Institutional Incentives and the Provision of Urban Sanitation: Can the Community Increase the Chances of Success?

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Submitted in partial fulfilment of the requirements of the Degree Master of Science (Development Studies) at the London School of Economics, DESTIN

1995

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INTRODUCTION

Why does urban sanitation so frequently fail? What is the incentive structure that determines the outcome of investments in infrastructure and can it be improved by coordinating investments from the state and the community?

Urban sanitation fails, or rather the system set up to provide urban sanitation fails, when people are forced to live in unsanitary conditions amongst the waste products of their daily lives. They may live in areas which have never been provided with sanitation, in areas where sanitation facilities have been built but have never functioned, or adjacent to sewers that have long since ceased to function. Decisions about the level and coverage of sanitation services are made in a situation of limited resources on the basis of available information. They are influenced by structures of power and levels of accountability. Most low income householders in semi-official unserviced housing will have no illusions about why they are not provided with services. It may be less clear to them why sewers are sometimes built only to remain non-functional, or are built, with spectacular results, only to silt up and become a worse health hazard than the filthy streets they replaced.

This paper is not about sources of funding for sanitation. It is not enough to say that infrastructure fails because of lack of resources. Lack of resources limits what can be done but does not explain why resources are wasted on overdesigned systems, badly supervised construction or inadequately maintained networks. Neither does it explain why the poorest communities, living in the harshest conditions, are frequently left with no sanitation at all. Inattention to poor communities, inappropriate designs and inadequate supervision and maintenance persist because actors involved in sanitation have no incentive address these failures.

Decisions *made by individuals* determine whether infrastructure is maintained or not. These decisions are affected by the perceptions which individuals have about the infrastructure concerned. In the words of Ostrom et al.:

> "Individuals, who are expected to invest resources (including their own time and labour) in sustaining ... infrastructure, must perceive that the benefits they obtain (including the

> benefits they share with others) exceed the costs of the resources they devote to this effort." (Ostrom et al.: 1993: 9)

Infrastructure will be sustained when the net flow of perceived benefits is positive. In other words the "sustainability" of infrastructure is determined as much by individual perceptions as by the nature of the infrastructure itself.

The sustainability of externally funded projects is sometimes obscured by the inflow of external resources. Furthermore, projects which demonstrate a net positive return on capital investment will not be maintained if there is no net positive return to the individuals who make the critical decisions about maintenance. For example projected rises in property values may be used as a proxy for the benefits of urban infrastructure (Asian Development Bank: 1986: 50). However, from the perspective of an individual tenant, an increase in property values is more likely to be seen as a disbenefit than a benefit and this will affect the tenant's response to the scheme. This will become very important if tenants are expected to carry out maintenance . Analysis of net benefit flows must be carefully focused on individual actors - not just on Government or external donors who are looking for a return on capital investment - and *all* the costs and benefits must be considered.

The aim of this paper is two-fold: to identify some of the incentives that currently drive unsustainable or biased investment in the sanitation sector in an urban context; and to examine whether this incentive structure can be improved by coordinating investments from the state and the community.

New Institutional Economics (NIE) has begun to tackle the problem of perverse incentives in the area of infrastructure provision[2]. Much of the work to date has concentrated on rural infrastructure, particularly roads and irrigation. There is a need to reconsider some of the recent theoretical developments in the light of the very different situations which arise in urban areas. The paper opens by establishing a framework for the analysis of institutional arrangements in infrastructure based on the excellent work of Ostrom, Schroeder and Wynne. This is followed by a review of urban sanitation, identifying features of the sector that crucially affect its administration and production. The first of two central sections of the paper then examines a stylised representation of the centralised provision of sanitation services.

The coordinated provision of infrastructure, involving both Government and the Community, has been proposed both by non-governmental organisations (NGOs) working in Pakistan and latterly by the World Bank (World Bank World Development Report: 1994). While community involvement may bring down production costs for the Government the overall costs of service provision may in fact rise.

Furthermore successful community based interventions are predicated on the assumption that potential for collective action exists in the Community. The second central section of the paper examines this potential and the costs of coordination between the Community and Government. Finally it touches on the long term prospects for wholesale policy changes in the sector, in view of political, social and economic structures that are biased against the poor (Korten and Alfonso: 1983).

THE ANALYTICAL FRAMEWORK

Administration and Production of Sanitation

In the debate about infrastructure provision it is very easy to conflate the concepts of service provision and service financing. Sara Bennett has pointed out the conceptual differences between financing and provision in the health sector, showing that the range of broad policy options combining public or private financing with either public or private provision give rise to a range of very different outcomes (Bennett: 1991).

Ostrom et al. use the terms "Provision" and "Production" to describe policy and regulation on the one hand and the physical construction and operation of facilities on the other. For them "Provision"

"refers to decisions made through public choice mechanisms about

- the kinds of goods and services to be provided by a designated group of people;
- the quantity and quality of the goods and services to be provided;
- the degree to which private activities related to these goods and services are regulated;
- how to arrange for the production of these goods and services;
- how to finance the provision of these goods and services; and
- how to monitor the performance of those who produce these goods and services."

while "Production" refers to " the more technical process of transforming inputs into outputs - making a product or in many cases rendering a service." (Ostrom et al.: 1993: 74). Thus financing options are considered in combination with other policy options all of which are separated from the more mechanistic processes of construction, operation and maintenance. This distinction is risky if it falsely distinguishes between the process of policy making and the processes of construction, operation and

maintenance, and if it blurs the distinctions between the latter three activities. Nonetheless the grouping together of all policy and regulation issues with financing is helpful in progressing beyond the polarised "market versus the state" debate. To avoid confusion I shall refer to this group of activities under the heading of "Administration", since I have already used the term "Provision" to describe the entire process, encompassing both administration and production.

Analysis of Institutions

Institutions consist of rules which establish a system of rights and obligations amongst a group of people. Institutional arrangements result in outcomes which can be assessed in terms of Economic Efficiency; Equity through Fiscal Equivalence; Redistributional Equity; Accountability; and Adaptability (Ostrom et al.: 1993: 112-6).

Economic Efficiency is achieved when resources are allocated in such a way that no person or group can become better off without some other person or group becoming worse off. Clearly if the costs of maintaining and running a sanitation facility exceed the benefits then efficiency is not being achieved.

Equity can either be expressed in terms of *Fiscal Equivalence* where, in an exchange economy, "those who benefit from a service should bear the burden of financing that service" or in terms of *Redistributional Equity* where policies are designed "to redistribute resources to poorer individuals" (Ostrom et al.: 1993: 114).

In competitive systems, as opposed to command economies, producers (or "Agents") must produce to the satisfaction of consumers ("Principals") or the consumers will go elsewhere. The degree of dependency of the Agent on the Principal determines the level of *accountability* between them. In a democratic system accountability is exercised by means of the vote. In a free market the Principal is able to select the Agent who provides the best deal. Accountability has to do with what the Principal perceives as the duties of the Agent, and how much information the Principal can acquire about the actions of the Agent[3].

