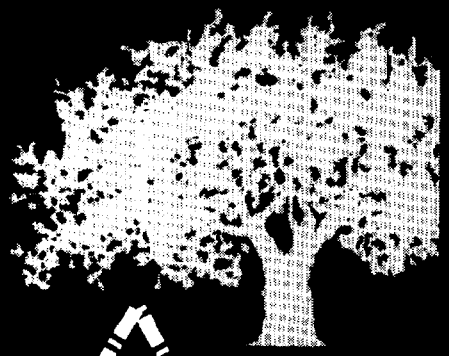
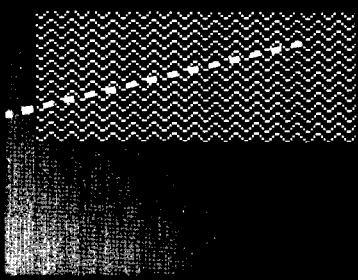


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Participation
and Partnership
in Urban
Infrastructure
Management

Peter Schübeler



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UNDP/UNCHS (Habitat)/World Bank
Urban Management Programme

Urban Management and Infrastructure

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Participation and Partnership in Urban Infrastructure Management

Peter Schübeler

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The Urban Management Programme (UMP) represents a major approach by the United Nations family of organizations, together with external support agencies (ESAs), to strengthen the contribution that cities and towns in developing countries make toward economic growth, social development, and the alleviation of poverty. The program seeks to develop and promote appropriate policies and tools for municipal finance and administration, land management, infrastructure management, environmental management, and poverty alleviation. Through a capacity building component, the UMP plans to establish an effective partnership with national, regional, and global networks and ESAs in applied research, dissemination of information, and experiences of best practices and promising options.

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CONTENTS

FOREWORD	v
ABSTRACT	vi
ACKNOWLEDGMENTS	viii
EXECUTIVE SUMMARY	1
I. SIGNIFICANCE OF PARTICIPATION IN INFRASTRUCTURE MANAGEMENT	7
Potential and Constraints	7
Participation and Management Reform	14
II. ELEMENTS OF PARTICIPATION	21
Who are the Participants?	21
Non-Governmental Organizations	26
What is Participation?	32
Infrastructure Service Management Functions	36
Scope of Participatory Strategies	40
III. APPLYING PARTICIPATORY STRATEGIES: LESSONS OF EXPERIENCE	48
Conditions and Forms of Participation	48
Implementation	59
Operation and Maintenance	65
Investment Programming	68
Long-Term Planning	70
Monitoring and Evaluation	73
Formulation of Policies and Goals	75
Organizational Basis of Participation	77
IV. TOWARD PARTICIPATION AND PARTNERSHIP IN INFRASTRUCTURE SERVICE MANAGEMENT	86
Framework for Action	86
Learning by Doing	88
Looking Ahead	89

ANNEX A: Objectives and Issues	92
ANNEX B: Defining Urban Infrastructure Services	96
REFERENCES	98
FIGURES	
2.1: Strategic Approaches to Participatory Infrastructure Service Management	47
4.1: Infrastructure Management: Overview of the Policy Framework	91
B.1: Schema of Urban Infrastructure Systems	97
BOXES: CASE EXAMPLES	
1.1: Government supported self-managed development: Villa El Salvador in Lima, Peru	10
1.2: Participatory sites and services and area upgrading: the World Bank-assisted Lusaka Project	11
1.3: The status of urban infrastructure services in developing countries	15
1.4: Community management of private sector infrastructure service delivery	19
2.1: Women as community managers: the case of Guayaquil, Ecuador	25
2.2: Women as infrastructure producers: the case of San Judas in Managua, Nicaragua	26
2.3: Private sector solid waste collection in Porto Alegre, Brazil	29
2.4: From confrontation to partnership: the case of PROFAVELA in São Paulo, Brazil	30
2.5: Indonesia's Kampung Improvement Programme	42
2.6: Orangi Pilot Project, Karachi, Pakistan	44
2.7: Decentralization is a two-way process: Indonesia's IUIDP	46
3.1: Indian Urban Community Development Programme, Hyderabad, India	51
3.2: Reaching the poor: Khuda Ki Basti incremental housing scheme, Hyderabad, Pakistan	54
3.3: Sri Lanka's Million Houses Programme	57
3.4: Minimizing the private costs of sewerage: the case of the Bandung Sewerage Project	62
3.5: The NGO as project manager: FUNDASAL in El Salvador	64
3.6: The CUDP Community Programme in Cirebon, Indonesia	67
3.7: Information system for participatory environmental management: CEMIS	76
3.8: Danida/UNCHS Community Participation Training Programme in Bolivia	78
3.9: Community Infrastructure Project (CIP), NWFP, Pakistan	81
3.10: Cross-sectoral environmental planning and management in Dar es Salaam, Tanzania	82
3.11: Building capacity for community and government collaboration in Zambia: objectives and approach	83
3.12: Private sector solid waste collection: ANR in Colombia	85

