



# INCOME AND EMPLOYMENT FROM SERVICES

## Introduction

The current trend towards a more urbanised global population is accompanied by an increase in the size and number of urban slums. Slums are growing at similar rates to cities in most parts of the developing world (UN-Habitat, 2006: 11) and urban authorities are unable to keep pace with provision of basic infrastructure services<sup>1</sup> in these areas. With the constant threat of eviction due to insecurity of land tenure in 'illegal' settlements, residents may be reluctant to invest their own money into improving services for themselves and may find services offered by governments or the private sector unaffordable. The provision of affordable, improved basic infrastructure services in slums typically brings many benefits, including health and an improved local environment. Among other benefits are opportunities for employment and income generation. Such opportunities may come as a result of improved access to services for slum dwellers as well the involvement of the poor in systems of service provision - from construction of infrastructure through to its operation, maintenance and management. Maximising the urban poor's share of this income and employment from services not only magnifies the positive impact of infrastructure interventions but also has important implications for poverty reduction.

Agencies and organisations have adopted a variety of approaches in their implementation of infrastructure projects in slums. These range from conventional, 'top-down' provision (designed to increase coverage levels and implemented by external contractors and engineers with little or no participation by residents) to community-managed models (typified by greater resident participation in the construction and/or ongoing operation and maintenance (O&M) of the infrastructure services). Practical Action's approach to urban infrastructure service provision seeks to improve the living environment of the poor through better access to services. In addition, it looks for ways in which the infrastructure can provide employment and income-generating opportunities for the poor as users and providers of services. By placing improvements to the livelihoods of the poor as a key objective, Practical Action feels that the sustainability of infrastructure services may be promoted without jeopardising pre-existing informal or small private systems of service provision. These systems are often owned by the poor and provide important livelihoods for them.

This technical brief is based upon research carried out in Bangladesh looking at Practical Action's urban services programme. It is intended for project staff and other practitioners who work on services and infrastructure provision for the urban poor. It looks first at the main mechanisms by which these income and employment benefits may be realised by slum dwellers.

Secondly, the ways in which they can accrue at the different phases of infrastructure service provision are discussed. Finally, we consider the need to look beyond the physical boundary of the affected slums, recognising the important role that service providers from the wider urban poor have to play in constructing, operating, maintaining and managing infrastructure services in slums.

## Infrastructure and services produce income benefits for the poor

Opportunities for income and employment arising from improvements to infrastructure services may be seen as coming about through the following three mechanisms:

### 1. Direct income benefits

Direct income benefits are those realised by the poor as they operate as *providers of services*.

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<sup>1</sup> The basic infrastructure services considered in this technical brief are water supply, sanitation (excreta disposal), solid waste collection, street/walkway paving and drainage.

Income gains may be enjoyed by existing informal or private providers of services, as demand for and the reliability of their services increases in line with the construction, operation and maintenance of new infrastructure. Similarly, incomes may increase for others who become involved in service provision for the first time, providing community labour inputs during construction (e.g. under community contracting arrangements), or choosing to start operating services as a business. Such activities may include operating water points as community enterprises, delivering piped or groundwater to unserved areas, collection of solid waste and recyclable materials, and compost production. Possible roles for sanitation service providers include: automated and manual pit emptying services, latrine construction, pit digging, sanitary mart operators, caretakers of public latrine/shower facilities, and providers of low-cost sewered systems (Moran and Batley, 2004: 49).

## 2. Indirect income benefits

Indirect income benefits can also accrue to *users of services*. Table 1, below, shows four expected outcomes from the provision of improved services. These outcomes are then linked to examples of indirect income benefits arising to users.

