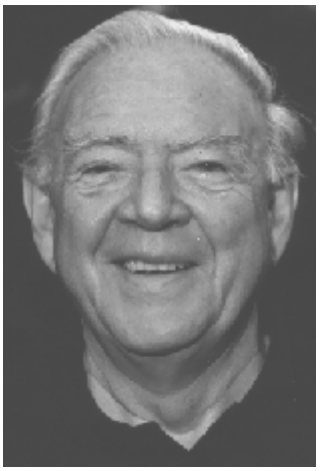
Services for the Urban Poor

A People-centred Approach

by George McRobie



George McRobie was educated in Scotland. At the age of 17 he began to work in the coal mines. He studied as an evening student and earned a degree at London School of Economics in his 20s.

In 1956 he became assistant to E.F. Schumacher, then Economic Adviser to the National Coal Board, and 10 years later helped him form the Intermediate Technology Group in London. He left the Coal Board to work on small industry development in India, and during his three years there, started the Appropriate Technology Development Association of India. In 1968 he returned to London as an executive Director of the Intermediate Technology Group. On Schumacher's death in 1977, McRobie became Chairman of the Group and published Small is Possible*, a sequel to Schumacher's* Small is Beautiful.

He has worked for many years as a consultant on appropriate technology and rural development in Africa, Asia and Latin America. He serves on the governing bodies of Intermediate Technology, the India Development Group, the New Economics Foundation and the Soil Association, and two non-profit companies promoting appropriate technologies in Europe and the Third World, Technology Exchange and the Bureau of Knowledge and Finance.

In 1984 he launched a postgraduate course in appropriate technology at the University of Pennsylvania and taught there for four years. In 1988 he received an honorary doctorate from the University of Prince Edward Island.

McRobie has been a welcome visitor to Lund, lecturing to LCHS's annual postgraduate courses, and entertaining us with moral tales based on his unparalleled experience.

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Preface

When Swedish Development Aid was reorganized in 1995, a new Urban Development Division was established, acknowledging the importance of cities as centres of both dynamic growth and human hardship. It is responsible for setting policy, conducting programmes in infrastructure and housing, and advising the other sectors of Sida when they work in urban areas.

We are pleased to present four *Building Issues* as a Swedish contribution to the Second United Nations Conference on Human Settlements, Habitat II, Istanbul 1996. They address the themes of the conference: *adequate shelter for all and sustainable human settlement development in an urbanizing world.*

George McRobie has written one of these four *Building Issues*. It is not typical for the series – instead of giving us concise recommendations, he challenges us to think about how we "do" development, to find an appropriate mix of technology, support, participation and responsibility. His personal experience makes him uniquely qualified to offer such a broad perspective.

Göran Tannerfeldt

Head of the Division for
Urban Development and Environment
Sida

Acknowledgements

In writing this copy of Building Issues, I have drawn freely on the literature in the reference list. I extend my thanks to all the authors concerned. I am especially grateful, for their advice and permission to use material from their writings, to Maggie Black, who writes on issues of social development, Nick Hall of the Intermediate Technology Group, Babar Mumtaz of the Development Planning Unit, Derek Miles and Andrew Cotton of the Water, Engineering and Development Centre, Loughborough University of Technology, the staff of Water Aid and to David Satterthwaite of the International Institute for Environment and Development. I am also indebted to Michael Parkes, Overseas Development Administration, Professor Robin Spence and Eric Dudley, Cambridge Architectural Research, and John Britten, Overseas Division, the UK Building Research Establishment.

George McRobie

London, April 1996

1 Introduction

Problem

The urban population of the Third World more than doubled in the past 20 years and is now 1.7 billion. This explosive rate of growth has no parallel in human history.

The most striking evidence of urban growth is the mushrooming of large cities in the South. Most of them tripled in size between 1950 and 1990 and in many the increase was fivefold. It was no less than 10 fold in 17 of the South's "million cities" and a phenomenal 20-fold in several of those in Africa.

Most urban growth in the Third World is in settlements where investment in services – roads, water and sanitation, drainage, garbage collection – is negligible or non-existent. The proportion of urban poor in these cities is between 30 and 60%.

Absence of the services essential for healthy living is by no means restricted to mega-cities, which in fact account for quite a small proportion of urban dwellers in the South. Nearly two-thirds of the 1.7 billion urban dwellers live in cities of fewer than one million inhabitants – 30,000 cities of which many may double in size within the next 20 – 25 years. Table 1 shows how the urban population of the Third World was distributed among cities of different sizes in 1990.

At least half of the urban population of developing countries live today in life-threatening houses and neighbourhoods, in slums and shanty towns. Surrounded by filth and squalor, they are prey to endemic diseases such as diarrhoea, dysentery and typhoid. At least as many have no access to adequate health care. During the next few decades, hundreds of towns which numbered a few thousand people thirty years ago will grow to between 100,000 and 250,000; but with their local governments little changed to reflect this unprecedented growth.

The objectives of this Building Issue are to highlight the problem of services for the urban poor and to suggest alternative solutions. The recommendations should be seen more as strategies and principle ideas, as a contribution to the debate, than type solutions to be applied uncritically.

Tab. 1 The Third World's Urban population in 1990

	Total population (millions)	*Number of urban agglom-erations*	*Percent of total urban population*
10 million plus inhab.	98.5	8	6.9
5 – 9.99 million inhab.	113.3	15	7.9
1 – 4.99 million inhab.	280.2	148	19.5
Less than one million	943.5	c. 30,000	65.7
Total urban population	1,435.5		100

Source *Hardoy, Jorge E and David Satterthwaite, Squatter Citizen (second edition), Earthscan, forthcoming.*

Method

The report was written as a desk study. It is based on the author's 35 years of experience as a development consultant and lecturer. Recent literature was reviewed and interviews were held with experienced professionals.

Organization of the Report

The report consists of two parts, Chapters 1–3 and Chapter 4. Part one defines the problem, gives a brief conceptual description of the issue and practical recommendations on design and implementation of community-based programmes for infrastructure services. Part two consists of five case studies showing successful examples of community involvement in infrastructure and services projects.

2 General Considerations

The Urban Poor and Health

The scale on which infrastructure and services are required is reflected by housing needs in poor urban areas. It was estimated in 1987 that some 430 million urban people lacked adequate shelter. Twenty years on – that is 11 years from now that figure will be a staggering 2,700 million: requiring some 400 million new dwellings over the 20 year period. If these are not adequately supported by services, the next two decades will witness a public health problem whose dimensions and consequences beggar the imagination.

Until quite recently, service provision in poor settlements was virtually neglected. One reason is that the very serious health problems of the urban poor have been obscured by health statistics which seemed to show that it was healthier to live in cities than in villages: and of course it is, for the one-third or so well-to-do city dwellers who enjoy adequate services and whose health is well above average. Recent studies are now revealing that the urban poor are worse off than even the rural poor as regards health.

Another reason for the neglect of service provision in slums and shanty towns is that health professional have tended to concentrate on the incidence of disease, its control and treatment. Non-medical activities such as water supply and sanitation have been viewed as less cost-effective than medical interventions, such as ORT for diarrhoea, and immunisation. But the value of such treatments is minimised if the risk of recurrence of the disease is very high because of contaminated water, lack of washing facilities, and the pervasive presence of faecal matter.

There is also the high cost of conventional infrastructure and services. In Third World cities this means that only the well-off inhabitants get piped water, paved roads, sanitation and garbage collection. Engineering standards and technologies imported or copied from the rich industrial countries are too expensive to be widely introduced. The difficult terrain where the poor live would add to the cost or even make it impossible for conventional systems to be introduced. Finally there is the fact that until recently Third World governments generally regarded informal and squatter settlements as illegal and therefore not entitled to services. Third World governments are now addressing themselves to the formidable task of bringing essential services to the urban poor; and it is now generally accepted that the urban poor must become partners in service delivery.

The fact remains that the urban poor have remained beyond the reach of infrastructure and services. Most urban centres in Africa and Asia – including many cities with over a million inhabitants – have no sewerage system at all. Human excrement and household wastes end up, untreated, in rivers, canals, gullies and ditches. The same is true of garbage: an estimated 30–50% of solid

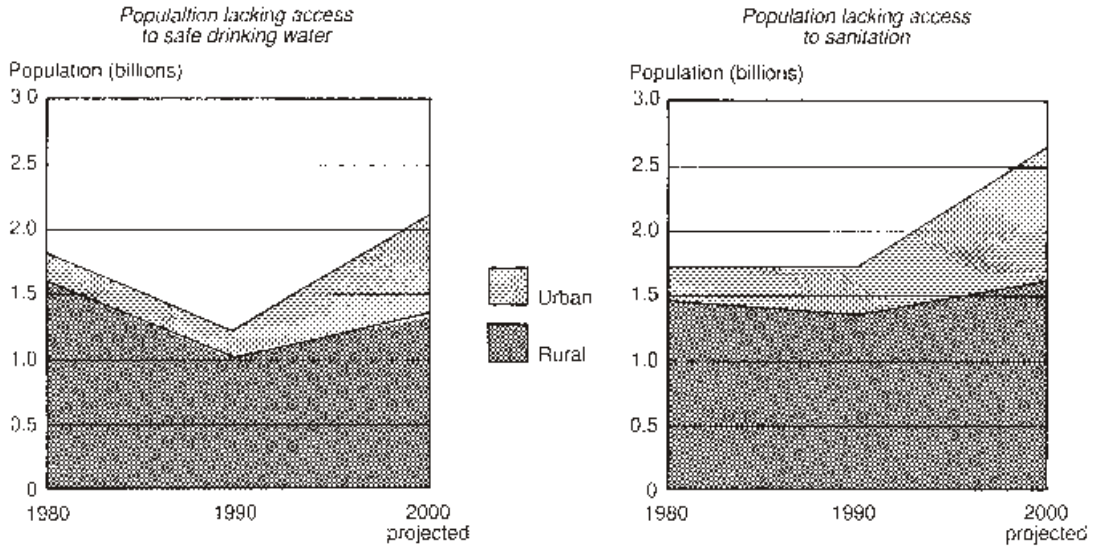


Fig. 1 Developing country populations lacking water and sanitation. Although the number of people with access to safe water and sanitation grew between 1980 and 1990, population growth erased any substantial gain, especially in urban areas. Between 1990 and 2000, an extra 900 million people will be born in places without water and sanitation.