Institutional arrangements must adjust to changing environments to be successful. Their *adaptability* is related to the degree of accountability, and to assymetries of power. As Midgely points out most

institutions are "systems maintaining", that is, they work within and tend to reinforce "existing structures [of power]" (Midgely: 1988).

Neo-classical economics makes the crucial assumptions of perfect information, costless transactions and perfectly rational behaviour on the part of participants. Not surprisingly these assumptions ensure that markets generate efficient outcomes and that redistributional goals are not achieved without "some sort of subsidy" (Ostrom et al.: 1993: 118). The discipline of New Institutional Economics (NIE) in attempting to explain the "persistence of resource misallocations" has proved that it is "necessary to acknowledge the existence of transactions costs" (Toye: 1995: 9). Many traditional and informal contracts which appeared to be irrational or non-functional begin to make sense when the cost of transactions is considered[4](ibid: 12).

Furthermore, much work has now been done to analyse "opportunism" within the contractual relationship between Principal and Agent (ibid: 10, citing Williamson: 1975). A group of people, acting "in an uncertain environment" and "attempting to achieve joint long term benefits" will enter into contracts or agreements. Principals will, if possible, select contractual arrangements which help them to minimise Principal-Agent problems arising from information assymetries. Agents may try to select arrangements that operate in the opposite way. According to Toye "[t]he ubiquity of incentives problems ... is the reason why transactions costs are high." Nonetheless

> "incentives are not in principle observable [and that] is why, if testable propositions are to be derived from theory, the problem should be cast in terms of the *costs* of enforcing performance" (ibid: 11).

Transformation and Transaction Costs

What is required is an assessment of the full costs of administration and production. These include both transformation and transaction costs.

However, in the rush to assimilate transaction costs analysis into the mainstream of development thought, it would be all too easy to overlook the costs of "transforming inputs into outputs". These costs, often referred to as "production costs", are referred to in the Ostrom analysis as "transformation costs"[5] (Ostrom et al.: 1993: 119).

Transformation costs in *production* are relatively easy to conceptualise - they are

> "the costs of transforming inputs (land, labour and capital) into outputs (the design and construction of an infrastructure facility or its operation and maintenance)" (ibid: 123).

Transformation costs in *administration* are more complex. They are

> " the costs involved in (1) transforming citizen preferences about outcomes and their willingness to pay into articulated demands for publicly provided packages of goods and services, (2)arranging for financing and producing these packages, (3) monitoring the performance of producers, (4) regulating the use patterns of consumers, and (5) enforcing compliance with taxation and other resource mobilisation measures" (ibid: 120).

Transaction costs are made up of costs of coordination, information costs and strategic costs. Coordination costs occur both ex ante and ex post (ibid: 46, citing Williamson: 1975). Ex ante costs are those involved in setting up a contract, including the costs of obtaining information, negotiating agreements, making side payments (to gain the agreement of participants who are averse to the negotiated settlement) and communication. Ex post costs include the cost of monitoring the performance of participants, the costs of sanctions and the cost of renegotiating if contracts require adjustments.

Information costs arise both in searching for and coordinating information and from any failure to acquire the required information. Strategic costs are made up of both those which arise from the need to limit strategic behaviours and those which arise *because* of strategic behaviours.

THE URBAN SANITATION SECTOR

The Sanitation Network

Conventional water-borne sanitation systems (sewerage) consist of a network of pipes (sewers) which collect household waste (sewage and sullage), and carry it away for treatment and disposal[6]. Alternative solutions - bucket latrines and vault toilets - involve either manual or mechanised removal of household wastes. These are both unhygienic and, in many countries, socially unacceptable. The night soil system found in many parts of China for example, is not a common feature in the countries of South Asia. Bucket latrines are commonly used in communities where there are no other facilities available, but health implications, and the lack of appropriate treatment and disposal facilities, render this one of the

least acceptable solutions. Pit latrines, septic tanks and soak pits, which allow for some on-site treatment of wastes, are commonly adopted in rural areas. However, conditions in many poor *urban* settlements may limit their effectiveness or preclude their use entirely. Lack of space, high water tables, the risk of contamination of shallow aquifers, unstable land, sandy soils or high incidences of flooding are all conditions which constrain construction of pits and soakaways.

For these reasons I shall concentrate on water-borne systems which require the removal of wastes from the area for treatment and disposal. Traditional western designs for water-borne systems, little changed in the last one hundred years, persist in many less developed nations, despite high construction costs, high water requirements and high land take (Cairncross and Feacham: 1983: 111). Technological traditions, exported in the main by colonial powers, have proved tenacious, championed by professional institutions, universities and the community of engineers and planners. Much work has been done to develop low cost versions of the system but these are rarely adopted in more than isolated project situations[7].

To avoid the disposal of raw sewage into the streets or adjacent wasteland, sewerage within the settlement must be connected to a disposal network which collects wastes from a number of locations and carries it away for treatment. There are clearly two networks - the local network collecting sewage from households, and the wider disposal network collecting sewage from groups of households. Looked at from the perspective of the urban community these could be referred to as the "Internal" system and the "External" system. This typology was first developed by the Orangi Pilot Project in Orangi Township, Karachi, Pakistan, where Internal Development was defined as those elements

> "Inside the house, the sanitary latrine, in the lane - underground sewerage line and secondary or collector sewerage."

External Development was defined as

> "Main trunk sewer and treatment plant." (Akhter Hameed Khan: 1994: 11)

These definitions were developed in a particular case; for general purposes it is useful to loosen the definition somewhat. Thus Internal development may be characterised as:

- small in scale;

- serving small groups (households or groups of households);
- using the simplest of the technologies in the system; and
- being at the upstream end of the system.

The nature and cost of Internal development will depend on the characteristics of the particular community concerned. External development may be characterised as:

- large in scale;
- serving many groups of people who may have divers needs and means;
- using larger scale technologies; and
- collecting outflows from Internal areas.

Engineers will recognise that these definitions are related to primary, secondary and tertiary elements of the system. However, the purpose of these definitions is to put less emphasis on the technical nature of the network and focus on the organisational aspects of each part of the network.

Administration of Sanitation

Turning first to issues of administration Ostrom et al. identify attributes which determine the potential for institutional arrangements to result in sustainable outcomes. This analysis can be brought into sharper focus when one sector alone is under consideration. Picking out the critical issues relating to sanitation we can look at:

- externalities;
- the need and potential to exclude or include users;
- problems associated with joint use;
- the nature of maintenance activities;
- problems of measurement; and
- the opportunities for rent seeking activities.

Externalities

The relationship between improved sanitation and improved health and well being is intuitive but extremely difficult to measure with any kind of accuracy. Sanitation interventions are rarely made in isolation; the relationship between improvements in health status and sanitation interventions may be masked by corresponding improvements in water supply and health services[8]. Feacham suggests that there is no clear correlation between sanitation and reduced mortality; reduced morbidity may be more significant, but this is harder to measure. However, a 1980 study by Zachariah and Patel did indicate that the provision of a toilet could have a significant impact on both mortality and morbidity (Halstead et al.: 1987).

