid waste removal

- Community buildings

The term 'Operation and Maintenance' (O&M) has been used as a general concept covering a wide range of activities carried out by public utilities, government and communities in order to sustain their services and to maintain existing capital assets. Specifically, in the present context:

- ***Operation*** refers to the procedures and activities involved in the actual delivery of services, e.g. abstraction, treatment, pumping, transmission and distribution of drinking-water.

- ***Maintenance*** refers to activities aimed at keeping existing capital assets in serviceable condition, e.g. cleaning of open drains, repairing public taps.

An overview of O&M: difficult questions remain

O&M: Is scaling up community based approaches realistic?

We have found numerous examples of good practice where community groups are maintaining the services in their neighbourhood. We need to be careful to distinguish between instances of good practice which are:

- done by households; users are making small repairs - we expect no problems at household level, where there is a strong incentive to rectify faults to individual service connections or on-plot facilities; and

- cases of shared or communal services being operated and maintained collectively; this is more problematic.

Despite our evidence of cases of good practice, there remain crucial unanswered questions which we need to face up to:

- Many initiatives are basically 'isolated'; they are islands of good practice in a sea of neglect of services.

- We have no evidence of community based approaches for O&M being taken into the mainstream and rolled out across a city

- What is the potential (realistically) in terms of scaling up this approach? Are we looking at a model which works only on a local *ad hoc* basis?

This leaves two unanswered questions:

- is the community based approach for O&M of urban services a model which can only work in an *ad hoc* and isolated way, or can it be scaled up and mainstreamed?

- Do we believe that the community based approaches offer a serious way ahead in the long term?

O&M: responding to crises?

We have substantial evidence of maintenance activities being carried out in response to what is actually a crisis or emergency; something has to be done, so community groups do it. We must remember that maintenance is not only about crisis management; planned periodic maintenance programmes are essential if assets are to last. This aspect is missing.

On the other hand, an interesting finding is that some community halls are well-kept and maintained. More 'obvious' things are first to be cared for; for example, the community hall has a direct financial link, as it is hired out in order to generate funds. The perceived importance of this is higher than, for example, cleaning drains or repairing access roads.

The general lack of planned and preventative maintenance on the part of municipalities and utilities is due at least in part to certain fundamentals which are missing. For example:

- there are no registers of infrastructure assets;

- infrastructure condition surveys are not carried out;

Without this, it is neither possible to plan a rational maintenance programme nor to assign the appropriate resources. Hence we so often see maintenance activities which are responding to crises.

O&M: Who cares?

The underlying priority which emerges is that procurement and construction are the priority, not O&M. Whilst this is not new, it also means that nothing has changed.

Perceptions of O&M responsibility are important. We can see that considerable NGO effort has gone into the development of participation related to construction of new works, but very little (even in Sri Lanka) which relates to O&M. This may be a result of

an 'awareness gap': if community groups are not aware of the need for O&M, many NGOs will not respond simply because that demand is not articulated.

Behaviour change, both of users and providers of basic services, is likely to be a key long term factor if we are to see significant improvements to O&M. Behaviour change could be a key recommendation for NGOs, involving promoting behaviour change in terms of use of facilities, and creating civic pressure on municipalities to perform better.

Despite the on-going widespread nature of problems with O&M, it still seems that there has been relatively little progress. In development terms, we are not dealing with 'rocket science'; there are few who really perceive its importance and fewer who want to be bothered with it.

O&M: Where will the capacity come from?

Community based approaches have worked in a coherent fashion when the support has been available. This has raised issues of cost and capacity.

- What are the costs of supporting the community based approach? There are the support costs of NGO staff, the costs of household and community financial contributions, which are offset against the benefit of having usable infrastructure over an extended life cycle.

- It is difficult to establish how much effort has been put into those community based schemes which work.

- What level of support is needed to scale up and how realistic is it to replicate this level of effort?

- Are these resources for support realistic and where can they be found?

O&M: The key – change management in utilities and municipalities?

Traditional centralised systems for O&M which are the responsibility of municipalities and utilities are not delivering. This is why we are looking at alternatives such as community based approaches, even though our evidence of success is rather patchy.

A key finding is that there is a lack of planned maintenance. Community groups respond to problems but there is no body of evidence pointing to strategic approaches; the city institutions have not taken the necessary lead. We are therefore left with the problem of not knowing how to develop an implementation strategy involving local groups on any meaningful scale. So can anything other than local *ad hoc* responsive activities happen without serious municipal reform taking place?

- Why should these city institutions bother with new approaches? A major problem is lack of incentives on the utility/municipal side.

- The interface between local neighbourhood and city systems remains undefined; the linkages are not in place, so neither is effective O&M. The very limited cases of interaction between community groups and a utility over O&M have reaped substantial benefits through the collaboration.

- How realistic is it to link these local initiatives to the utility/municipality on a wider scale. And finally

- Municipal/utility reform needs to tackle the way these institutions work. This may be a prerequisite for any significant change. Otherwise we are tinkering round the edges with communities doing bits and pieces here and there.