Source Mega-Slums, p 9 (Reproduced by kind permission of Water Aid).

Tab. 2 The effects of improved water and sanitation on diarrhoeal disease

WHO has examined the extent to which water and sanitation services reduce the incidence of diarrhoeal infections. The benefits of sanitation were found to be greatest where there is a real demand, as in high-density urban areas.

Condition	*% age reduction*
Improved water quality	16
Improved water availability	25
Both the above	37
Improved excreta disposal	22

Source Mega-Slums, p 13

wastes in urban centres is left uncollected, a permanent danger to the health of the poor.

Different Strategies for Providing Services

In most developing countries today, standards and codes of construction are still derived from colonial legislation designed to serve a tiny European minority with high-cost standards of housing and its supporting services. The technical standards are high and the systems expensive. Lower-cost ways of providing water, drainage and sanitation, more appropriate to the needs and resources of vast numbers of low-income urban dwellers, have been largely ignored by Third World governments.

In her recent study for Water Aid, Maggie Black observes that the dominance of public engineering works and the removal of responsible actions from households and communities – a legacy of Victorian sanitary engineering in the North – has not worked and cannot work in the poor urban areas of developing countries. It is suited only to city centres and the suburbs of the well-off. Even there it often stretches Third World municipalities beyond their managerial limits: a World Bank review of 120 projects found water authorities performing well in only four countries. Despite widespread international recognition that poor countries' sanitary needs cannot be met in the conventional way – financially, technologically and managerially – the bulk of investment in this sector still goes into high-cost systems (*Mega-Slums*, p 15).

It has of course been argued that there is a free market solution to the problem: raise the incomes of the poor, who can then buy better housing and services. But how to make the poor richer is a problem that not even the richest countries in the world have tackled with any success. In fact, the poor already buy high-cost and inadequate services, such as water and garbage collection, in the market, and if their incomes were to rise, the chief beneficiaries would be landlords and landowners.

There is, however, a growing body of experience showing that well-designed and implemented government actions to improve housing, infrastructure and services need not be too expensive, even for the poor; and that a high proportion of costs can be recovered by charges that the poor can afford.

For this to be done on a much bigger scale, new methods and approaches are essential. Three conditions must be met. The first is the recognition that there is a variety of ways of providing services. Conventional high-cost systems for water supply, sanitation and other services are not the only option. The second is that local governments develop a capacity to work with local populations to identify their problems and devise workable, appropriate solutions. The third is that local governments develop ways of strengthening community organizations and working with them to ensure that basic levels of infrastructure and services are provided and maintained, and that they meet the most pressing needs as perceived by the community.

Appropriate Technologies for Service Provision

There is a parallel between the need to introduce low-cost affordable infrastructure and services for the urban poor, and the need – first identified by E F Schumacher thirty years ago – to develop and introduce low-cost "intermediate" technologies in industry, agriculture and their supporting services in developing countries. To work themselves out of their poverty, Schumacher argued, the poor need access to relatively simple, robust, low-cost technologies which they can own and operate, and which can be locally made and maintained. Such "low cost per workplace" technologies, appropriate to the needs and resources of the poor, could be created in the very large numbers required. The conventional, large-scale and costly technologies of the rich countries, being labour-saving as well as expensive, are singularly inappropriate for the task of creating very large numbers of new workplaces.

The same applies to technologies for infrastructure and services. Conventional high-cost, high-tech solutions do not work for low-income people. They represent a "high cost per household" and accordingly, relatively few households can be serviced. But at a low cost per household, many poor communities could afford the basic services essential for healthy living. They are – experience has shown – perfectly capable of organizing themselves to manage the installation, operation and maintenance of the local services they need. It is, in fact, only by mobilizing the energy and resources of the poor urban dwellers, that the enormous task of creating an adequate public health service for slum and shanty town inhabitants becomes feasible.

Water Supply

Innovative projects have shown that low-income people can be reached with piped water, improved sanitation and drainage and garbage collection at low per capita cost and with good cost recovery. Some of the lessons learnt, especially as regards technology choice, are briefly set out below for three of the services essential for improving health in poor urban areas.

The scale of the task of providing adequate water supplies is vividly illustrated by the fact that in 1975, it was estimated that 74% of the Third World's urban population had access to a safe water supply. Ten years later, the number of people served had risen by 300 million – but 25% still remained without safe water.

In 1991, only half of the South's urban dwellers had a water supply piped to their home. A quarter, about 350 million people, had access only to contaminated water. Roughly the same number had "access to safe water" but from inconvenient and often inaccessible supplies, such as public standpipes shared with dozens or even hundreds of other households.

Contaminated water is one problem. But getting enough water may be an even greater one. Inadequate hygiene caused by lack of water promotes the spread of

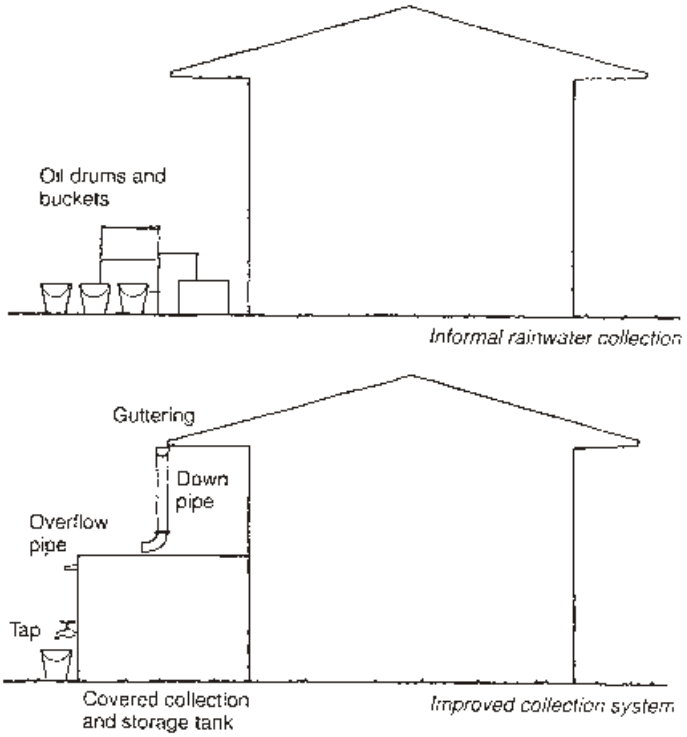


Fig. 2 Household rainwater collection.

Source Services for Shelter, p 63.

many diseases; and the high price that the urban poor pay for water reduces their spending on food, again to the detriment of their health.

Perhaps one-third of the urban population of the Third World buy their water from water vendors. They usually pay exorbitant prices to the owner of the water supply or the salesman at the door. One study found that people were paying ten times as much per litre as wealthier citizens with private connections. It seems that one-fifth or more of a poor family's income can be spent on water.

The amount of water available in most urban areas could be substantially increased by reducing leakages, which typically lose 30 – 60% of the water treated and pumped into the system. Access of the poor to water can be achieved by providing yard taps, an "intermediate technology" between the standpipe and the full house connection. Single tap yard connections are relatively cheap to install. Other creative measures include reducing the diameter of distribution pipes (which can cut the

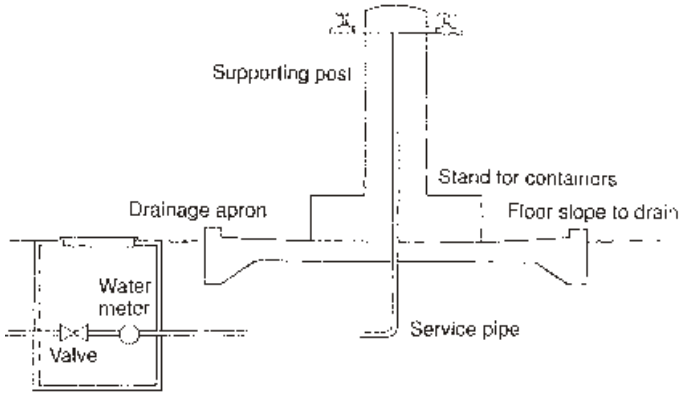


Fig. 3 Standpost.

Source Services for Shelter, p 64.

cost of the network); installing a series of small independent networks of water points each served by a local source such as a well, to augment the system; grants to householders for installing rainwater catchment tanks; and upgrading the service provided by water vendors.