What is clear is that where health improvements do arise they will benefit the entire population and not just those being provided with sanitation. A reduction in infection and disease among some part of the population will reduce the risk of infection in others. While sanitation may have a less spectacular effect in this regard than, for example, immunisation, there will nonetheless be external benefits. Roth suggests that a better way to conceptualise these externalities is to consider the negative health impacts of too little sewerage provision, and consider how these can be reduced (Roth: 1987).

The construction of a sanitation system may also have *negative* health externalities especially where inappropriate designs are used or maintenance is poor. Poorly maintained silt traps and uncovered sewers, for example, can act as breeding grounds for disease vectors such as mosquitoes.

Exclusion and Inclusion of Users

Where non-payers cannot be excluded from using a service or facility then there is little incentive for any user to become a payer. Ostrom et al. argue that *non-excludability* of users may cause a systematic underinvestment in a system (Ostrom et al.: 1993: 77). In a sanitation system users are connected to the network by means of a house connection, which is relatively expensive and highly visible. This *should* make the exclusion of non-users relatively easy but illegal connections and informal outflows from houses remain common features of urban sanitation systems (see for example Abbott: 1985: 95).

In fact consideration of user exclusion misses one of the critical points about urban sanitation - that externalities make *non-includability* much more critical. To be successful a sanitation system should aim to service all households within an area to achieve clean and dry streets. Effective systems should provide good incentives for all potential users to be connected, or have an effective mechanism to *ensure* that they are.

Problems of Joint Use

Sewerage networks serve a number of people. Problems of joint use may arise on the small scale within a single Internal development, and on a larger scale, between different groups utilising an External network.

The joint use of a facility gives rise to problems of collective action. An individual, or group, has less incentive to invest scarce resources in either construction, operation or maintenance when the benefits of that investment accrue to a larger group of beneficiaries. Joint use gives rise to an incentive problem because the marginal cost of any investment *to the individual or group* may fall below the marginal benefit *to that individual or group*.

The Nature of Maintenance Activities

Problems of joint use are exacerbated by the nature of maintenance of disposal networks. Since the network is interlinked, the success of any maintenance activity at any point is dependant on the functioning of the system further downstream. This adds uncertainty to the calculation that any individual must make when investing in maintenance. Note that in *delivery networks* (such as water supply or irrigation schemes) maintenance downstream has a much lower impact on performance. (If water reaches a point just upstream from a group of users the benefits of carrying out any maintenance required to bring the water to themselves is clear). This may help to explain why delivery networks are in general better maintained than drainage networks.

Furthermore, many of the benefits of sanitation are intangible and the benefits of maintenance activities still more so. The biggest problem in water-borne sewerage is blockages caused by a build up of solids. Blockages can be largely avoided by the use of silt traps and settlement chambers which need to be cleaned out regularly. Routine checking and cleaning of access chambers and sewers is also required. However, these activities have a very long term and uncertain benefit. They require the investment of valuable time and resources in an activity that is at best unpleasant and at worst hazardous to health. All this to prevent blockages which may or may not happen in the future.

Problems of Data Collection and Measurement

Problems arise in data collection and measurement largely because of the scale of sanitation networks. Information requirements can be divided into two types, "time and place information" and "scientific knowledge" (Ostrom et al.: 1993: 49). Time and place information is acquired by individuals or groups who are intimately acquainted with an area, or mode of life. Scientific knowledge is generally acquired through education and training and is often regarded as the preserve of professionals.

The design of large sewerage networks and sewage treatment facilities and decisions regarding disposal require a high level of technical expertise. Internal development design may also require scientific knowledge and a good understanding of technical alternatives. However, knowledge of street layouts and experience of where the water flows in local watercourses as well as more intimate information about personal hygiene habits, water use patterns and the potential for communities to form groups and organise collective action may also be critical to successful Internal development.

Opportunities for Strategic Behaviour

Potential for strategic behaviour arises in conditions of scarcity. Economic models of corruption tend to emphasis welfare and efficiency losses which arise when there is excess demand for scarce resources and "buyers" invest time and money trying to secure a flow of future benefits (see for example Schliefer-Vishny: 1993 and Krueger: 1974). This investment diverts resources from one group to another.

Economies of Scale in Production

The argument that sanitation is a natural monopoly rests on the need for a networked disposal system, where investments are irrevocable and non-convertible. The scale of the system means that *demand* for sanitation services is likely to be steady, while *investments* will be "lumpy". The provision of services at one point in the system is dependant on performance at other locations and thus coordination is required. Economies of scale exist because the marginal unit cost of treatment and disposal (External development) will tend to fall as the number of users increases (World Bank: 1994: 22-3).

CENTRALISED PROVISION OF SANITATION

One of the purposes of this paper is to identify why urban sanitation projects fail. The analytical framework developed in the first section can be used to assess institutional arrangements for the provision of sanitation and to identify whether they contain in-built biases against success.

I have decided to consider a stylised representation of arrangements for sanitation provision which are common in many countries. (A more detailed study of a particular case could not be encompassed in a short paper such as this.) In my generalised case the *production* of sanitation falls to an Executive Agency within Government while the elected Government itself determines overall policy, covering decisions on service coverage, budget allocations and regulation. Within the Executive Agency responsibility for construction is separated from responsibility for operation and maintenance. Construction works and maintenance are carried out by contractors who bid for work tendered by the Executive Agency[9], who also carry out all planning and design activities. Although the Community are deemed to be the beneficiaries of this arrangement they are only involved through the electoral process.

The Government and the Community

The relationship between the Government and the Community is formal and explicit, with established terms and conditions[10]. The Government may be a local authority or a national government. The Community is the constituency served by the Government. The Government has a duty to provide infrastructure, including sanitation, and in return the Community undertakes to fulfil its fiscal responsibility, that is to pay taxes, or to pay whatever charges are levied by Government. Sanctions are available in the form of penalties imposed by the Government on individuals for failure to meet fiscal obligations, and in the form of electoral power on the part of the Community in the event of Government failing to honour its commitment to service provision. In a situation of scarce resources the Government must decide where to provide sanitation and the level of service to be provided.

The key feature of this relationship is a low level of accountability. The ex post costs to the Community of monitoring the performance of the Government are liable to be high and unevenly distributed. The poorest members of the Community are likely to find it harder to gain information on Government activities while the opportunity cost of their time in doing so will be higher relative to their income. This low level of accountability may allow Government to behave opportunistically. Political incentives may override other considerations leading to outcomes which:

- serve the most articulate or powerful groups within the Community;
- emphasise the more visible External developments; and
- emphasise capital investment, which again is highly visible, over operation and maintenance.

Even were these political incentives to be eliminated there is no de facto mechanism for the Government to establish user preferences with centralised funding. On the other hand central Government funding can capture both the economies of scale of External development and externalities.

Where regional or urban governments are dependant on central government for annual budgets there will be incentives to maximise the budget and to ensure that budgets do get spent. This will lead to the selection of projects which are relatively easy and quick to complete. Such projects are more likely to fall into the category of large External developments than complex Internal developments, for which adequate time and place information is expensive to acquire.