**Table 1: Expected outcomes and indirect income benefits arising from improvements to water, sanitation, walkways and drainage in slums**

Indicator	Outcome	Example of income benefit
Health/injury	Reduced diarrhoea and reduced injury from slips/falls	<ol style="list-style-type: none"> <li>1. Reduced medical expenses associated with consultation and treatment of diarrhoea or injury.</li> <li>2. Fewer work days lost for those suffering <i>and</i> for family members who are responsible for looking after them.</li> <li>3. Fewer costs associated with friends/family visiting the sick/injured.</li> </ol>
Time	Less time spent accessing services and moving around the slum	<ol style="list-style-type: none"> <li>4. More time available for productive activity.</li> <li>5. Increased school attendance by girls and time available for home education of children (<i>future</i> income benefit).</li> <li>6. Ability to arrive punctually for work.</li> </ol>
Convenience	Conveniently-located services	<ol style="list-style-type: none"> <li>7. Productive uses of water<sup>1</sup> for small-scale home enterprises.</li> <li>8. Shorter distances carrying water reduces risk of injury (see benefits 1 – 3 above).</li> </ol>
Expenditure	Reduced cost of services	<ol style="list-style-type: none"> <li>9. Piped or groundwater available at a greatly reduced cost per unit volume than that purchased from water vendors.</li> <li>10. Protection from fines for making illegal water connections and/or removing the need to pay bribes to ensure access to such connections.</li> </ol>

It should be noted that it is not reasonable to expect these indirect income benefits to arise for *all* users. For example, research into the impact of Practical Action's urban services programme in Bangladesh found mean daily time savings for water collection of  $56 \pm 32$  minutes for each household. However, only 29% of respondents reported using this time for activities relating to income generation, with the remainder spending it on housework or socialising. Non-governmental organisations (NGOs) may consider improving linkages to income generating activities for these people to enable them to use this saved time more productively, if appropriate. Also, combined water, sanitation and hygiene-promotion interventions produce a mean 33% reduction in diarrhoeal disease morbidity (Fewtrell et al. 2005). Thus, health-related income benefits arising from such infrastructure improvements may be enjoyed by some, but not

<sup>1</sup> e.g. pottery, agriculture, food production/vending, iced water sales (Blagbrough, 2001), brewing, laundering clothes (WSSCC, 2006: 21), [livestock rearing and motorcycle washing](#) (Noel et al. 2006)

all users. Finally, it may be difficult to accurately quantify the size of these income benefits without establishing somewhat spurious cause and effect linkages.

### 3. Broader impacts and benefits

The enhanced local environment arising from the improved infrastructure services can make the affected area attractive for those looking to invest in the local economy in the form of small businesses or enterprises. Newly established shops, food stalls and small-scale industries can provide employment opportunities for the local population. A cleaner area is better linked with the wider town or city economy. Other consequences of the improved environment may be increased property values which can have a positive impact for home owners, yet a negative impact for tenants if rental rates also increase.

## Direct income benefits for the poor at each phase of service provision

Service provision can be broken down into different phases, from construction to operation, maintenance and management. Direct income and employment benefits may be realised at the different phases through some of the approaches described below.

### Construction phase

*Community contracting* – in this approach the urban poor are contracted either by local government or NGOs to carry out infrastructure construction. In this way, the financial benefits of the contract go to the community, rather than to an external contractor or agency. The approach promotes skills development in addition to income generation, and community members may be hired for a range of activities including designing and costing as well as the construction itself (World Bank Group, n.d.). Cotton et al. (1998) deal with the subject in detail, providing guidelines for community contracting under a variety of stakeholder arrangements, funding scenarios and for different community roles and involvement. Participation need not be limited to residents from the slum areas receiving the infrastructure - necessary skilled and un-skilled labour may also be procured by looking beyond the physical slum to the wider urban poor. Existing skilled labour might include latrine pit diggers, masons, and day labourers connected to sanitary marts or shops selling plumbing parts.

Cotton et al. (1998) state that contracts should:

- Be low risk and low hazard
- Be straightforward, both technically and managerially
- Not require highly skilled personnel
- Be labour intensive (see *labour-based technology*, below).