FOREWORD

This paper has been prepared for the urban infrastructure management component of the joint UNDP/UNCHS (Habitat)/World Bank Urban Management Programme (UMP). The UMP is a major long-term technical cooperation program designed to strengthen the contribution made by cities to human development (including economic growth, social development, and the reduction of poverty). The UMP seeks to promote coherent urban policies, strengthen urban management, and enhance the provision of municipal services by harnessing the skills and strategies of regional networks of experts and communities, as well as public and private sector organizations. It does this primarily through its regional offices in Accra, Ghana; Cairo, Egypt; Kuala Lumpur, Malaysia; and Quito, Ecuador.

The UMP relies on two mutually supportive processes to facilitate capacity building in its five theme areas of municipal finance and administration; urban infrastructure management; urban land management; urban environmental management; and urban poverty alleviation:

- **City or country consultations** which bring together national and local authorities, the private sector, community representatives, and other stakeholders to discuss specific issues within the UMP's theme areas and propose reasoned solutions. In so doing, UMP thematic policy framework papers, discussion papers, and management tools may be used as starting points for discussion. Consultations are held at the request of a city or country and are intended to provide a forum for discussion of a cross-section of issues, generally resulting in an action plan for policy program change.
- The development of **regional networks of experts** in each of the five UMP theme areas for the purpose of providing technical advice and cooperation and to ensure a sustained capability to support consultations and follow-up. This follow-up includes facilitating the implementation of action plans and the corresponding mobilization of resources. Typically, after having participated in supporting several city or country consultations in their specific area of competence, these regional experts become the foundation of the human resource base in the program.

By synthesizing lessons learned, identifying best practices, conducting state-of-the-art research, and disseminating program-related materials, the UMP core teams in Nairobi and Washington, D.C. provide support for the regional programs and networks.

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ABSTRACT

Infrastructure service users make important contributions to the provision, operation, and maintenance of infrastructure service systems in cities and towns in developing countries. These contributions may occur within development projects or, more importantly, in the regular daily processes of service provision. The potential benefits of community and service user participation are not being fully realized, however, due to numerous constraints, including shortcomings in prevailing policies.

Participation in infrastructure service management—which includes planning, programming, and monitoring as well as implementation and operation and maintenance—is a form of partnership between government and service user communities which may be promoted in the context of programs for improving infrastructure service management. In particular, participation is essential to realizing demand-oriented service delivery. As countless experiences have demonstrated, the benefits of participation derive not only from mobilizing additional community resources but, more importantly, from increased effectiveness in the use of available resources.

Participatory strategies must consider the role of many stakeholders at the community level (households, community-based organizations, leaders and, in particular, women), the intermediary level (non-governmental organizations and special purpose government agencies), in the private sector (formal and informal enterprises), and in government (technical agencies and local government authorities). It is important that they take a process-oriented approach to infrastructure systems and consider all processes by which users gain access to services, including private and informal provision as well as public sector service delivery.