The Executive Agency

The role of the Executive Agency is to focus Government policy, select detailed projects for implementation and to carry out the production roles of construction, operation and maintenance. In addition to political and budget incentives other features of Executive Agencies may tend to divert benefits away from the poorest groups within the Community. These are:

- the need to minimise personal professional risk;
- the need to minimise personal discomfort;
- short term planning horizons due to lack of continuity in staffing and annual budgeting;
- the nature of evaluation; and
- division of responsibility between construction and operation.

In many Executive Agencies there is a high level of security for employees. Nonetheless officers are often unwilling to take professional risks and procedures which have been established over many years are followed scrupulously. The use of standard designs and design manuals, for example, reduces the costs of design, but over the years designs may become so well established that innovation is impossible.

Many executive officers will choose to use standard designs not because they are most appropriate but because in the case of failures they will be able to claim they "were only following the rules" thus saving face and passing the blame onto the "system". The use of standard designs reduces the transformation costs of design but precludes the use of cost saving designs. It also results in standard designs being applied blindly even in situations where they are almost certain to technically fail.

Most construction and maintenance activities require a certain amount of supervision. Many officers will consider the prestige and comfort of supervising work on a major trunk sewer to be superior to the more difficult and uncomfortable task of monitoring work on a large number of small sewers in a residential area. Amongst Internal developments, those not in crowded slum areas are likely to be preferred.

Lack of continuity in staffing is another problem. In Indian Executive Agencies, for example, postings are for periods of three years or less. This gives officers little chance to familiarise themselves with a post before they must be considering the next transfer (Wade: 1984: 303). Furthermore, there is a market for transfers, caused by an unequal distribution of potential for rent seeking behaviour in different posts, which has been meticulously described by Wade (ibid). This results in much time and resources being taken up with concerns about potential transfers rather than in consideration of the administration or production of sanitation[11]. The annual process of budget preparation may also lead to short term planning and monitoring within technical departments; budgets are often based on the previous years' progress rather than on realistic targets for the current year.

The division of responsibility between operation and maintenance departments and construction departments enables each to blame non-operational drains on the other. A great deal of time can be wasted in attempts to apportion blame (and to keep the troublesome and difficult problem of trying to rectify failures off one departmental budget).

Evaluation systems often send signals to employees emphasising activities rather than results (Korten, FF: 1983: 186). Thus performance may be assessed in terms of metres of drain built rather than metres of *operational* drain built. This reduces the cost of monitoring performance but creates no incentive to ensure quality in design or construction.

In summary the nature of Executive Agencies may tend to lead to outcomes which;

- maximise the proportion of investment in construction over operation and maintenance;

- maximise the proportion of External development over Internal development;
- emphasise the physical completion of works rather than the completion of operational works; and
- minimise the potential for innovative or cost saving designs, particularly in Internal development.

Executive Agencies and Contractors

Most civil engineering contracts are adversarial in nature. The contractor is paid agreed rates for works as they are completed and work is monitored by staff from the Executive Agency; disputes over the quantity and quality of the completed work are a feature of these contracts. Often the *quality* of work is secondary or gets ignored completely; although the Executive Agency has powers to accept or reject work on the basis of workmanship it is generally much harder to assess than quantity of works completed[12].

Contractors bid for work on the basis of an estimate of the quantity of works, prepared by the Executive Agency. In theory the bids, which are opened simultaneously by the Executive Agency, are evaluated on the basis of both price and quality - quality being assessed on the basis of the experience of the Contractor and on the proposed method of work. Generally, the representatives of the Executive Agency "would have to show good cause for not accepting the lowest" (Wade: 1987: 294). This effectively means that a Contractor may be selected who is unable to complete the work to a satisfactory standard.

Monitoring construction work carried out by a Contractor is complex and costly. If the Executive Agency wishes to achieve a good level of supervision they may have to select projects which are in areas that are easily accessible and relatively more comfortable to work in - a further incentive to concentrate on the more salubrious areas or on External development.

The potential for strategic behaviours in the contracting process is very high. Wade, in his study of canal irrigation in a southern state in India, suggests that there is a well developed system of collusion between individual officers and contractors. His analysis concentrates on the process of contracting for maintenance works. Collusion may start when the estimates are being drawn up; kickbacks for officers are "by long-established convention" included in bids which are made against the estimate and specification. Contractors may be selected by officials *prior* to the bidding process - thus establishing a

"legal business partnership" between some Contractors and some officials (Wade: 1987: 295). Other Contractors may be instructed to submit bids above a specified value to ensure that the contract is awarded as arranged. All the maintenance Contractors will collude in this process because "no contractor of the small size interested in maintenance contracts can long survive without the approval of the [officer]" (Wade: 1987: 294).

This systematic collusion between the Contractor and officials persists through the supervision process where "savings on the ground" can also be achieved:

> "If, for example the estimate call for six inches of gravel to be laid but the contractor lays only three, or if four inches of silt are to removed but the contactor removes only one, the balance is split between the contractor and the officers." (Wade: 1987: 293)

When large Contractors are used in construction the potential for strategic behaviour changes. Such Contractors may have influence in political circles and therefore officers of the Executive Agency must proceed with much greater caution. This is not to say that corruption is eliminated; Contractors may still put a lot of resources into securing a contract - resources which they may expect to get back during the execution of a contract - but the pattern of benefits and incentives may shift away from the officials immediately concerned.

While the patterns of strategic behaviours may alter between different countries, agencies, and within departments, nonetheless the contracting process undoubtably sets up potential for strategic behaviours which shift benefits away from the community and set up perverse incentives for officials and contractors. The relationship between officials and contractors is established such that the both the information costs and coordination costs of *corrupt* behaviours are minimised - for example officials will use Contractors whom they can trust not those who can necessarily do the best job. Significant investments of time and money may be made initially to establish these relationships. While the potential for "savings on the ground" may encourage a higher standard of supervision this will not have the effect of guaranteeing quality of work but will serve to maximise unofficial payments to officers.

The Community have little access to this contractual relationship. Lines of accountability exist between Contractors and Executive Agencies but the Community would have great difficulty discovering what was happening. The costs to the Community, both in time and money, of uncovering the details of the contracting process would be prohibitive - again the more powerful and educated elements within the community may have better chances of success - suggesting that poorer and less secure elements of society may be more at risk from exploitation by such strategic behaviours.

In summary, the distribution of responsibility and the institutional structure as a whole, set up a system of incentives that are skewed away from the Community and, in particular, from the poorest groups. There are few incentives to develop responsive and innovative designs and little recourse for groups who remain unserved by the sanitation network. An emphasis on activities rather than results combined with an enduring technocratic culture do little to encourage investment in sustainable urban sanitation services. The system is characterised by poor accountability and adaptability which results in a net flow of benefits away from the Community. Nonetheless Government is able to handle large investments and the system contains the potential for redistributional policies. The technical capabilities of Executive Agencies should bring down production costs, particularly in External development, *if* strategic behaviour could be eliminated.