They outline the following benefits of this approach:

- A strong incentive for community members to see that work is carried out well
- Dual benefit of the infrastructure itself as well as creation of employment in the community
- Development of small enterprises in the community
- The local economy is supported by the increased business for building materials suppliers
- Participation process empowers and offers greater control to community groups and households
- Local knowledge is available about existing services and there is less potential for disputes with residents when working on site

*Labour-based technology (LBT)* – this is one of the approaches promoted by the Employment Intensive Investment Programme (EIIP) of the International Labour Organisation (ILO) for the construction of basic infrastructure. In contrast with common equipment-intensive approaches, LBT gives priority to labour, supplementing it with appropriate equipment only as required for reasons of quality or cost. Some authors question the final construction quality with LBT, so well-managed sites are essential to ensure specified standards are met (ILO, 2003: 20). More details are available at EIIP (2005).

Comparative studies looking at LBT and equipment intensive approaches found that, for the same

final quality of infrastructure, labour-based options were 10 - 30% cheaper, had foreign exchange requirements that were 50 - 60% lower, and *resulted in 2 - 4 times more employment creation* (ILO, 2003: 10). While this employment may only last for the duration of the construction period, longer-term and wider benefits should also be considered:

- Income multipliers are very high for labour intensive construction (UN-Habitat 2005: 151). The wages earned result in increased consumption, investment and savings, with a multiplier effect on the local economy. As a result, for every directly generated job there are 1.5 – 3 jobs that are indirectly generated (ILO, 2003: 13, Cotton et al. 1998: 7).
- The capacity and size of the local/domestic construction industry is expanded through the use of small-scale contractors. The result is a more dynamic industry with better back- and forward linkages, leading to a greater number of sustainable jobs (ILO, 2003: 13, and Cotton et al., 1998: 20).

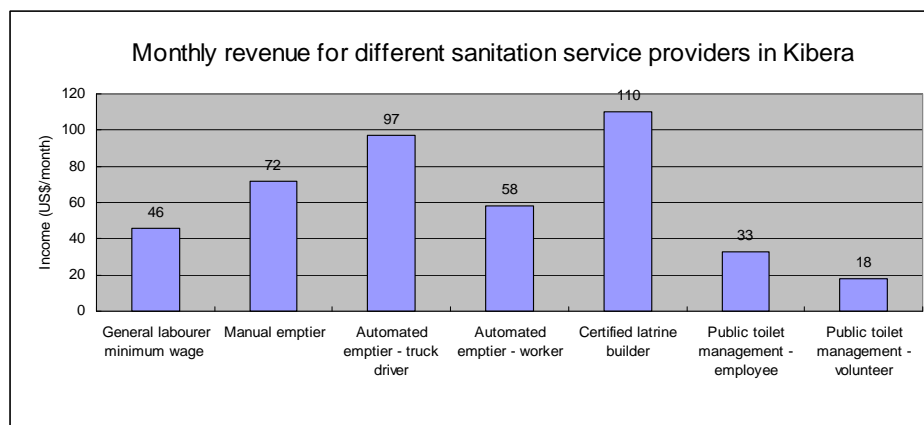
In-depth information and specific case studies about LBT in infrastructure construction can be found in ILO (2003). ILO (2002) contains a list of LBT-related publications.

### Operation, maintenance and management phases

*Small-scale private enterprises* – there is large scope for service provision operated in the form of small-scale private enterprises. A common form of income generation from water supply within slums is the on-sale of water from privately-owned service connections or tubewells. Comparative advantages of this and other types of informal water service provision may be found in Sansom (2006a: 6), and an in-depth review of informal water vendors is provided by Kjellén and McGranahan (2006). Possible roles for water vendors and skilled handpump mechanics within systems of improved slum infrastructure are considered under the heading ‘Looking beyond the physical slum boundaries’ below.

The re-sale value of recyclable waste products and compost means that solid waste collection represents a useful source of income generation for the urban poor. In Dhaka, Bangladesh, community-managed solid waste collection programmes are run within slums by community based organisations (CBOs) in conjunction with the watsan interventions of NGOs such as DSK. Waste is collected by residents using a cart and deposited at secondary collection points for final disposal by the city authority. The collectors are paid by the users of the service. CBO-run schemes of this nature are common but require close coordination with the urban authorities to ensure secondary collection is successfully carried out. Compost making is also common and efforts are being made to establish reliable income and employment from this.