O&M: Some requirements for success

Where is the functioning management system for O&M?

There are fundamental issues regarding the management of O&M which have to be addressed at the institutional level and which the case studies found to be largely missing.

- A clear understanding of roles and responsibilities; who makes management decisions, according to whose priorities and objectives. What are the roles of community leaders, NGO groups and politicians? If local initiatives are being undertaken, there are inadequate or non existent links to any strategic planning process.

- A knowledge of the infrastructure asset base and its condition. There are no inventories of assets which are under the control of the organization. Consequently, condition surveys are not carried out, and O&M workplans are not based on an assessment of needs.

- Sound financial management with adequate resources; organizations tended to be financed through transfer payments from higher level government departments. They do not know what their financial allocations are at the start of the year and do not have separate budget lines for O&M. They operate on a pay-as-you-go basis without effective budgeting procedures; the first call is on staff salaries, and spending stops when the money runs out.

- Management information systems to furnish information for planning. *Financial reporting* systems make no distinction between capital and recurrent expenditure. The only way to retrieve information is by a detailed examination of all works carried out. *Technical reporting* systems have no means of classifying the work undertaken into capital, operation, and maintenance.

- Monitoring and evaluation systems for the assessment of performance are lacking. Setting targets for municipal/utility staff performance and providing on going training to all stakeholders is rarely done.

- A system for forward planning of O&M. The above problems make it very difficult, if not impossible, to develop effective strategic and short-term plans for O&M.

Failure in maintenance is the order of the day, with little scope for preventive or even routine maintenance to be effective. Strategic planning for O&M is necessary to ensure that the optimum value is obtained from the infrastructure assets. Better municipal maintenance would increase the life span of infrastructure and reduce the O&M burden on communities.

Supporting community institutions

There are important questions which arise around the status and capacity of local organisations; whilst these are not new, it does reinforce their importance in the context of O&M. For example:

■ Do CBOs have a formal legal and permanent status and autonomous control of their finances?

■ Groups need strong leadership and support from the community and to be representative of all user groups.

■ Are responsibilities clearly defined? It is essential to involve communities at the planning stage and to define roles and responsibilities.

■ They need to be able to organise and carry out the planned programme of activities; it is then necessary to develop guidelines for the execution of tasks.

The following table highlights community perceptions of issues and questions in relation to O&M which were raised during the fieldwork.

Issue	Community perceptions
Community	■ How satisfied are people with existing service. Is there a perceived need for improvement ■ Ownership issues must be resolved. Roles for O&M need to be clearly defined ■ Define interactions with local committees, NGOs and authorities ■ Systems for dealing with problems and complaints are necessary
Labour	■ Are people willing and able to make labour contributions? ■ Is there a willingness to hire labour to work on O&M? ■ Expenses to households include payments and/or days off work ■ Mechanisms for conflict resolution are required ■ Increases in workload result
Costs	■ Previous costs of water from vendors/communal toilets indicate a willingness to pay when these costs are annualised ■ O&M costs involve payments to skilled people and for spare parts
Level of Service	■ What access do people have to existing facilities ■ Look at the functioning/adequacy of existing facilities – is the service discontinuous (e.g. for water) ■ Doubts over the desirability of shared facilities (concerns about cleanliness) and the need for privacy
Repairs	■ Lack of spare parts results in the system not working ■ Travel/inconvenience incurred to buy spares ■ Training of Community members to make repairs ■ Community activities to reduce the amount of time system is out of action ■ Dealing with municipality to follow up complaints
Institutions	■ Setting up an 'official' community organisation ■ Identifying a maintenance team ■ Community based training required

A need for commitment

There is a need for genuine commitment at the household and community level for improved services. This involves the need for consultation between planners and local representatives, following which there is a trade-off between what people want and what a formal institution is prepared and/or able to supply. Commitment may depend on the awareness of health, social and economic benefits of improved services and a willingness to contribute to the development and maintenance of the facilities. The need for a particular level of service may be encouraged through health promotion, literacy programs and general micro enterprise development as in the Orangi Pilot Project in Karachi.

People may be happy to pay for services if they feel that they have a direct say in decisions: making a contribution is also perceived as a declaration of equality in status. There is also a role for the agency in being willing to encourage communities to make these improvements. Vandalism may be a problem, in addition to deterioration of the infrastructure due to age/ inadequate maintenance, if consumers do not have a strong sense of communal ownership.

Expertise: the skills gap

There is a large skills gap. Some of the technical skills required to carry out the necessary maintenance tasks may be present within the community or may need to be developed. One approach is the selection of volunteer trainees, thus creating local capability to respond to simple repairs and carry out maintenance. There are also financial management skills required in fund raising activities and managing money. Organizational skills are needed to mobilise the community and manage conflict, institute participatory methodologies for planning and evaluation, deal with politicians and local government. Thus, implementing agencies need to have access to a huge range of skills in order to impart training to local community groups. In addition, further skills are required in social organization, communication, developing programmes in hygiene education training, monitoring and evaluation. Increasingly there is a new and expanded role for the small-scale private sector in responding to growing demands for maintenance, i.e. self-employed plumbers/mechanics.