THE DUAL APPROACH TO SANITATION AND THE ROLE OF THE COMMUNITY

The 1994 World Development Report considers in general a number of solutions to the perceived failures of public finance and provision of infrastructure. In the conclusions there is a recognition that in "poorer urban areas" many of the proposed commercial solutions have little role to play. Private actors are unlikely to be attracted to areas where service provision is expensive but the flow of payments from users may be unreliable and costly to secure. It would be hard to introduce competition into the sector, and it is doubtful whether the private sector could adequately capture externalities or manage a system of subsidies, even though subsidies in both water and sanitation may be highly efficient (Bahl and Linn: 1992: 335).

The recommended approach is to use "intermediate technology [which] can be adapted to match users' service requirements and their willingness to pay ... chosen, financed and operated *by the community* with technical assistance". External development should "remain the direct responsibility - in planning financing, and operation - of the sector utilities concerned." (World Bank: 1994: 117 italics added).

This approach raises the question of distributional equity. Is it fair or equitable to lay the burden of community financing onto the poorest communities? One of the key policy issues must be to ensure that higher and middle income communities do not continue to benefit from state funded services when poorer areas do not. The probability of this happening is raised by the relative difficulty involved in the policy recommendations for these less poor areas; to develop "contracting schemes, such as concessions" and to "apply commercial management to sanitation facilities" (ibid.). Considering the advantages

currently enjoyed by relatively articulate and powerful communities under the current arrangements and the vested interests of Government and many Executive Agency officials, there may be little incentive to adjust the current arrangements. On the other hand the current arrangements are manifestly *not* serving poorer communities whose only hope of obtaining services may therefore involve the disequitable use of community financing mechanisms.

It is not possible to pursue the equity issue further here although I think it is a critical one. Rather I would like to examine the *process* of community finance and operation; to consider what potential it has for reducing the costs of sanitation provision (thus increasing the chances of sustainable outcomes); and discuss whether a new institutional framework could be developed, integrating the Community further into the process of sanitation administration and production.

I would like to consider an approach developed by the Orangi Pilot Project (OPP) in Karachi, Pakistan; an approach which is often quoted as a successful synthesis of community and government strengths[13]. The basic concept builds on the ideas of Internal and External development. The community take responsibility for the Internal development - including planning, design, construction, operation and maintenance - and arrange for the financing themselves. External development remains the responsibility of the Government.

There are three issues to consider here;

- how can the Community improve the chances of successful Internal development?;
- what is the potential for successful coordination between the Community and the Government?
- what is the prospect for the long term cooperation between the Community and Government?

Community Participation and Collective Action

Community participation is a concept in danger of being trivialised; very easy to recommend, as the World Bank have done, but much harder to bring into sharp analytical focus. As Majid Rahnema has pointed out, "all societies...are participant" (Rahnema: 1993: 117). The inclusion of "Community

Participation" in policy can be seen variously as a truism, an excuse to pass some of the burden of financing services onto the community or, in the most optimistic sense, as an opportunity to improve the chances of providing sustainable services to the community. Bourne asserts that community participation brings "the sense of shared investment in the project in addition to [a] significant reduction in overall cost" (Bourne: 1984: 16) but like many other supporters of community participation he fails to show *how the involvement of the community can achieve this*.

First let us assume that Internal development can take place independent of External development. If the community can significantly lower the costs of administration and production of sanitation internally then the chances of achieving a net flow of benefits must rise. This depends on the potential for collective action within the community.

In the aftermath of Garrett Hardin's pessimistic polemic against the management of resources held in common (Hardin: 1968) a debate developed concerning the nature of successful Common Property Regimes (CPRs). Both Elinor Ostrom and Robert Wade have done valuable work identifying the conditions under which joint management of resources can be successful (see for example Ostrom: 1990, Wade: 1987). Much of this work centres on *rural* settings and concerns the use of resources held in common (common grazing land, fisheries and groundwater aquifers for example). Successful CPRs limit the risk of overexploitation by individuals acting in their own self interest. Clearly where urban sanitation systems are under consideration the conditions for joint use change. Wade convincingly argues that the success of *rural* common property regimes depends on five factors associated with the resource and the user group:

- a small and clearly defined resource;
- a close physical proximity between the resource and users and a high level of dependence on the resource;
- a small and defined group of users, having established "arrangements for discussing common problems" and with the relative balance of power in the hands of sub-groups favouring communal action;
- high "noticeability" of cheating on arrangements; and
- high costs of "exclusion technology" (Wade: 1987: 231-2).

What relevance do these factors have to urban sanitation and on balance do they mitigate in favour of successful collective action?

The "resource" which we are considering is the stream of benefits which arise from the capital stock of infrastructure (Ostrom et al.: 1993: 85). The stream of benefits from sanitation may not be well defined and externalities may blur the boundary of benefits. Concerns around employment, housing and debt may far outweigh perceptions about the need for sanitation in communities which "experience an underlying sense of social and economic vulnerability" (Beall: forthcoming: 19).

The group of users *will* be well geographically defined, but the existence of power structures and mechanisms for consultation cannot be guaranteed. There is little point in attempting to generalise the nature of urban communities - they may form under any number of circumstances, be composed of homogeneous groups with coincident interests or not[14]. Wade's research shows that "corporate organisations" are effective in rural areas only where *they are based on existing structures of authority and where the individual private interests of the "elite" are coincident with the need for collective action* (Wade: 1987: 230). Where these conditions are *not* met, "coercion, or some other special mechanism" are needed to "make individuals act in their common interest" (Olson: 1971)[15]. It is too easy to romanticise the poor and to over emphasise the probability that poor communities will be characterised by altruistic behaviour. As Frances Korten has pointed out, the poor community is as likely as any other to be characterised by "factionalism" and corruption (Korten, FF: 1983).

"Noticeability" is related to the characteristics of both the resource and the user group. It will vary at different stages of production. It may, for example, be easier to shirk on a monthly cleaning rota than it would be to avoid contributing prearranged labour or time to construction when the whole group may be more aware of the actions of each individual.

"Exclusion technology" in Wade's analysis, is important where individuals can gain control over a "privatised" stream of benefits by excluding other users. The simplest example is of powerful individuals fencing common grazing land so as to retain all the grazing rights for themselves. In view of the poorly defined public benefits of sanitation and the *need* for all users to be involved in order to realise the full benefit stream, individuals would have few incentives to gain control of a scheme. Individuals may seek to generate profit by providing services to others but, by so doing, they would have to carry the full costs of provision and address the problems of non-excludability. In exceptional cases, where power is highly

concentrated, the issue of exploitative privatisation within the community may become important but there is no space to consider it further here[16].

In summary then, the nature of the resource and problems of low noticeability in operation and maintenance will generally mitigate *against* successful collective action in the community. The potential for successful collective action will then rest on the extent to which existing and potential structures within the community can override these factors. Critically it is not possible to generalise the potential for collective action in poor urban communities.

Lowering the Costs of Administration and Production

Let us assume, for the moment, that conditions for collective action do exist, and that a group of householders formed a user group to provide a sanitation service for themselves. What advantages would such a group have?