Participation implies that people acquire a greater voice in local affairs and an expanded role in decisionmaking processes; it is inseparable from empowerment. At the same time, the justification for participatory strategies must lie in their contribution to the specific objectives of infrastructure service delivery.

As a form of partnership between service user groups and government authorities, participation exists in a wide variety of forms, which range from government participation in and support of community-based development activities on the one hand to people's participation in government-directed management functions on the other. In between, various forms of involvement and collaboration are possible. Four main strategic approaches may thus be identified:

- community-based support strategies
- area-based involvement strategies
- functionally-based collaboration strategies
- process-based decentralization strategies

An important characteristic of each approach is the manner in which it defines the sharing of infrastructure service management tasks and responsibilities between stakeholders at the community and government levels, and how it structures the relationships between them. A large body of experience demonstrates the relative strengths and weaknesses of each of these strategic orientations. The strengths of each approach tend to complement the weaknesses of the others. A certain evolution from one approach to the next is advantageous and frequently observed.

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EXECUTIVE SUMMARY

- i. Infrastructure users contribute in many ways to the provision and operation and maintenance of infrastructure systems. In the context of development projects, the benefits of participation derive not only from cost reduction and resource mobilization during implementation, but also from more effective targeting of project measures to the real needs of the people. Participation enhances user “ownership” of facilities, thus helping to ensure fuller and more efficient use, better maintenance, and more reliable operation.
- ii. Outside the project context, community-based processes of informal housing production also involve major contributions to infrastructure service provision. Additionally, infrastructure users may perform important functions in the government’s overall management of infrastructure systems. Participation is essential to demand-oriented infrastructure service delivery.
- iii. However, the potential contribution of user participation is constrained by numerous factors such as the absence of secure tenure rights, inappropriate technical standards, rigid planning methods, time-bound project management requirements, and the absence of workable models. Participatory infrastructure management calls for an appropriate organizational basis for the partners, a clear division of tasks in line with the interests and capacities of each partner, adequate communication channels between participants, and a favorable policy context.

The Partners

- iv. The main partners in participatory infrastructure management are:
 - **community-based organizations (CBOs)**, which are often formed when neighbors join forces to improve local security, housing quality, environmental quality, basic utilities, and social services. **Community leadership** is very important to participatory infrastructure development. Since **women** normally organize household access to drinking water, sanitation, and waste disposal services, they play a key role in the struggle to improve service access and quality.
 - **non-governmental organizations (NGOs)**, which may be understood as a “third system” between the public and the private domains. Their main functions include mediating between communities and government authorities, advocating community interests, consulting and providing support to community-based development, and, occasionally, managing project activities.
 - **private sector actors**, who range from informal workers and small-scale enterprises (e.g. waste collectors and scavengers) to large-scale business firms who may contract with the government to provide selected infrastructure services.
 - **local government authorities**, who bear primary responsibility for provision of infrastructure as well as other urban services. As well as being humanistic and idealistic, the interests of local government authorities are political and economic. Being at the “contact” level of government, local authorities are very much concerned with the level

of satisfaction of the people with service delivery performance. Local government technical departments are particularly concerned with **reliable operation** of infrastructure facilities, **minimization of operating costs**, and **adequate cost-recovery**.

What is Participation?

v. Participation in infrastructure management is a process whereby people—as consumers and producers of infrastructure services, and as citizens—influence the flow and quality of infrastructure services available to them. Participation is not limited to development projects. It is important that participatory strategies build upon existing informal processes and community-based infrastructure development, promoting them and linking them to formal systems. Participatory approaches depend upon voluntary relationships or partnerships between two or more of the groups mentioned above, which include private sector infrastructure suppliers as well as infrastructure users.

vi. The impact of participatory infrastructure development extends beyond service improvement to include enhancing people’s capacity to manage local affairs and interact more effectively with authorities and other partners. Participation is inseparable from **empowerment**. At the same time, participatory management requires inputs of time, organizational capacities, and other skills, which need to be both understood and supported by policy makers and infrastructure managers. Participation involves risks and costs as well as benefits. In the right circumstances, however, the benefits of participation can far outweigh the costs.