Tab. 3 Typical costs of urban water supply (in US$ per capita)

Level of service	*Typical construction cost*	*Equivalent annual amount* [a]	*Typical water consumption* [b]	*Annual operating cost* [c]	*Total annual cost*
Public standpost	60	8.88	20	2.55	11.55
Yard tap	80	11.84	60	7.66	19.50
Private connection	120	17.76	150	19.16	36.92

a Converted on the basis of amortisation over 10 years at 10% interest.
b In litres per person per day.
c Calculated on the basis of $ 0.35/m³.

Source The Poor Die Young, p 122.

Sanitation

Official statistics for 1991 suggest that at least one third of the South's urban population have no hygienic means of disposing of excreta, and an even greater number have no way of safely disposing of waste water. Many urban dwellers judged by governments to have "adequate sanitation" have only a simple pit latrine or toilet that is shared among dozens of people and where maintaining it is a great problem. Little more than a third of all urban dwellers had toilets connected to sewers. The WHO identify a clear reduction in disease, and in death rates, following the introduction of sanitation.

The conventional water-borne sewerage system is the most convenient, but it costs anything from 7 to 10 times as much as a simple but equally hygienic latrine.

National agencies in India, Zimbabwe and Vietnam have done much to introduce low-cost technologies, but urban sanitation for the poor living in high-density settlements remains the single greatest challenge to public health in the Third World.

There are more than 20 different excreta disposal systems, of which the pit latrine in various forms is the most common. A major improvement came with the Ventilated Improved Pit latrine (VIP) and its use is spreading rapidly especially in rural areas.

The pits have to be emptied; and they do not solve the problem of disposal of household wastewater from washing and food preparation (sullage).

The pour-flush latrine has a water seal and is flushed by 2 – 3 litres of water after use. The outlet is into a

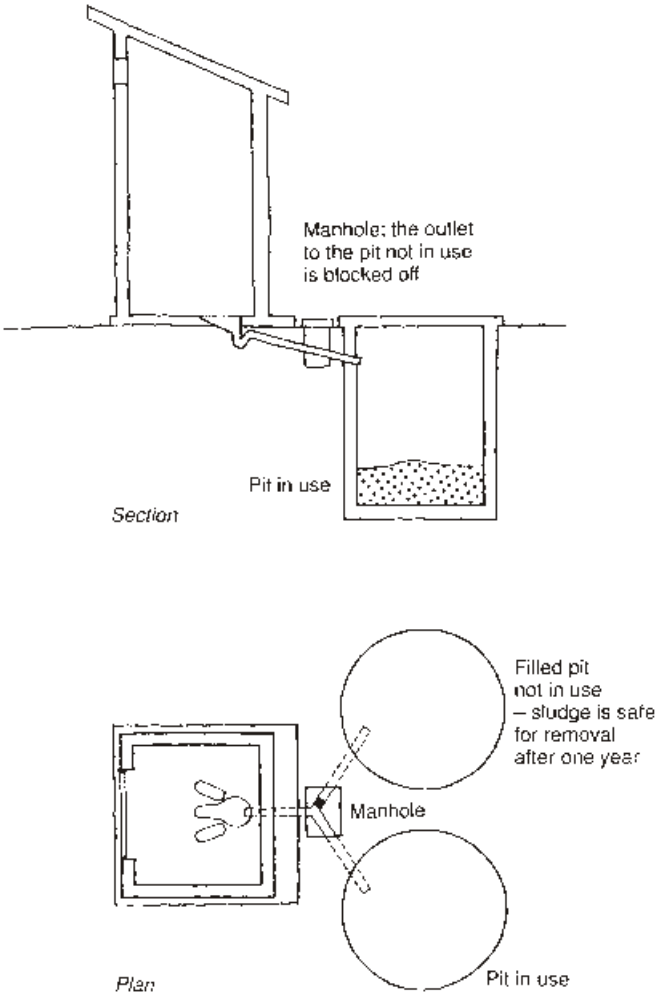


Fig. 4 A pour flush double pit latrine.

Source Services for Shelter, p 83.

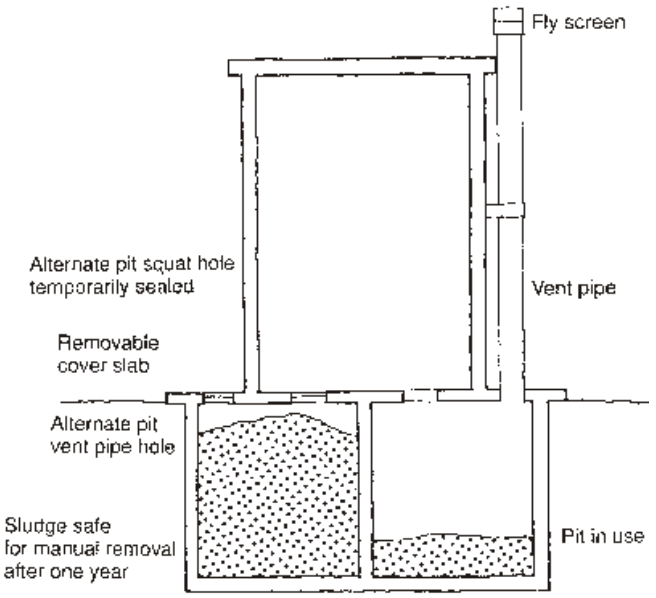


Fig. 5 A double pit ventilated improved latrine.

Source Services for Shelter, p 84.

Tab. 4 Typical range of capital costs per household of alternative sanitation systems

Type of system	*US$*
Twin-pit pour flush latrines	75 – 150
Ventilated improved pit latrine	68 – 175
Shallow sewerage	100 – 325
Small bore sewerage	150 – 500
Conventional septic tanks	200 – 600
Conventional sewerage	600 – 1200

Source The Poor Die Young, p 156.

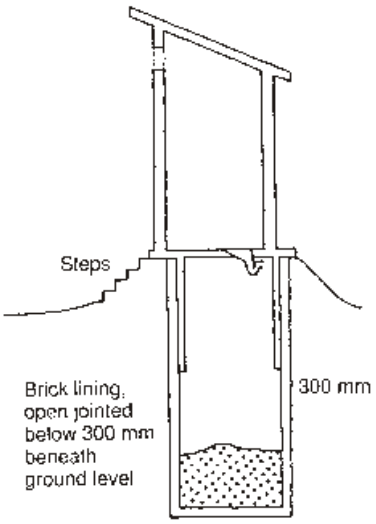


Fig. 6 Raised pour flushlatrine.
Source Services for Shelter, p 84.

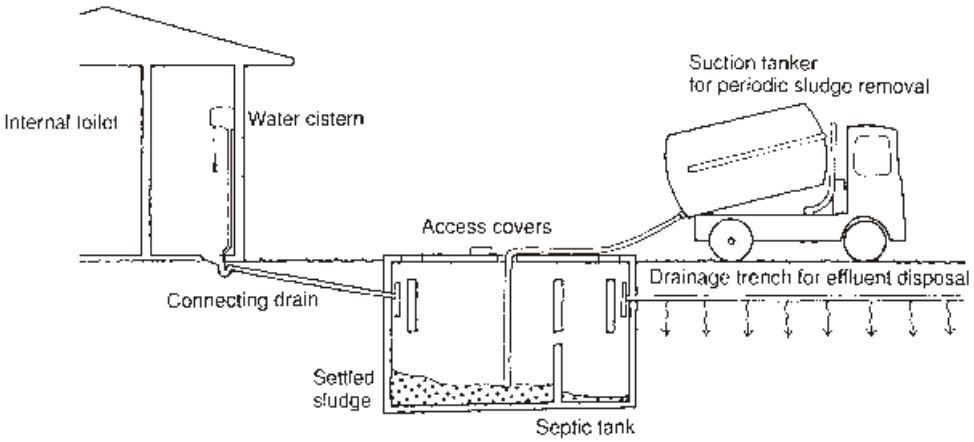


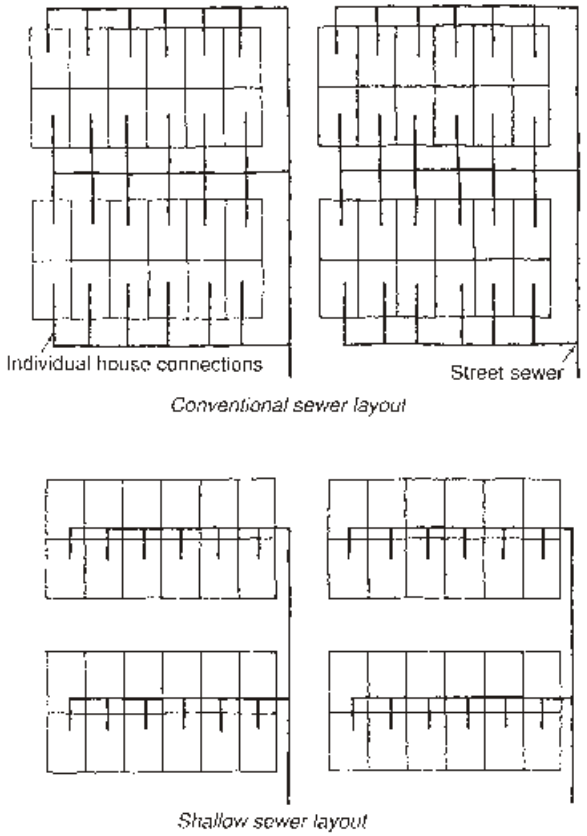
Fig. 7 Septic tank and drainfield.
Source Services for Shelter, p 85.

soakage pit. The latrine can be located within a house, and it can be upgraded by connection to a small diameter sewer. But it does need a reliable source of water.