On the administration side both transformation and transaction costs should fall. The key features of such a user group *should* be accountability and adaptability. The group must be small enough to ensure good communication and low cost monitoring, bringing down coordination costs. Good time and place information will be more readily available to the group than it would be, for example, to officials from the Executive Agency of the Government. The group may be prepared to experiment with low cost solutions because they are not limited by technical preconceptions. However, there will almost certainly be a shortfall of scientific knowledge - some technical assistance will almost certainly be required. It is important not to underestimate the costs of providing such technical assistance. OPP, for example, invested twelve months in Research and Extension work in Orangi prior to the implementation of any community sanitation. The cost of this was carried not by the community but by external commercial institutions (Akhter Hameed Khan: 1995: 1,7). Even then maintenance and supervision problems persisted (Abbott: 1985: 84).

The extent to which community financing is an adequate mechanism for establishing citizen preferences and willingness to pay is disputable. I would argue that it is a good mechanism provided community decisions are not influenced by outside considerations. Where a community decides in isolation to provide sanitation, and establishes a payment mechanism, then it may lead to highly efficient and fiscally

equitable solutions. However, where outside influences, assistance or funding are available the use of community financing cannot be relied on to produce unskewed results.

Finally we turn to production. In Orangi, innovative designs and the elimination of contractors is estimated to have brought down the transformation costs of production to around one third of the cost of a conventional system (ibid: 69)[17]. Savings of around Rs 100 per metre of sewerage have been achieved. However, both transformation and transaction costs will be much higher *to the community* than under the centralised system. The impact of cash payments on the community is hard to establish. Under the OPP programme in Orangi it was estimated that the average investment of each household in the sanitation system was Rs 1,000 compared with an average investment of Rs 20 -25,000 in the house itself (ie investment in sanitation is worth between 4 and 5% of the value of the house). OPP estimate this to be equal to the average monthly income per household[18,19] (Akhter Hameed Khan: 1995: 7-8). While these figures suggest that the investment in sanitation is manageable, they fail to capture the costs of contributions in kind and the opportunity costs of time devoted to the programme. When these are included the real costs of community provision are likely to be significantly higher.

The use of community members in operation and maintenance may also be expected to bring down costs and increase effectiveness. However, Community involvement in operation and maintenance may be harder to mobilise, principally because the benefits of good maintenance are even less tangible to the community than the benefits of the original installation. Regular maintenance, carried out periodically by selected group members, is harder to monitor than contributions to construction - less visible and harder to physically check. Evidence from Orangi suggests that maintenance is often "crisis management" rather than good routine preventative maintenance. The fact that a minority of groups manage effective organisation of maintenance only serves to highlight that in many other cases the institutional foundations for a sustainable system have not been adequately laid (Abbott: 1985: 99).

Coordination of Internal and External Development

So far we have been looking at the potential for Internal development which is independent of External development. However, in the majority of cases, as we have seen, one is dependant upon the other to

function satisfactorily. What are the incentives for the actors currently involved in sanitation provision to coordinate with the community, and what would the cost be?

The use of community financing will bring down the transformation costs of production for the Government. This is one of the principal theoretical underpinnings of such policy[20]. However, it is important to recognise that a corresponding rise in transaction costs is likely to occur, both on the administration and production sides.

There are few examples of successful attempts to coordinate Internal community financed development with publicly financed External development. Nonetheless some lessons can be drawn from the available evidence. In the Urban Basic Services Project in Sukkur, Pakistan, the OPP model has been adopted under a programme funded by UNICEF. This programme commenced in 1988 and involves three Executive Agencies of the government, one international donor organisation, one consultant[21], the community and two new organisational entities, a site office and a steering committee, which were set up as part of the coordination effort (Arif Hasan: 1994: 16). UNICEF provided the majority of the funds for External development and funded training for government staff, both for existing postholders and for new posts that were created as part of the project.

Reports from the UBS project highlight the lengthy procedures required to establish working relationships between the various actors. It was two years before an agreement was signed on the methods to be adopted in the project. Poor coordination between Executive Agencies proved a major stumbling block even before the project commenced[22]. Lengthy negotiations between Executive Agencies have delayed External development after commencement of the project, jeopardising the development of community groups for Internal development. In some cases money collected for Internal works was returned to residents because delays on the Government side (ibid.: 26-9).

Longer Term Obstacles to Community Participation

In the short term we have seen that the transaction costs, and therefore the total costs, of administering a producing sanitation jointly with the Community may be high. Nonetheless the presence of external funding may be catalytic in overcoming this. In the longer term these transaction costs could be brought down *if* the concept of coordinated development became part of mainstream government policy.

Institutional arrangements could then be established, staff trained and many of the one-off costs of a project such as the Sukkur UBS would disappear. However, obstacles remain. These obstacles are located within the Executive Agencies of Government and within society itself[23] (Korten, FF: 1983).

For coordinated development, such as that proposed here, to really work the Community must become true partners with Government in the development process. Genuine channels of communication are required which will lead to much greater accountability of Government to the Community. Furthermore radical change may result as a Community gains strength through the development process. In Orangi the project which started with the provision of sanitation in the lanes of the settlement has grown to include housing, basic health services, supervised credit, a schools programme and a women work centre programme. Caroline Moser points out that participatory projects "located at the place of residence" while appearing to "pose no threat to the control over production held by the urban industrial and manufacturing class" actually create space for radical change (Moser: 1986: 93 citing Tendler: 1982). In the long term such radical change may lead to "societal change ... which is bound to conflict with the status quo" (Korten, FF: 1983: 196).

At the societal level then there is likely to be resistance to such change. *Politically* there may be a resistance to policies which would encourage community groups to become too strong. Groups which do become too strong may experience a "backlash". Korten suggests a number of strategies that communities can adopt to avoid such a backlash such as forming alliances with political groups. However, such strategies do little to extricate the community from its present weak position in the structures of power and may reduce the potential for real long term change.

Participatory approaches may also require *legal changes.* A key issue determining the willingness of urban communities to invest in housing and services is the degree of security which they experience (Beall: forthcoming). A good proxy for overall security, although not a guarantee by any means, is the granting of legal security of tenure. While this is *not* a prerequisite for community groups to invest in infrastructure it may greatly increase the chances of communities making commitments to long term provision of services. Where the granting of tenure security in informal settlements requires changes in the law resistance may come from developers and political parties who have an interest in maintaining a sense of insecurity among poorer urban communities (Korten FF: 1983: 196). This may not always be the case though. One of the breakthroughs in the Sukkur UBS project has been the recognition of the need to coordinate investments in sanitation with regularisation of slum areas (Arif Hasan: 1994: 17).

As if political resistance within society were not a large enough obstacle there are a number of features of Executive Agencies which will mitigate against a radical policy change. Centralised decision making and highly hierarchical structures are not conducive to the responsive approach required in coordinated development. The culture of many Agencies places a high value on technical knowledge. There is usually a long tradition of dictating solutions to passive "beneficiaries" and a tendancy for staff to communicate with each other rather than with these beneficiaries. Evaluation systems which emphasise activities rather than results leave little room for the recognition of successful community capacity building or the establishment of good communications with community groups. Finally rapid turn over of technical staff is disruptive and breeds "short term" views (Korten FF: 1983: 190).