Possible areas of sanitation service provision are listed above under ‘direct income benefits’ and more discussion on their role in service delivery can be found in Scott and Sansom (2006). Figure 1, below, gives monthly revenues of sanitation service providers in Kibera in Nairobi, Kenya, and shows many of these occupations to compare favourably with the minimum wage for a general labourer. More may be found in WSP-Africa (2005).



**Figure 1: Monthly revenue for different sanitation service providers in Kibera, Nairobi**  
Source: adapted from WSP-Africa (2005: 3)

Small-scale private enterprises benefit from being flexible and able to respond quickly to

customer demands, while unregistered, informal enterprises also enjoy advantages such as exemption from paying taxes or making social security payments for employees. Discussion of the merits of formally integrating informal service providers is beyond the scope of this technical brief, but further information on this may be found in Sansom (2006b) and Collignon and Vézina (2000: 54).

*Paid caretakers and operators in community-managed facilities* - this model of service provision is becoming increasingly common within slums, where it is often accompanied by support from civil society organisations such as NGOs. Typically a CBO is formed which is responsible for the collection of user fees, administration and management of the facilities. Depending on the situation, fees may be monthly or paid per use, and may cover full or partial repayment of the capital cost of the infrastructure, service charges (in the case of water supply extensions from the utility's network) and payment of a salary for the caretaker of the facilities. The caretaker/operator position can be very desirable - in watsan projects implemented by DSK in Dhaka, Bangladesh, households sometimes sacrifice land for the new infrastructure on the condition that they receive the caretaker job (Ahmed, 2003). In Dakar, Senegal, women who work as operators of standposts receive 30% of the revenue at the water point, but pay US\$40 up front for the privilege of holding the position (Colin and Lockwood, 2002: 8).

*Voluntary community-management* – areas of service provision and responsibility for improved communal watsan infrastructure in a typical slum in Faridpur, Bangladesh, supported by Practical Action, are shown in Table 2, below:

**Table 2: Service provision associated with a volunteer-managed model for watsan infrastructure in slums in Faridpur, Bangladesh**

	Service provider
<b>Physical task</b>	
Repair and maintenance of shared water point (tubewell or standpost)	minor CBO member major <i>External labour market</i>
Regular cleaning of communal latrine	All user households, by rotation
Emptying of pit/septic tank	<i>Externally procured private pit emptiers</i>
<b>Administrative task</b>	
Collection of users fees and ad-hoc maintenance costs	CBO treasurer
Participation in monthly meetings	All CBO members
Purchase of bleach/brush	All user households (communal purchase)
Oversee cleaning rota	'User committee' of female volunteers responsible for each latrine
Check cleanliness of latrine	

While the choice of service provider may vary according to specific situations and cultural norms, many of the tasks shown above will be applicable to the majority of community-managed schemes. Many of the voluntary inputs made by user households/CBO members in Table 2 would be made by the caretaker or operator in the paid model.

*Possible indirect income benefits to communities in community-managed schemes* – in the Faridpur case, collection of user fees continues to generate a fund intended for ongoing maintenance and repairs. Research fieldwork revealed that the CBOs' experience of collective saving in this way had motivated them to make plans to use this saved capital to attract future donor-funded projects aimed at improving housing conditions – their stated top priority for slum improvement. In addition, project processes of participatory planning (with the involvement of representatives from the municipal authority) and CBO formation (with subsequent increased levels of organisation within the communities) have brought other, related benefits. Communities now have the knowledge and confidence to engage formally with the municipality to request further services, as well as a degree of protection from eviction because of the municipality's investments. While these are not *direct* income benefits, they have an income dimension and may be considered as intangible *indirect* income benefits for the community.

Although the community-managed systems in the slums studied in Faridpur seemed to be functioning well, the literature suggests that the ongoing sustainable management of purely volunteer-operated schemes is questionable, due to problems in terms of revenue collection for

cost-recovery and ensuring suitable O&M procedures are put in place (Sansom, 2006a: 4, UN-Habitat, 2003: 185). However, volunteer-operation may be the most suitable choice for certain social situations, such as where charging neighbours for water and sanitation services is culturally unacceptable. This was found to be the case in Faridpur; not only was there a reluctance to charge for water (which was felt should be available freely), slum communities also questioned the logic of paying someone to provide services within their neighbourhood that they could provide for themselves, free of charge. In addition, CBOs members are often socially knitted through extended families, ethnicity and reciprocity. These relationships can add weight to feelings of obligation to make voluntarily contributions for the good of the community.