Systems using on-site soakaways can be upgraded by connection to a small diameter sewer system. Settling tanks, a type of septic tank, are used to trap the solids; small-bore sewers can be used and the treatment plant is less costly. But the sludge tanks have to be emptied regularly.

Shallow sewers are more appropriate for high-density housing. The network comprises small diameter (100 mm upwards) pipes laid to flat gradients in roads and alleys not subject to heavy loads.

The sewers are laid in shallow trenches about 0.3 m below paving. Although they need more water than is used in pour-flush latrines, they do not require large quantities of water to work properly; they rely on high frequency of water flows. This system works technically and economically best where population densities are high; it can also cope with sullage, adverse ground conditions and areas with high water consumption.



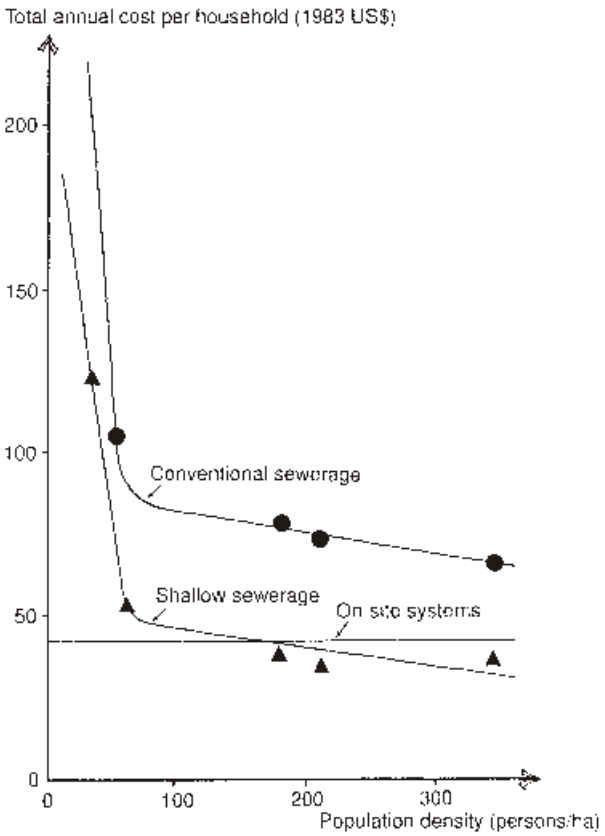


Fig. 8 Conventional and shallow sewer systems: schematic layout and costs.
Sources Services for Shelter, p 85, and The Poor Die Young, p 153.

An example from Sri Lanka

Shallow sewers have been built in Colombo in two urban settlements as part of the government's Million Houses Programme. Population densities in these settlements exceed 500 persons per hectare and shallow sewers proved to be the most economic and technically appropriate alternative. Water was supplied to both communities through communal standpipes. The total capital cost of the shallow sewer system including a wet sanitation core for each house (a squat pan, grit and grease trap, ground level water tank, house connection and street lateral) was no more than US$ 60. In comparison to earlier upgraded slums which were provided with more costly communal bathing facilities or which used on-site pour-flush toilets built through individual household initiatives, a distinct preference was expressed by the communities for the shallow sewer system that removes both sullage and toilet waste-waters.

Source *The Poor Die Young, p 152.*

Household Garbage

Up to half the solid wastes generated in urban communities is left uncollected: a serious health hazard especially for children.

Most engineers dealing with solid waste rely only on technologies inappropriate for poor urban communities: large sophisticated trucks and complex incineration and composting facilities far beyond the resources of the municipality. And even if funds were available, the conventional approach is useless on inaccessible sites. Poor households are very badly served because they discard less waste that can be profitably reclaimed (so private companies ignore them); their settlements are considered illegal, so they have no rights to public services; and they are usually in the poorest municipalities which cannot afford much of a service anyhow (garbage collection can use up to 40% of municipal budgets).

There is now a growing recognition that a variety of collection methods is needed. Manual carts, bicycle trailers, animal drawn carts are often most appropriate. If in collaboration with residents, compostable material can

Summary of sanitation options

The requirements advantages and disadvantages of the systems appropriate for urban low-income housing are summarised below.

	ADVANTAGES	*DISADVANTAGES*
Sealed pit latrines	Cheap. Do not require water. Do not require permanent superstructure. Small land requirement on plot. Control of flies and cockroaches providing that a tight fitting lid is placed over the hole in the slab.	Only works if a tight fitting lid is placed over the hole.
Ventilated improved pit latrines	Cheap. Do not require water. Control of flies. Less smell in latrine. Small land requirement on plot.	Extra cost of vent pipe and superstructure.
Pour flush latrines	Cheap. Absence of smell in latrine. Control of flies. Contents of pit not visible. Excellent from the user's point of view.	Only suitable if water is used for anal cleansing. Extra cost of pour flush bowl. Requires reliable water supply.
Septic tanks	Users have convenience of a conventional cistern flush toilet. Problems with effluent disposal. Large land requirement for effluent disposal; unsuitable for high-density housing.	High cost. Reliable and ample water supply from house connection.
Sewerage	User convenience; no concern what happens after toilet is flushed. Means of sullage disposal. Usable with very high density housing.	High construction and maintenance cost. Efficient institutional organization needed for construction, operation and maintenance. High level of water supply service required (minimum about 70 litres per person per day). Only suitable if water or soft material is used for anal cleansing. Adequate sewage treatment process is required before discharging to a water course.
Vault and cartage	Satisfactory for users if the collection service is reliable.	High construction and operation cost. Highly efficient central organization required to maintain regular collection service. Serious health hazards if collection is inefficient. Adequate sewage disposal facilities required.
Communal latrines	May be the only option in highly congested sites with poor water supply.	Lack of responsibility for funding and carrying out maintenance service. If maintenance is bad, latrines will not be used. Inconvenient and undesirable for the user unless access is controlled.

Source *Services for Shelter, p 93.*

be sorted out early, this can cut disposal costs. There is also a growing recognition that many families make a living out of sorting garbage, and that they are an important part of the garbage disposal system; but they need support, especially to address their health problems. Locally-agreed schemes can be cost-effective besides eliminating some health hazards, by composting waste and by keeping drains clear.

Costs of Service Options

By far the biggest potential cost reductions (Figure 9) are found in sanitation; smaller but significant savings apply to

- drains, using the road-as-drain option for storm water drainage
- roads, by using earth, gravel or local paving stone; this also reduces drainage costs
- access, by limiting the access width within the housing cluster or street.

Studies have been made of infrastructure costs for housing schemes in India, the Far East and South Africa. The total annual cost per household (TACH)[1] for India is shown in Figure 10, which reveals that savings of 40 – 60% are made by employing the appropriate technologies shown in Table 5.

The cost difference between the two options in Figure 10 shows that conventional infrastructure costs twice as much as a lower level of service using appropriate technologies. There is no possibility of the poor paying for the conventional level of infrastructure. The poorest 40% of the population to be housed have an annual income of less than US$ 700. Assuming that 20% of income can go on housing and services, this comes to $ 140 a year. If $ 100 is spent on housing (based on a plot size of 30 m^2, a building cost of $ 30 per m^2, amortised at 5% over 20 years, this leaves about $ 40 per household for supporting physical infrastructure and services.

Nor can the affordability gap be closed by any feasible redistribution of incomes. Income distribution figures indicate that the poorest 80% in low-income countries earn only $ 1200 a year; the differential between the poorest 40% on $ 700 and the poorest 80% on $ 1200 does not provide a tax base for the redistribution that would be necessary, even if this were politically possible in any country.

Those who are provided with conventional services in the urban areas of the Third World do not pay the full costs of these services. On average they pay only 35% of the costs, according to the World Bank. The political difficulties of significantly raising this percentage need no emphasis. A higher cost recovery rate would, of course, make the conventional infrastructure and services systems more sustainable: the financial situation of utilities and water boards is steadily worsening.

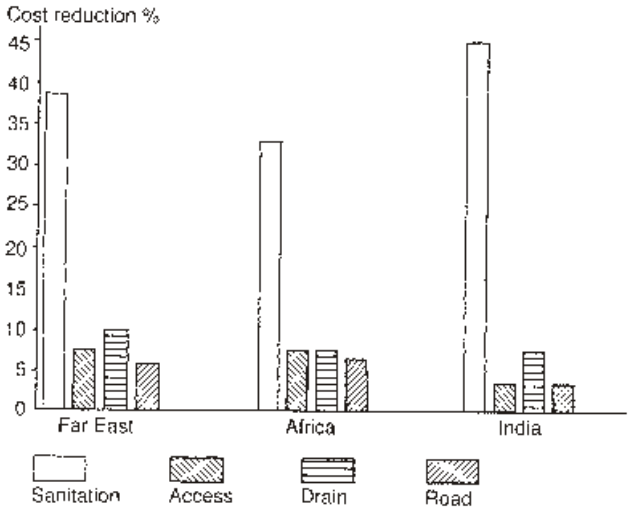


Fig. 9 Potential cost reduction in various service sectors.

Source Services for Shelter, p 3.