The need for appropriate levels of service

Issues exist around what are appropriate and affordable levels of service. Technology must be appropriate to the socio-economic and technical context, regarding ease of maintenance with locally available skills and spares. There are a number of related issues.

- The need to review existing institutional and regulatory frameworks, design standards and norms.

- Strengthening the role of improved construction quality standards to ensure a lesser O&M burden.

- Provision of guidelines on O&M for local community groups and service users.

- Research and consultation on workable norms and standards.

The need for support services

A more effective support service is needed in order to ensure the regular availability of funds, equipment, spare parts and staff to carry out O&M. There need to be specifically assigned responsibilities for community based maintenance; monitoring and supervision of operation and maintenance tasks, a preventative maintenance program, the establishment of maintenance teams at the agency level to support local efforts and a customer service department to which faults can be reported. This has major implications, including:

- Change in priority regarding community based O&M.

- Developing mechanisms for financial support tailored to low-income groups.

- Provision of technical support to communities for carrying out O&M; that is municipal staff in an extension-services role, or the facilitation of NGOs to carry this out.

- Setting rules for infrastructure O&M for all stakeholders and formal agreements of responsibilities.

Using the other resource materials

### Operation, maintenance and sustainability of services for the urban poor

This manual contains the full details of the findings, lessons learned, case studies, summary and analysis and will give you:

■ a more detailed summary than is contained in this synthesis note, including comparisons between the case study cities in south Asia.

■ information on the individual case studies, what was done where, and the specific details which we used to develop our lessons learned.
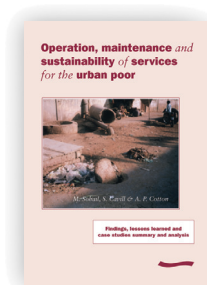
Tools for assessing the status of water supply and sanitation in developing countries

This WHO monograph comprises nine tools which can be used to measure and evaluate the effectiveness of operations and maintenance (O&M) of water supply and sanitation services. Performance is measured using carefully selected indicators to assess the status of O&M and to highlight successes and failures. Managers can use the information on performance to help them formulate policy and implement plans which are relevant to the problems that have been exposed, and conversely to avoid unnecessary actions. The tools will help policy-makers and professionals to:
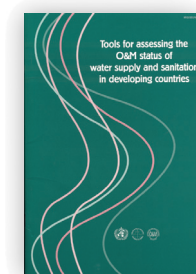
■ establish management objectives for O&M performance;

■ develop a framework for performance measurement, including systems for reporting;

■ carry out measurement and reporting of performance;

■ prepare action plans to improve performance;

■ implement the action plans;

■ continue to monitor and report on performance; and

■ update and implement the revised action plans.

There are nine tools as follows:

Tool 1: Effectiveness of the O&M management system

Tool 2: Guidelines for an audit of O&M

Tool 3: A framework for assessing the status of O&M

Tool 4: Guidelines on O&M performance evaluation

Tool 5: Guidelines on O&M performance reporting

Tool 6: Guidelines for the selection of performance indcators

**Tool 7: Performance indicators for water supply and sanitation**

Tool 8: Potential information sources

Tool 9: Participatory information-gathering.

Tools for sustainable operation and maintenance of urban infrastructure

Tool 7 suggests performance indicators which are specific to water supply and sanitation; all other tools are generic and apply equally to any other of the urban services. We have therefore provided Tool 7A as a supplement to Tool 7 which provides some indicators in relation to these other urban services. However, on looking at Tools 7 and 7A, you will see that it is relatively straightforward to develop 'equivalent' performance indicators yourself for your own use.

An additional Tool 10 has been prepared to offer advice on indicators for technical, financial and institutional sustainability.
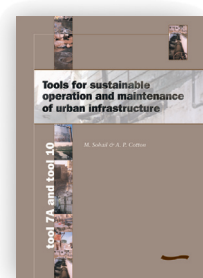
DFID

Sponsored by the Department for International Development (DFID)

This synthesis note introduces other resource material available on the operation and maintenance (O&M) of urban services. Designed for policy-makers who need to optimize investments in services for the urban poor, and professional staff employed in public utilities in developing countries, it also summarizes the key issues and recent research findings; presents an overview of O&M and the difficult questions which still remain; and examines some of the requirements for success.

Other resource material:
Operation, maintenance and sustainability of services for the urban poor:
Findings, lessons learned and case studies summary and analysis
WEDC, Loughborough, UK.   ISBN 0 906055 95 4

Tools for assessing the status of water supply and sanitation in developing countries
WHO, Geneva.

Tools for sustainable operation and maintenance of urban infrastructure:
WEDC, Loughborough, UK.   ISBN 1 84380 016 0

WEDC

Education, training, research and consultancy for improved planning, provision and management of physical infrastructure and services for development in low- and middle-income countries, focusing on the needs and demands of the poor.

Loughborough University

www.lboro.ac.uk/wedc/projects/omssup/