While arguments exist both for and against purely volunteer-operated models, the literature suggests that the success of such schemes may be more likely when:

- CBOs act as partners (often with NGOs) in community-managed schemes (Sansom, 2006a: 4). Discussion of the importance of such partnerships may be found in Colin and Lockwood (2002) and via the BPD website (see 'Useful Websites', below).
- Long-term strategies for O&M are agreed at the planning stage of projects. Agreements should involve both community and municipality, with clearly defined roles and responsibilities as well as a means of enforcing the agreements. Incentives and mutual benefits are required for all actors if they are to remain committed to maintaining the infrastructure services (Sohail et al. 2001: 29, 44, 121).

In addition, outsourcing O&M to the local private sector is an option if community members become tired of long-term voluntary inputs for community infrastructure (Sansom, 2006a: 14), or where internal conflicts adversely affect the ability of volunteer-run systems to function effectively. Outsourcing is also relevant for maintenance/repair tasks that are beyond the skills capacity of community/CBO members - this is the case for the service providers shown in *italics* in Table 2. The involvement in this way of skilled external service providers in slum infrastructure services' operation, maintenance and construction, is considered below.

### Looking beyond the physical slum boundaries

Enterprises providing pit emptying and septic tank desludging services require a minimum number of clients in order to be viable; these clients may be found in both low- and higher-income urban areas, according to demand. Indeed, for many of the sanitation services listed under the heading 'direct income benefits', service provision is occasional or one-off, and may cover a wide geographical area and client base. The same applies to skilled handpump mechanics and labourers linked to shops offering plumbing services. Similarly, the nature of solid waste collection services is such that they may be operated locally within one slum, yet equally they may extend into more affluent areas.

While there may be ways to promote direct income benefits for new service providers residing in slums receiving infrastructure interventions, it is important to also consider established external service providers and look for ways in which their incomes too may be maximised (created and increased). Being skilled and in possession of the tools required for the job, external service providers are often best suited to effectively deliver construction, operation, maintenance, and management services in slums. Examples of situations where paid service provision would be better a) performed by service providers (SP) who are slum residents, or b) outsourced to the wider urban poor, are given in Table 3, below.

Existing service providers can also play a role in extending improved services into unserved or underserved areas. These may include water vendors who transport water for sale. Prices charged by water vendors typically exceed the cost of utility water, yet the benefits to users of vendors' services include flexibility in payment and time-savings from being relieved of having to queue at public standposts (Kjellén and McGranahan, 2006: 9-10). Although there can be no guarantee of the quality of water sold by vendors, it may be higher than that obtained from users forced to resort to unimproved sources in an attempt to save the time spent queuing at standposts. The possibility also exists for vendors' obtaining water from improved water points in slums, which can represent a more convenient water source for the vendors as well as providing additional income for the owners/operators of the slum facilities.

**Table 3:** Examples of situations where paid service provision would be better a) performed by service providers (SP) who are slum residents, or b) outsourced to the wider urban poor