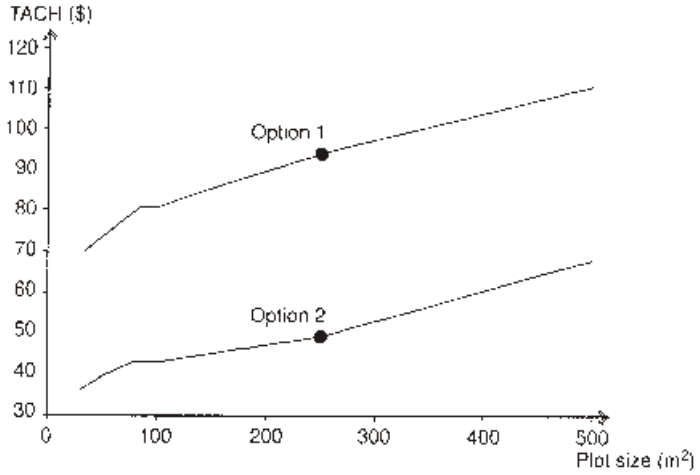


Fig. 10 Servicing costs for options 1 and 2 (Table 5) based on data from India.

Source Services for Shelter, p 3.

Tab. 5 Infrastructure options

Service	*Option 1*	*Option 2*
Access width	5 m	2.5 m
Storm drains	lined	road-as-drain
Sanitation	sewerage	improved pit-latrine
Water supply	house connection	public standpost
Sullage disposal	sewerage	lined sullage drain
Roads	sealed surface	paved surface
Power	overhead lines	overhead lines

Source Services for Shelter, p 2.

1 Includes capital, operation, maintenance and replacement costs.

3 Recommendations

Community Involvement and the Role of Government

There are two basic approaches to community involvement. The first is community participation; the second, community management. In the first, control of the scheme remains with the relevant government authorities. The second is more radical and devolves power and responsibilities to the community. It is harder to organize and requires a complete change in bureaucratic thinking, but this should be the preferred approach.

A community managed scheme does not, of course, mean that there is no role for government. Government will still be responsible for bringing infrastructure to the site, providing on-site secondary infrastructure; and providing loans to assist the community-led action groups to provide tertiary infrastructure. Community management does not necessarily mean construction by the community. In many instances small contractors will be used. It should be added at this point that the notion that poor urban dwellers can easily donate free labour is fallacious. The poor are fully occupied: the opportunity cost of their labour is high. Community managed projects could of course provide new paid jobs in the locality, and make maximum use of local skills.

Successful community involvement requires that the local authority is committed to the idea. There must be a demand for improvement in the community; and all information must be shared between the community and government officials.

It is important that the limitations and weaknesses of community involvement are understood as well as its strengths. Thus attempts to involve the community in planning and designing a water supply system are unlikely to succeed, but community leaders are essential in discussions about level of service, tariffs and cost recovery. A brief checklist is shown in the box.

The choice of approach in dealing with upgrading and deficiencies should be left to the community members themselves, after they have had a chance to understand the alternatives and likely costs and benefits. Ideally this should lead to community management of the programmes, provided strong NGO support is available. Workshops are a good way of explaining alternatives; one should be for women only so that they can give their views without intimidation. The sequence in which work is done should always be determined by the community's expressed needs and priorities.

An incremental approach may be the best way forward. For example, government might provide water to a standpost at the end of a lane, but the design might allow for individual connections, thus giving householders the option of organizing themselves to install a service line in the lane in the future. Community managed programmes can take a long time. The approach should be for the municipality to provide primary and secondary infrastructure (trunk services and those to district level); and then seek the provision of tertiary (local) services under community funding.

Street paving Community management possible, with technical assistance.

Sanitation Community construction and management of individual and shared pit latrines is possible, with technical assistance. Householders must be taught how to use and maintain the installations, and understand that the health improvements of sanitation depends upon the users as well as the installation.

Solid waste management Local collection services can be run by the community, but will depend on the provision of district-level services by the municipality, provided that these are properly run.*

Drainage The construction of open, lined drains, culverts and channels is possible, with technical assistance. Maintenance of drains is more important than construction, and the community can organize this.

Health The community can contribute to the operation of basic health services, and the most successful programmes are those that train people from the community for this purpose. The programme should include midwives and others dealing with health care, and be linked to the wider system at district level and above.

** e.g. if skips are provided they must be removed regularly.*

Several important lessons have been learnt from innovative projects involving community management:

- Community managed programmes cannot be developed quickly. It is often necessary to proceed incrementally.
- They cannot be designed as engineering projects with fixed, pre-determinable start and finish dates, exact specifications of costs and quantities. They need to be flexible to respond to the community. Nor can time or expenditure budgets be used to measure rates of progress.
- They need to be flexible in their implementation, allowing for the possibility of changing or modifying the sequence of operations in response to failures, or successes, on the ground.
- Their evaluation and monitoring criteria must be carefully designed so that the development of the community becomes the underlying objective, rather than inputs and outputs of money and materials.
- "Pilot projects" are unlikely to be repeated and are therefore unlikely to want to wait their turn. The scale of operations must ensure that its impact will be felt across a large section of the city simultaneously.

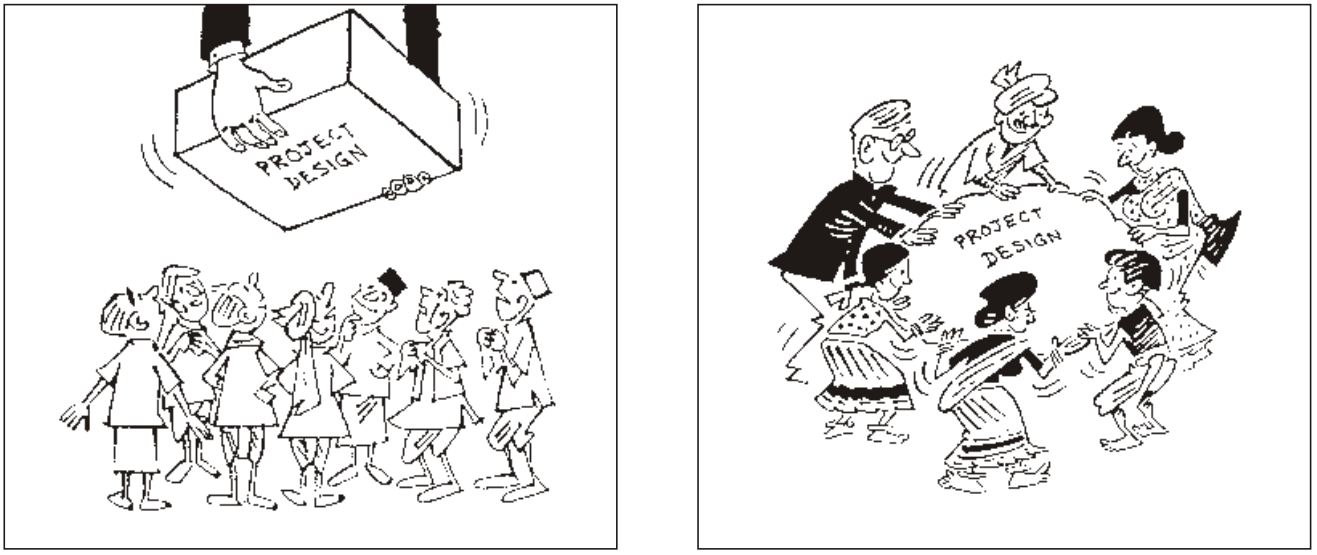


Fig. 11 Comparison of top-down approach with that of involving the community.
Source Urban Upgrading, p 11.

Design of a Community-Based Programme

In the design and implementation of community-based programmes it is important to communicate with the community easily and regularly; otherwise it is impossible to get the feedback upon which the success of the programme depends.

One effective way of doing this is to use people who can act as intermediaries between the community and the local authority. Ideally they are members of the community who have been selected by it, who command respect, are willing to be involved with development and innovation, and are likely to have some experience with similar work in the past. They facilitate, expedite or motivate the communication process; international experience indicates that they are essential in upgrading programmes. They can also help to ensure that the needs of women, children and other disadvantaged groups are taken into account. They articulate the views of the community, guide beneficiaries in the choice of technologies, and advise on how to get the work done.

Facilitators should be given training in communication, social and community development, and have some understanding of the technologies involved. But technical knowledge is far less important than human understanding and knowledge of the community. Women facilitators are the only means by which women's views are incorporated into the project and benefits reach mothers and children.

Again going by the experience of recent innovative projects, there is a crucial role for NGOs in the preparation of action programmes. Usually a number of upgrading programmes will have to be undertaken simultaneously. This will require a number of NGOs to train trainers, ideally drawn from the community itself. Each NGO should be asked to prepare its own plan of action and a statement of how and where they will work.

The geographical area covered by the programme should be big enough for the needs of the strategic infrastructure to be considered, but small enough to allow a process in which local communities can be involved. This means a single programme will suffice for a small town or small urban area, but a number of separate programmes should be prepared for various districts of larger cities.

1 A support programme of data collection and analysis should establish
   - the present levels of service and the serious deficiencies
   - the potential for new development
   - the likely demand for services and the financial and institutional capacity of the community and existing organizations to meet the demands
   - the existing and programmed primary and secondary facilities of public agencies to determine whether there is any spare capacity to service tertiary upgrading.

2 An assessment of development options should also be made. Each scenario should have with it an estimate of capital, operating and maintenance costs. This assessment should show the benefits of community involvement, and form the basis far discussions with community leaders.