Clearly there is scope to make changes in organisational structures to improve the chances of successful coordinated development. However, political incentives may prevent this. Executive Agencies are themselves loci of political power and influence. Democratically elected governments may be wary of proposing policy changes which threaten the position of executive officials in society. Frances Korten notes that bureaucracies are resilient and the tendency to centralise the locus of decision making is related to the distribution of power in society (ibid: 198). In such a climate the potential for Executive Agencies to adapt to participatory development seems small.

Nor is the creation of new organisations likely to improve the chances of success. New organisations would be subject to a similar set of incentives as outlined above. Furthermore the costs of establishing new organisations is high (ibid: 198, citing Robert Chambers). Coordination with existing agencies is likely to be a requirement of any new agency established within Government and hence the transactions costs of participatory development may rise still further.

CONCLUSION

Why does urban sanitation so frequently fail? While lack of resources may limit the extent and level of service provided it does not explain the systematic biases that exist against the poorest urban groups, nor the persistence of inappropriate designs and inadequate supervision and maintenance. The objective of a sanitation provision system should be to provide sanitation facilities that sustain a flow of net positive benefits to the users, based on the understanding that individuals will invest time and resources in operation and maintenance only if they perceive that the benefits to themselves outweigh the costs.

Perverse outcomes persist because there is little incentive for individuals concerned with urban sanitation to address them. In many existing centralised arrangements accountability to poorer groups is low and political incentives may over-ride more egalitarian aims. The culture and organisation of Executive Agencies mitigates against the development of innovative designs. Investments in Internal development, particularly in the poorest areas, remain low because individual officers have strong incentives *not* to work in these areas. Where these issues are addressed it can usually be attributed to individuals who see beyond opportunities for personal benefits to recognise the wider benefits of good service provision.

Can the incentive structure that determines the outcome of investments in infrastructure be improved by coordinating investments from the state and the community?

The coordination of investments from the community and the government has been proposed both by the World Bank and by non-governmental organisations, with the twin objectives of increasing the resources available for sanitation provision and increasing the chances of achieving sustainable infrastructure. However, care should be taken when such policies are proposed as a wholesale solution to all the problems of urban sanitation provision. Their success is predicated on the assumption that the community contains the potential for collective action. Such policies contain a germ of the unhelpful contention that urban communities can be generalised. Proponents of these policies often fail to analyse the high costs of coordinating such investments. Most importantly of all they may underestimate the structures that exist in society, in Executive Agencies and within the Community, which will resist institutional changes based on the coordinated provision of services.

Nonetheless there is some potential to overcome these problems. The presence of external funding to overcome transactions costs between the Community and Government may act as the catalyst for change. The adoption of coordinated funding for sanitation in poor areas could then be seen within the context of a wider developmental goal, strengthening links between the Government and the Community. The aim of participation in projects should be to identify and implement policy that produces positive incentives for all the actors. The goal for the Community should not be "to conquer or vanquish the state but to forge selective alliances with parts of the state and its bureaucracies while avoiding new clientelistic constraints" (Stiefel and Wolfe: 1994: 204).

How far external actors should act to catalyse community action is a vital question and too big to be tackled here. Stiefel and Wolfe urge that "would-be guides and allies need sufficient humility to leave

the choice of tactics to those who will experience the dangers and consequences of defeats, but not to the point of complete renunciation of confidence in capacity to interpret and help" (ibid.: 15). These would-be allies must also guard against overestimating the strengths of coordinated responses, underestimating the strength of resistance to them and against the tendency to generalise solutions which cannot be generalised.

Notes:

1. The analytical structure of this paper is based on the pioneering work of Ostrom Schroeder and Wynne in their 1993 book "Institutional Incentives and Sustainable Development: Infrastructure Policies in Perspective"

2. For me incentives are "perverse" when they act against the interests of the group which is nominally the "beneficiary" of an activity or investment.

3. A E Brett: Lecture to the students of the Development Studies Institute of the London School of Economics, 21st November 1994.

4. Toye cites sharecropping and interlinked markets for land and credit which have persisted in rural environments. Transaction costs analysis begins to explain such arrangements in terms of their ability to counteract distortions which arise from information assymetries.

5. This typology is adopted to avoid confusion between the *production of sanitation* and the *costs of transformation* which are associated with both *administration* and *production*.

6. Industrial waste and stormwater add further complications, which there is not space to deal with here.

7. It must be noted that "low cost solutions" are adopted not only because of their low cost but also because in some cases they may be much more appropriate. The use of small bore sewerage which is relatively easy and cheap to maintain is a good example of this.

8. At very low levels of water consumption (up to 40 litres per capita per day) the benefits of increasing water supply may be spectacular, masking associated improvements due to other sector changes (Linn: 1992).

9. Works may also be carried out by "force account" - direct labour controlled by the Agency. Both this and the use of Consultants may alter the incentive structure.

10. The terms of this contract are established in election manifestos as well as in the constitutions of Executive Agencies.

11. While Wade's analysis is based on an Irrigation Department in a state in South India he realistically hypothesises that his findings could be generalised to many government departments concerned with the provision of public services.

12. Other forms of contract exist - for example contractors may be paid lump sums for completed works. The nature of the contract may change the incentive structure to a certain extent.

13. The OPP project, which continues today, produces regular progress reports where details of ongoing activities can be found. OPP are now acting as consultants on a number of new projects which have adopted similar approaches (Akhter Hameed Khan: 1994: 12). However there is a regrettable dearth of independant review material.

14. The nature and complexity of poverty in the urban context has been overlooked by many commentators in thrall to the idea of "urban bias". Michael Lipton's 1976 positing of a systematic bias acting against the rural community has given rise to the concept of a homogeneous urban community which has never existed. The healthy debate that now surrounds the nature of urban poverty and urban communities is welcome (see for example Wratten: 1994, Moser and Satterthwaite:1985 and Beall: forthcoming).

15. In fact Olson argues that this is always true, falling in with Hardin's unconvincing advocacy of privatisation.

16. In April 1995 the Guardian Weekly carried an article detailing the involvement of certain political parties in Bombay in the administration of housing and services to selected groups. Such politicisation of housing and infrastructure cannot and should not be ignored, but is too large a subject to tackle here.

17. Excluding the cost of External development.

18. Rs 1,000 = £20 (1995 prices) approx.

19. These figures also indicate that the Orangi community, while not rich, cannot be classed amongst the very poor.

20. The 1994 World Development Report for example, talks about the "fiscal drain" of publicly financed infrastructure" (World Bank: 1994: 29).

21. OPP Research and Training Institute, established in 1983 to "help replicate the OPP model" (Arif Hasan: 1994: 15).

22. OPP note that "various government organisations are not aware of each others plans and responsibilities [nor] of the funds that are available to their sister organisations " (Arif Hasan: 1994: 33).