	Service provider	Notes
<b>General</b>		
Infrastructure construction (including earthworks)	Slum resident	Users of finished infrastructure have: - increased sense of ownership - knowledge of technology, promoting correct usage and ability to make repairs.
	External SP	Advisable in the case of a lack of available or suitably skilled labour among residents - employment reaches the wider urban poor and for skilled work the quality is assured
Caretaker or operator of communal facilities	Slum resident	Quality of service provided is promoted because: - caretaker can be easily held accountable - caretaker's social obligation to community - (s)he is also a user of facility
	External SP	Advisable in the case of failure of volunteer-operated systems – outsourcing stops facilities falling into disrepair/disuse
<b>Water-related</b>		
Major handpump repairs or plumbing	External SP	Investment into tools and/or training of a resident may not be worthwhile for a service that is only required occasionally and readily procured from outside.
Water vending to unserved parts of the slum	Slum resident	Relevant for localised <i>on-sale or cost-sharing of water from private connections</i> or wells within the slum
	External SP <i>or</i> Slum resident	Where time spent queuing at shared water points is significant enough to create demand for <i>water deliveries</i> . Suitability of slum resident for this purpose (and on-sale, above) depends on social attitudes towards charging neighbours for water.
<b>Sanitation-related</b>		
Pit/septic tank emptying	External SP	Unlikely that slum residents are willing to do it. Also, regular, external SPs more likely to have: - protective clothing/suitable equipment - links to an established faecal sludge management chain (environmental advantage).
<b>Solid waste-related</b>		
Door to door waste collection	External SP or Slum resident	Depends on the size of the area served by the collection service and willingness to pay (WTP) by clients - if service is limited to the slum and WTP exists then it is suitable for a resident. If not, then external SP can also include higher income areas with cross-subsidy from charges collected there.

## Conclusion

Improved basic infrastructure services in slums can result in income and employment benefits for the residents of the affected areas. This technical brief has outlined the three main mechanisms

through which income gains may arise, focussing principally on direct income benefits to those who act as service providers. Indirect income benefits which accrue to the users of improved services have been covered to a lesser extent, and NGOs should be aware of the mechanisms shown in Table 1 so as to promote ways in which these benefits may be realised to the fullest.

Using labour-based technology and community contracting approaches, employment creation can be maximised during the construction phase of infrastructure services. Direct employment gains may be short, but they are supplemented by wider economic and employment benefits. Careful supervision is required to ensure the final quality of construction, and specifics regarding stakeholders, funding, and community roles/levels of involvement must be considered before engaging in community contracting.

The operation, maintenance and management phase of infrastructure service provision provides a number of possibilities for direct income gains. Community-managed models are commonly adopted for slum infrastructure improvements, and may or may not include elements of paid service provision for caretakers and operators. Evidence suggests that purely volunteer-based models are less likely to be sustainable, although this may need further research and understanding, as there are a number of social factors which may dictate these to be the most suitable systems to adopt. Sustainability may be enhanced by forming partnerships between CBOs and NGOs, agreeing detailed arrangements for O&M at the planning stages. These agreements should involve all stakeholders, including local municipal authorities. Ways to enforce the agreements as well as incentives and mutual benefits should also be considered.

It is important to remember that slums do not exist in isolation, and NGOs should consider the role that existing service providers from the wider urban poor can play in the construction, operation, maintenance and management of urban services. Outsourcing of tasks to such providers by CBOs can represent a solution in the event of waning volunteer motivation, and it is the logical choice when a skills gap exists in the community. It can also be the most appropriate choice in the case of occasional or one-off water and sanitation services, whose providers rely on servicing a geographically diverse range of clients in order to meet the minimum number required to be viable.

Finally, potential income and employment benefits are unlikely to be fully realised by chance, and NGOs should incorporate these concepts into the early stages of planning for infrastructure service improvements so as to maximise the impact they can have on poverty alleviation for the urban poor.

## Further details and acknowledgements

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## Useful Websites

In addition to those sources mentioned in the text and listed above, the following websites contain useful information and links to relevant documents:

Building Partnerships for Development (BPD) in Water and Sanitation has a wide range of documents downloadable from its on-line library: [http://www.bpd-waterandsanitation.org/web/w/www\\_143\\_en.aspx](http://www.bpd-waterandsanitation.org/web/w/www_143_en.aspx)

Employment Intensive Investment Programme (EIIP) of the International Labour Organisation (ILO). <http://www.ilo.org/public/english/employment/recon/eiip/>

International Institute for Environment and Development (IIED) has huge catalogue of publications relating to urban development, some of which may be downloaded for free. <http://www.iied.org/>

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Practical Action is a development charity with a difference. We know the simplest ideas can have the most profound, life-changing effect on poor people across the world. For over 40 years, we have been working closely with some of the world's poorest people - using simple technology to fight poverty and transform their lives for the better. We currently work in 15 countries in Africa, South Asia and Latin America.