3 Data collection and analysis and preparing development options may take several months and may require consultant and/or NGO input. There is now a growing emphasis on the participatory rural appraisal method (PRA, equally applicable to urban groups) in which the community identifies its own problems and options. Every effort should be made to develop local programme-planning skills. The findings should then be discussed in workshops and an action programme developed. The communities and concerned organizations can then get ahead with implementation.

Experienced field workers report that where communities and supporting NGOs take on responsibility for in-

Reaching More People

By way of illustrating the dramatic differences between the conventional top-down approach and the community-based, appropriate technology option, here are four ways of spending $ 20 million aimed at improving the condition of the poor:

PUBLIC HOUSING: $ 20 million spend on the construction of two bedroom "low cost" housing units "for low income groups". The cost of each unit is some $ 10,000, once the land has been purchased, the site prepared, the contractor paid for building the units and the infrastructure and the units allocated. Thus, 2,000 households or 12,000 people receive a good quality house – if we assume that on average, there are six persons per household. Cost recovery would be difficult if these were from among the poorer households.

SERVICED SITES: $ 20 million is spent on a serviced site project, so that more households can be reached than in public housing projects. Knowing that poorer households need to live close to the main centres of employment, a relatively central site was purchased for $ 12 million with the other $ 8 million spent on site preparation and installing infrastructure and services. At a cost of $ 2,000 per plot, 10,000 households (or 60,000 people) could benefit. It would be easier to recover some costs than in the public housing project but for the poorer households, $ 2,000 for a site on top of the cost of having to construct their own house would be too much.

SLUM UPGRADING: $ 20 million is spent on a slum upgrading programme with paved roads and drains installed in illegal settlements together with public standpipes for water, health centres and provision for the collection of solid wastes. At a cost of $ 50 per person, 400,000 people benefit from this. However, no costs can be recovered since costs can only be kept down by having rapid implementation by public works agencies or private contractors with none of the institutional problems of collecting repayments from individual households. In addition, the improvements do not last long as no provision was made for maintenance or for equipping the municipal authorities with the skills and resources to permit this.

FUNDING COMMUNITY INITIATIVES: Local government makes available to any residents' organization formed by the majority of the inhabitants of an area the sum of $ 100,000 for site improvements. These residents' organizations have considerable flexibility as to how they choose to spend these funds and to whom they turn to for technical advice. For instance, they can use local NGOs for technical advice, as long as certain basic standards are met. Although what can be achieved with such a sum will vary greatly depending on site characteristics, local costs and the extent to which residents contribute their skills and labour free, within an area with 500 households, it should be possible to "reblock" the site to allow better access roads and to pave them and also to greatly improve site drainage, water supply and sanitation. Support could be given to local artisans to fabricate the materials, fixtures and fittings which are most cheaply and effectively made on site – for instance, a carpenter's cooperative to make doors and windows or cheap building block fabrication. Of the $ 100,000, an average of $ 150 is spent per household on improved infrastructure and services with $ 10,000 spent on technical advice and $ 15,000 on support for local businesses. The "reblocking" of the site also frees up sufficient land to allow 50 more housing plots to be developed within the existing site or on adjacent land as yet undeveloped and the cost of providing these with infrastructure and services and of building a community health centre was paid for by selling them.

With $ 100,000 provided to 150 community organizations with an average of 500 households (3,000 people) the total cost was $15 million and the whole programme reached 150 × 3,000 people i.e. 450,000 people. Since an average of 50 new housing plots were produced in each reblocking, not only did 450,000 people benefit from improved housing, infrastructure and services but 7,500 new plots with services were developed and new health centres constructed in each site. The possibility of cost recovery was much better than for the other options since organizations within each neighbourhood had agreed on what improvements should be made and their cost implications for each household. They also took on responsibility for collecting payments and organized the payments so that households could pay a single monthly charge which not only covered operation and maintenance but also over a ten year period paid for the capital cost. Spending $15 million in this way still left $ 5 million from the original $ 20 million which could be used to improve some city-wide service.

stalling water supply and sanitation, the costs come down so much that they can often install what are regarded as high cost systems. Thus the Orangi project in Karachi installed in-house latrines and connections to underground sewers at one-tenth of the cost of conventional sewerage (see case study). In other instances, individual water connections piped into homes (again often regarded as a high cost solution) and each household connected to sewers became possible because the inhabitants organized and did most of the work themselves.

Implementation of a Community-Based Programme

A programme of community management of service upgrading will not happen automatically, especially if

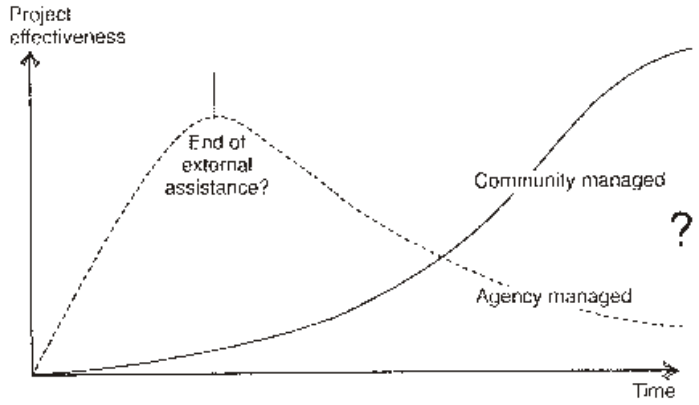


Fig. 12 The effectiveness of agency and community managed projects.

Source Services for Shelter, p 133.

there is no local tradition of community action. A staged approach is therefore suggested:

A demonstration phase including a pilot scheme or schemes designed to test out the community approach and demonstrate its viability; and to test different technology options. This phase would include monitoring the scheme to establish the cost of the facilities, and the level of the support services provided.

A consolidation phase of developing and proving the institutional and support arrangements necessary for the programme to work on a large scale. This would include framing the changes in rules and regulations necessary to promote a community-managed approach; setting up training for support staff; and creating facilities such as matching grant schemes, loans and revolving funds to unlock community resources.

An expansion phase aimed at the general introduction of the approach: the promotion throughout the area of service upgrading through community management. This could involve both using the media, and working through extension agents who should be based in local offices and be readily approachable by neighbourhood groups typically comprising one or more streets and 15 to 50 householders.

Services for Shelter – A Practical Approach

Scarcely any of the poor benefit from the high-cost, high-tech infrastructure and services provided for the well-off citizens in Third World cities. And like the rich, the poor are good at evaluating and ordering their own needs and priorities. There is now a growing conviction that householders, individually and collectively in small groups, can take significant responsibility for their own infrastructure and services. They should be involved in

- planning and choice of technology
- determining the rate at which improvements are made
- managing artisans and sub-contractors to implement the works in a time-frame to suit the community.

Community involvement and appropriate technology are the salient features of a practical approach to service provision recently put forward by the Water, Engineering and Development Centre, Loughborough University of Technology.

In reality, they argue, many slum dwellers live under conditions that are totally lacking in drainage, sanitation, proper access, garbage removal and power supply. They only have access to water, generally polluted and in small quantities. Any improvement will bring benefits to the population.

They start, therefore, by discarding the approach that treats high-cost traditional service standards as the objective. Their objective is to raise the level of services incrementally, to secure benefits to health, safety, social well-being and convenience; with the community deciding what is done, when it is done and how it is done.

A basic level of services should be provided by government: a primary level of service which can then be upgraded by community action. This primary level of service is the starting point, providing a sustainable foundation of infrastructure to which improvements can be made. It aims to provide buildable land with positive drainage, marked out for plots and access ways; a communal water point; supervised communal latrines; and low-cost methods of waste removal. All these are basic services employing low-cost, appropriate technologies.

Primary level services should be provided without cost to householders, beyond reasonable land charges and possibly water use charge. This recognises the fact that many of the urban poor simply cannot afford to pay for the total cost recovery of infrastructure and services. A cogent reason for not recovering the capital costs of primary level infrastructure is that the poorest communities should not have to bear the cost of developing the most unsuitable land.

Above the primary level, householders and the community take over responsibility for upgrading and improving services. This responsibility includes planning, implementing and paying for the improvements. It is of course essential that the detailed design of the primary level allows for subsequent upgrading. Provision for adequate access widths is especially important.

Experience has shown that the site dwellers should be prepared to meet the capital costs and user charges of their chosen improvements; otherwise maintenance tends to be neglected and the systems fail.

The municipality or other facilitating agency should provide long-term loans for the individual householder and the community organization to enable service levels to be upgraded. A revolving fund, possibly administered by an NGO, can help to ensure repayment, the disbursement of funds being dependent on the repayment of existing loans. Sometimes the incentive of loans may have to be complemented by regulations and by-laws, for example to require landlords to invest in basic facilities such as on-plot sanitation within a specified time.