23. They may also lie within the community, as we have seen earlier.

Bibliography

Abbott, John M, 1985, "The Evaluation of Environmental Health Engineering Projects in Developing Countries With a Low Cost Sanitation Case Study" Dissertation submitted in partial fulfilment of the requirements for an MSc in the Department of Civil Engineering, Imperial College of Technology, London

Akhter Hameed Khan, 1994, "Orangi Pilot Project Programmes", OPP-RTI, Karachi

Asian Development Bank, 1986, "Appraisal of the Karachi Urban Development Project", Restricted

Bahl, Roy H and Johannes Flinn, 1992, "Urban Public Finance in Developing Countries", Oxford University Press, New York

Beall, Jo, 1995 (forthcoming) "Social Security and Social Networks Among the Urban Poor in Pakistan", Habitat International

Bennett, Sara, 1991, "The Mystique of Markets: Public and Private Health Care in Developing Countries", Department of Public Health and Policy Publication No 4, London School of Hygiene, London

Bourne, Peter (Ed), 1984, "Water and Sanitation: Economic and Sociological Perspectives", Academic Press, New York

Cairncross, S and R G Feacham, 1983, "Environmental Health Engineering in the Tropics: An Introductory Text", John Wiley and Sons, Chichester and New York

Chandavarkar, Anand, 1994, "Infrastructure Finance: Issues, Institutions and Policies", WB Policy Research Paper 1374, World Bank, Washington

Chauhan, Sumi Krishna et al., 1983, "Who Puts the Water in the Taps? Community Participation in Third World Drinking Water, Sanitation and Health", International Institute for Environment and Development, Washington DC

De Soto,Hernando, 1989, "The Other Path: The Invisible Revolution in the Third World", Harper and Row, New York

Feacham R, M McGarry, and D Mara, 1977, "Water, Waste and Health in Hot Climates" , New York

Halstead, S B et al., 1985, "Good Health at Low Cost", The Rockerfeller Foundation, New York

Hardin, Garrett, 1968, "The Tragedy of the Commons", *Science 162* (December) pp1342-1348

Hardoy J E and David Satterthwaite, 1989, "Squatter Citizen: Life in the Urban Third World", Earthscan Publications Ltd, London

Harrison R (Ed), 1984, "Perspectives on Urban Infrastructure", National Academy Press, Washington

Hasan, Arif, 1994, "A Case Study of the Urban Basic Services Programme in Sukkur, Sindh Province, Pakistan: Prepared for the Regional Workshop on Community Based Programmes for Urban Poverty Alleviation (Kuala Lumpur, May 1994)", Arif Hasan (unpublished)

Ickis, D, 1983, "Structural Responses to New Rural Development Strategies", in Korten, D C and F B Alfonso (Eds) "Bureaucracy and the Poor: Closing the Gap", Kumarian Press, USA

Jaganathan, N V, 1987, "Informal Markets in Developing Countries", Oxford University Press, Oxford

Korten, D C, 1983, "Social Development: Putting People First" in Korten, D C and F B Alfonso (Eds) "Bureaucracy and the Poor: Closing the Gap", Kumarian Press, USA

Korten, F F, 1983, "Community Participation: A Management Perspective on Obstacles and Options" in Korten, D C and F B Alfonso (Eds) "Bureaucracy and the Poor: Closing the Gap", Kumarian Press, USA

Krueger, A, 1974, "The Political Economy of a Rent Seeking Society" *The American Economic Review*, *Vol64, No3* pp291-303

Lélé, Sharachchandra M, 1991, "Sustainable Development: A Critical Review", *World Development Vol19 No6* pp607-621

Lewis J P and N T Uphoff, 1988, "Strengthening the Poor: What Have We Learned?", Transaction Books: Overseas Development Council, New Brunswick, New Jersey

Lipton, Michael, 1976, "Why Poor People Stay Poor - A Study of Urban Bias in World Development", Harvard University Press, Cambridge Mass.

Mansoor Ali, Adrian Coad and Andrew Cotton, 1995 (forthcoming), "Municipal and Informal Systems of Solid Waste Management", in Nabeel Hambdi (Ed) "Education for Real", IT Publications

Mansoor Ali and Darren Saywell, 1995, "Community Initiatives in Solid Waste", paper prepared for the 21st WEDC conference on Sustainability of Water and Sanitation Systems, Kampala, Uganda, 1995

Ménéndez, Aurelio, 1991, "Access to Basic Infrastructure by the Urban Poor", EDI Policy Seminar Report 28, World Bank, Washington

Midgley, J (Ed), 1988, "Community Participation, Social Development and the State", Methuen & Co, London

Moser, Caroline (Ed), 1983, "Evaluating Community Participation in Urban Development Projects: DPU Working Paper 14" DPU

Moser, Caroline, 1986, "Community Participation in Urban Development in Third World Cities", *Progress in Planning 32(2)*

Moser, Caroline and David Satterthwaite, 1985, "Characteristics and Sociology of Poor Urban Communities", mimeo, British Library of Political and Economic Science

Narayan-Parker, Deepa, 1993, "Participatory Evaluation: Tools for Managing Change in Water and Sanitation", World Bank, Washington

Olson, M, 1971, "The Logic of Collective Action", Harvard University Press, Mass.

Ostrom, Elinor, 1990, "Governing the Commons: the Evolution of Institutions for Collective Action", Cambridge University Press, Cambridge

Ostrom, Elinor, Larry Schroeder and Susan Wynne, 1993, "Institutional Incentives and Sustainable Development: Infrastructure Policies in Perspective", Westview Press, Boulder, San Francisco, Oxford

Rahnema, Majid, 1993, "Participation", in Sachs, W (Ed) "The Development Dictionary: A Guide to Knowledge as Power", Witwatersland University Press, Johannesburg

Roth, Gabriel, 1987, "The Private Provision of Public Services in Developing Countries", Oxford University Press, New York

Schliefer, A and Vishny, R W , 1993, "Corruption", *Quarterly Journal of Economics*, August 1993

Siddiqui, Sarah and Arif Hasan, 1994, "Options for Urban Poverty Alleviation Actions at Municipal Level for Sukkur (Pakistan)", Arif Hasan (unpublished)

Sindh Katchi Abadis Authority, 1994, "Partnership in Development (An Alternative Development Approach): Proceedings of the National Workshop on UNICEF's Urban Basic Services Project, Sukkur"

Stiefel M and M Wolfe, 1994, "A Voice for the Excluded: Popular Participation in Development", Zed/ UNRISD

Thompson, John, 1995, "Participatory Approaches in Government Bureaucracies: Facilitating the Process of Institutional Change", International Institute for Environment and Development, London

Toye, John, 1995 (forthcoming) "The New Institutional Economics and Its Implications for Development Theory", in Harris, J, J E Hunter and C M Lewis (Eds), "The New Institutional Economics and Third World Development", Routledge

Wade, Robert, 1984, "The System of Administrative and Political Corruption: Canal Irrigation in South India", *Journal of Development Studies Vol18 no3* pp287-328

Wade, Robert, 1985, "The Market for Public Office: Why the Indian State is not Better at Development", *World Development Vol13 No4* pp467-497

Wade, Robert, 1987, "The Management of Common Property Resources: Finding a Cooperative Solution", *Research Observer Vol2 No2* July 1987, IBRD

World Bank, 1994, "World Development Report 1994: Infrastructure for Development", Oxford University Press, Washington

Wratten, Ellen, 1994, "Conceptualising Urban Poverty", Background Paper commissioned for the United Nations Centre for Human Settlement (Habitat) *Global Report on Human Settlements 1996*