The options for infrastructure development under this approach, what is done and who pays for it, are shown in Table 6. The ultimate level of service provision simply

Tab. 6 Options for infrastructure development

	PRIMARY Promoted and funded (capital only) by agency.		INTERMEDIATE Promoted and funded and maintained by household and community charges with loans from agency.	ULTIMATE Promoted and funded and maintaned by local taxation through municipality.
	OBJECTIVE	MEANS	LIMIT OF AGENCY ENABLING	
GROUND PREPARATION	Building land free of inundation or erosion.	Engineered, contoured fill or cut.	Landscaping of semi-private and semi-public land.	Landscaping of public land.
DRAINAGE	Safe disposal of sullage; rapid disposal of storm water.	Soakage pits. Lined drains from water points. Earth storm drains.	Lined sullage drains. Lined road drains. All drains lined.	Open drains covered in cluster or piped lines.
ROADS	Pedestrian and vehicle access to all houses at slow speeds.	Profiled and compact earth roads.	Profiled an compact gravel roads. Water bound macadam roads. Bituminous surfacing.	Bituminous macadam.
WATER	Potable water within reasonable distance.	Water point per 200 people for 20 litres pc.	Water point per cluster. Yard connections. Metered house connections.	Metered household connections. In-line water storage. Solar water heating.
SANITATION	Safe disposal of excreta.	Temporary communal latrines with restricted entrance.	Household improved pit latrines. Household off-set pour flush latrines. Communal septic tanks. Reduced cost sewerage. Communal latrines and bathing, restricted entrance.	Conventional sewerage.
SOLID WASTE	Adequate removal and disposal of solid waste.	Communal bin within 100 m.	Increased number of communal bins. Street corner collection.	Kerbside or household collection.
POWER	Economic power consumption; Future power line installation.	Allowance for improved cooking stoves; Clearance maintained between plot boundaries and access routes for O/H lines.	Security street lighting. One amp semi-conductor fuses. Full street lighting. Five amp semi-conductor fuses.	Household energy meters.
COMMUNITY STRUCTURES	Acknowledged meeting place.	Designated site with temporary shelter.	Secure offices on designated site. Secure meeting hall and offices.	Social, educational and medical buildings.
	Principally for health benefits and for social necessities		*Principally for convenience benefits*	

Source *Services for Shelter, p 7.*

marks the point at which the municipality ends its support, leaving householders to continue improving services as and when they can afford.

The financial costs of incremental upgrading, based on data from Sri Lanka, are shown in Table 7. This reveals a saving in total cost of 53%, and a saving of no less than 77% to the sponsoring agency.

Under this proposed approach, as already noted, the capital costs of primary level service are not recovered from householders. What users will pay for will be the operating and maintenance costs of primary level services, and the total costs of services over and above that level.

What people can afford to pay is often based on the rule of thumb that housing and services should not account for more than 20% of a poor household's income. What people are willing to pay, however, depends among other things on what they have now, and what benefit they expect from a new or better service, and what priority they attach to it. Surveys in Zimbabwe, for instance, have shown that people are prepared to pay twice as much for yard connections for water, as for standpoints. But in Indonesia electricity is given a higher priority than water connection, and users are unwilling to pay more for water than for electricity. Priorities are essentially an individual and local matter, and not for top-down planners to decide. If householders and communities can make their own decisions in their own time, then

- they can see what they are getting for the agreed price
- they can be advised about the running costs of each item

· they have ownership of the goods and recognise their responsibility to maintain them, because if they don't, no one else will.

Tab. 7 Effect of incremental upgrading on servicing costs, expressed as discounted cash flow in US$

	Mode 1	Mode 2	Mode 3
Household loan repayment or utility charges	106	252	28
Agency non-recoverable cost (capital, operation and maintenance)	809	186	192
Total	915	438	220

Mode 1: Existing approach of high level of service provision by an agency.

Mode 2: Proposed incremental option approach with community take-up of loans. (This example assumes individual toilet and leaching pit with staged introduction of other services above primary level over a fifteen-year period.)

Mode 3: Proposed incremental options approach but without any loans being taken up to upgrade the service levels.

Each discounted cash flow is the sum of the capital, operation and maintenance costs for drainage, roads, water supply, sanitation, power supply and solid waste removal. The discounting period is 15 years using a discount rate of 10%.

Source *Services for Shelter, p 8.*

4 Case Studies

Basic Sanitation Schemes

Pit Latrine Programmes in Mozambique, Ghana and Malawi

MOZAMBIQUE: After several years of research, the Mozambican government developed five types of pit latrines with modifications to suit ground conditions. The latrines were widely promoted in urban areas through the centralized production and sale of non-reinforced domed pit slabs. These slabs were produced on a commercial basis and sold for US$ 14 per 1.5 metre diameter slab and $ 10 per 1.2 metre slab. Production costs were approximately half this. Cooperative workshops for producing the slabs were set up, distributed throughout the settlements. Since transport was by two-wheel hand carts, a distance between workshops of two kilometres was considered to be the maximum. Training in slab production, accounting and the use of hand puppets for advertising was provided for the production crew. More than 25,000 slabs have been sold and latrines installed, benefiting some 125,000 people.

GHANA: Under a pilot-scale programme, in-house bucket latrines were converted to in-house twin-pit VIP latrines. Initially, the external parts of the pits were excavated and lined with open-jointed brickwork. The pits were then extended 450 – 600 mm inside the house, passing below the foundation wall; timber was used to support the foundation during this excavation. The pit lining was then completed, the reinforced cover slab placed in position and the old bucket latrine access doors bricked up.

MALAWI: The Ministry of Local Government through the various local authorities is promoting improved sanitation through the use of pit latrines. The Ministry has focused on their use in the urban low-cost housing areas since the needs and problems of poor sanitation are greatest in these settlements. The local authorities have created a number of Sanitation Centres within these settlements to promote the improvement of existing latrines and the construction of new ones. The new latrines contain the following improvements on the traditional latrines.

· Hygiene and child security have been improved.

· Fly nuisance has been controlled by use of a tight-fitting cover.

· The useful life of the latrine has been extended to over 20 years by increasing the pit volume to one cubic metre per user.

The key element of the programme is the production and sale of a small prefabricated concrete platform (600 × 600 × 50 mm) which includes an elevated footrest, a key-hole-shaped drop hole which makes the latrine safe for use by small children and a tight-fitting lid. The sanitation platform only costs $ 2, and is light enough (32 kg) to be readily transported. The Sanitation Centres also

sell screened vent pipes and materials for constructing improved latrines, and train local contractors and other personnel in their construction. The Centres also serve to inform and demonstrate the technology to the public. The Sanitation Centre concept has proved to be a success and over 1000 traditional latrines have been converted in under six months.

Source The Poor Die Young, p 135–136.

Simple Sewerage Systems

Small-bore Sewers in Orangi, Karachi

Orangi is a large unauthorized settlement on the outskirts of Karachi, Pakistan. Apart from the provision of water (supplied through standpipes) there are few other urban services in this settlement of over a million people. Over the last decade a non-governmental organization known as the Orangi Pilot Project (OPP) has been organizing and assisting the local communities to help themselves. Part of this has been the construction of small-bore sewers, which was organized and implemented with no support from the municipal authorities. This has proved OPP staffs original suggestion that a cheap but effective sanitation system could be installed and paid for, if local residents were fully involved.

To initiate the process, social motivators hold meetings with those living in 10 – 15 adjacent houses each side of a lane to explain the sanitation programme and the technology proposed. A single lane is considered the basic social unit and each lane is asked to elect its own lane managers. OPP technical staff then conduct land surveys and prepare plans and cost estimates and present these to the lane managers. The lane managers then collect the money from the residents, call meetings to sort out social problems, receive various tools from OPP to undertake the work and make arrangements to hire OPP-recommended masons and plumbers to carry out the work. OPP helps supervise construction.

Each house is provided with a single chamber septic tank which receives all domestic wastewater before it is discharged to the sewer.

Although strictly speaking this receiving sewer is not a smallbore sewer but a common 100 mm diameter concrete pipe, it nonetheless represents the cheapest locally available small-diameter pipe. The size of the septic tank is often not determined by any technical criteria but by what the user can afford. The effluents are discharged into the nearest watercourse.

During the last ten years the project has managed to service 458 of a total of 3,050 lanes in the project area. An additional 742 have built their own sewers as a ripple effect of the project. The average cost of the small bore sewer system is no more than US$ 66 per house. This is estimated to be a quarter of what it would have cost the city authorities to provide the same service. OPP capital and administrative inputs to achieve this coverage have been no more than one-tenth of the capital inputs of the community. OPP has also developed a health programme working through women's groups, also at the level of the lane, with advice provided on hygiene, nutrition, disease prevention, family planning and kitchen gardens, an income generating programme which provides credit and advice to small businesses and a project to help upgrade the schools in Orangi.

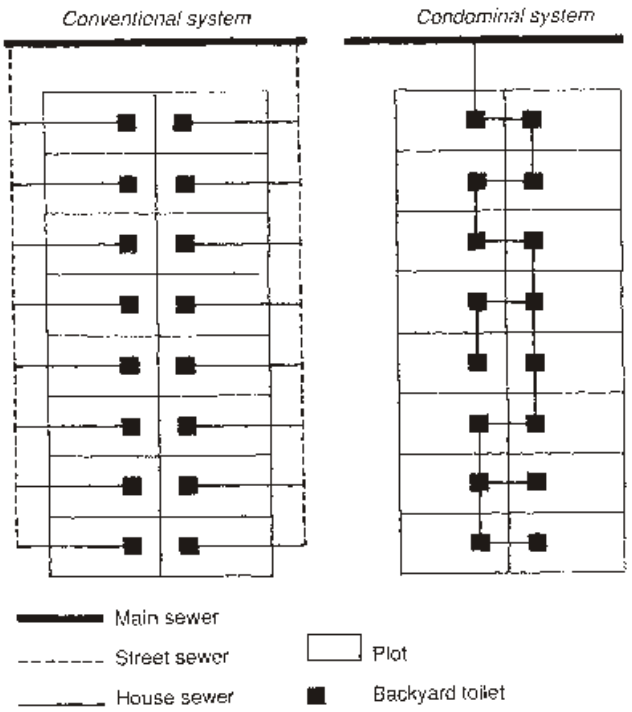


Fig. 13 Condominial sewage system

Source Mega-Slums

The sewerage technique adopted by OPP cost a fraction of typical Karachi connections by being the engineering equivalent of a donkey rather than a racehorse. A tank located between the house sewer and the street sewer retains the solids. This allows smaller pipes at flatter gradients to be used in the streets because they only have to carry fluids. The householder empties the tank when it is full.

Other types of sewerage donkey are being developed and applied in a number of countries. In Northeast Brazil, a condominial system has been invented which treats a group of houses as if it was an apartment block, runs a smaller, flatter sewer between them, and thereby reduces the costs of conventional household by 70%.

> *It is no coincidence that much of the new orthodoxy about low-cost technology and "demand" management in the water and sanitation field originated in the private, voluntary, non-governmental laboratory. Because non-governmental organizations (NGOs) tend to take as their starting point needs as they are felt and perceived within the community, they usually have a good record in responding to what people want. They understand user "demand" measured by people's willingness to contribute time, effort, and resources to a scheme rather better than elevated professionals and officials, whose orientation is to know what people should want and to respond to pressures from the moneyed and powerful. Also, because NGOs are too poor to go in for high-tech engineering, they usually rely on low-cost alternatives and community-level maintenance. Their first com-*

mitment is to their beneficiaries not to government policy-makers contractors, bankers and engineering consultants.

Thus, ironically, although the label they bear is "humanitarian", NGOs and voluntary agencies often function in a more business-like and cost-effective way as far as low-income communities are concerned than do professional authorities, which tend to look down on the poor. Orangi Pilot Project is a classic example of a mould-breaking NGO endeavour.

Cited from Mega-Slums
by kind permission of Water Aid.

Source The Poor Die Young, p 145–146.

Organized Self-help

The Community Construction Contract System in Sri Lanka

Under Sri Lanka's Million Houses programme, started in 1985, the formation of Community Development Councils (CDCs) was a prerequisite of communities receiving assistance for the creation of infrastructure and services. There was usually one CDC for 50 or 60 families. The Colombo Municipal Council ran training courses for over 1000 community leaders. The CDCs had three crucial functions:

- as a channel of communication between the residents, government agencies and NGOs, disseminating information from the agencies to the community, and conveying concerns and opinions from the community to the agencies
- as a forum where low-income urban dwellers can take decisions on projects for the benefit of their settlement and on any other community activity
- as the basis for organizing direct community participation in the work of providing services according to their own priorities.

Under the government's Community Construction Contract system, contracts for infrastructure provision were awarded to the CDC. The community could then carry out the work by itself; or hire labourers to do the work; or subcontract the work either to a private contractor, or a neighbouring more experienced CDC. (In practice, roughly a third of the CDCs chose each option). The community took on responsibility for the operation and maintenance of the facility it constructed. Between 1986 and 1991, some 150 contracts were awarded to CDCs. A review of 63 contracts placed in 1986–88 disclosed that two-thirds of the projects were for toilet blocks, drains, community halls, bathing wells and water standposts; that 84% of the contracts were completed within the estimated costs; and that all but a few either broke even or, more often, showed a profit (not easy at a time of high inflation). Communities which had received training generally implemented projects on their own or with hired labour.

During recent years the community contract system has lapsed owing to unfavourable economic and political changes. But while it lasted it provided conclusive evidence of the ability and willingness of poor urban dwellers to work together to create amenities for the common good, given technical and financial support from the private and public sectors. The programme was vulnerable, perhaps, because the communities depended upon 100% subsidy. But its success was attributable not to the subsidy, but to three core principles:

- the delegation of the responsibility for providing infrastructure in low-income settlements from the government to the end-users of the services
- the development of a sense of responsibility among the end-users for the maintenance and management of that infrastructure because they were involved in providing it
- the commitment of the government to providing the technical support, training and information needed by the local people to carry out these responsibilities.

Source UNCHS, Nairobi, 1994.

Community Development

UNICEF's Urban Basic Services Programme in Guatemala City

Since 1984 UNICEF has been developing an urban basic services programme in Guatemala City. A coalition of government agencies and private organizations, in collaboration with UNICEF, has supported a variety of community-based, community directed initiatives for water, sanitation and drainage, housing, health care and child development in the informal settlements in which nearly half of Guatemala City's population lives.

A study of the infrastructure needs of the low-income settlements in and around the city revealed that

- Only 4.5% of the houses had home water connections.
- Most people got water from a few public taps or bought water from privately owned trucks. Water from vendors was often contaminated and cost 25 times more per litre than water from the municipal supply network.
- One-sixth of the population had no access to toilet facilities of any kind.
- No garbage collection was available in most settlements.
- Virtually no drains or sewerage systems existed; during the rains, excreta and solid waste floated along public pathways.
- Most fuel needs were met by firewood; it was not unusual for families to spend one-third of their income on firewood.

In 1987 the government formed COINAP (Committee for Attention to the Population of Precarious areas in Guatemala City), a widely-based committee including representatives from some 20 public and private institutions. It started as a project-executing agency but after a few years its role became that of supporting and enabling communities to implement basic service projects. One

half of COINAP worked on mobilizing communities seeking assistance or undertaking projects. The other half concentrated on mobilizing resources from government or one or more of its member agencies. A research unit was formed to document and evaluate COINAP's work.

Health care: the basis of this programme was the recruitment of a team of 600 women, drawn from the communities, who became the health guardians of the settlements. Community pharmacies and low-cost food stores were started, and 15 small health centres are being set up. There have been dramatic improvements in health, especially among children. The women were the driving force behind other health-related changes.

Water and sanitation: Guatemala City's water shortage was equivalent to an adequate supply for nearly 1.5 million people. Community groups set to work to provide and maintain low-cost water supply systems. Two models developed; both combined the active involvement of a community group, with technical assistance and institutional cooperation from COINAP. One was the single source tank: a big water tank is installed by the municipality. From this a supply network leads to individual houses, each family connecting its own (metered) supply. The local community association gets a single bill from the water company, and collects fees from households. Part of the fee is set aside for maintenance, and for other infrastructure needs.

The other model was the community-managed well. The community formed a small private enterprise to manage the water supply from a 300 m deep well, capable of meeting the needs of 2,000 families at a price 25 – 60% less than they were paying, for water from other sources. The community association charges on a sliding scale according to usage. Payments go into a revolving fund to enable other homes to be connected. (Total capital costs, including training of community managers, is about US$ 100 per family). The projected surplus funds will go into other community projects.

Other initiatives: In one group of communities, volunteers were trained in basic environmental sanitation. Fourteen public taps and 500 dry latrines were installed, 3,000 existing latrines were improved, and drains and cobblestone sidewalks built in 24 alleyways. Some 20,000 fast-growing trees were planted to provide a sustainable wood supply, and fruit trees were included. New stoves which cut woodfuel bills by half, and reduce pollution, are being installed. Composting schemes are working in two communities. Literacy classes are run by women health guardians trained for the purpose. Day care centres are being set up – one is a decentralized model, run from women's homes. Employment and income-generating projects include a carpentry workshop, a women's centre equipped with a maize-grinding mill, and a community theatre.

A recent programme includes new and upgraded housing, neighbourhood improvement and water supply. The monthly cost per household is about $ 30, of which $ 21 is for housing improvement, $ 7 for roads and drains, and just over $ 1 for water. Average household income in the area covered is about $ 84 a month.

Source *Environment and Urbanization, vol 6, no 2, October 1994.*

Credit Schemes

What can be done with the right kind of credit programme

CHF and UNICEF Provide Options for Peri-Urban Sanitation

In Honduras, the Cooperative Housing Foundation (CHF) and UNICEF hope to improve unhealthy sanitary conditions through a sanitation loan program for low-income families.

The program aims to increase interest in using credit to make sanitation improvements, and to raise awareness of the need for better environmental sanitation. Loans are available to participating families to build shower stalls, construct water storage tanks and wash stands, implement rooftop rainwater collection systems, or make other improvements, such as devising an appropriate way to dispose of human excreta. People have the option of building alternatives to simple pit latrines, including ventilated improved pit (VIP) latrines, dry compost latrines, and pour flush toilets. Loans also can be used to make a legal connection to a city's waterborne sewerage system when possible.

By offering a variety of options in a broader price range and linking them to well-managed credit programmes, CHF and UNICEF hope to increase the demand for urban sanitation.

Grameen Bank: Sanitation Loans for the Poor

The Grameen Bank has gained international acclaim for its novel approach to economic development and poverty reduction in Bangladesh – making small loans at commercial rates to groups of poor people in rural areas. Today, it has nearly one million borrowing members in over 24,000 communities; nine out of ten borrowers are women from families that are landless and without assets.

Each individual who receives a loan must agree to the bank's "Sixteen Principles," one of which states, "We will not defecate in the open. We will use pit latrines." To date, more than 100,000 latrines have been financed. A subsidiary loan program also has been developed through which a latrine can be purchased with a US$ 14 loan repayable over a one-year period.

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