Management Functions

vii. Management is a cyclical process involving the formulation of goals; planning and programming; implementation; operation and maintenance; monitoring and evaluation; and application of information derived from monitoring to planning and operational functions. Participation is important for each of the following functions:

- *Goal and policy formulation*, which in principle expresses the values, needs, and aspirations of all interest groups. Public support is mustered for selected goals through a two-way process of information exchange and consultation.
- *Long-term planning*, which, as well as being a response to policy goals for infrastructure service systems, is based on real demands. Users may contribute to this process, both with regard to identifying effective market demand and interpreting development goals.
- *Medium-term investment planning and programming*, which calls for user participation in a bottom-up process involving the identification of needs, setting of priorities, selection of appropriate solutions, and definition of an investment program in relation to the means available. This bottom-up decisionmaking process can only work effectively if the participating communities and user groups have access to relevant information on conditions and technical possibilities.
- *Implementation of plans*, construction of facilities, and development of service delivery systems, which are influenced by people who, as **users**, purchase municipal services

such as water or sewer connections. Through their contributions to government projects, the construction of individual private facilities, and/or the provision of informal local services that may operate independently of public infrastructure systems, people are also involved in implementation as **producers**.

- *Operation and maintenance functions*, which encompass service use, service supply, and the upkeep of facilities. Proper use of public facilities by people can substantially improve their effectiveness and at the same time reduce maintenance requirements. Additionally, service users and community groups may themselves make important contributions to the maintenance of local segments of municipal facilities.
- *Monitoring and evaluation* of system performance, which constitutes an essential link in the management cycle. Because they are directly affected by the operation of infrastructure systems, users are in a good position to contribute to monitoring the condition and performance of systems.

Strategies for Participation

viii. Participation exists in a wide variety of forms, ranging from government involvement in community-based development activities to people's participation in government-directed management functions. These approaches are in no way exclusive and often take place at the same time. Four main strategic approaches are identified:

- *Community-based strategies*, which constitute the most elementary form of participatory development. The frame of reference for development inputs is the social group or community itself. The main objectives are to **support** the local development of infrastructure services; **enhance** community groups' capacity to manage service development; and **enable** these processes through appropriate changes in the legal, technical, and policy context. Typical measures include organizational and technical extension services. Enabling measures involve recognition of people's rights to self-help infrastructure improvements, tenure security, and awareness building programs.

The principal strengths of this approach derive from creative learning and the community's potential for self-organization. However, this strategy does not always succeed in introducing representative and functionally-oriented organizations. The bottom-up, community-based approach also faces inherent difficulties in linking locally developed infrastructure systems to municipal networks. The approach is seldom able to mobilize more than a modest volume of resources.

- *Area-based strategies*, which are the common form of government-directed programs for participatory infrastructure upgrading. Rather than a social group, a particular residential area constitutes the frame of reference of development efforts. Programs **involve** beneficiaries at various stages of the development process, with the principle objective of improving the efficiency and cost effectiveness of government activities. Typical measures include awareness building, community participation in demand analysis and the choice of solutions, and mobilization of resources for implementation and operation and maintenance. Organizational capacity-building may also be introduced.

This approach is well suited for channelling larger volumes of resources and for ensuring more effective linkages between local level development and municipal systems. Improvement measures may become standardized and supply-driven, however, loss of community “ownership” and poor cost recovery are common problems with this approach.

- *Functionally-based strategies*, which employ the functional structure of the infrastructure system as the frame of reference for organizing developmental inputs. The main objectives of this approach are first to designate areas of responsibility within which each stakeholder may pursue particular interests and exercise capacities, and second to establish effective **collaboration** between these various domains. Typically, a community group will take responsibility for managing and financing “internal” activities such as local garbage collection, while the municipality will ensure the “external” tasks such as onward transfer and disposal of waste materials. Ancillary programs of community development and organizational and technical support are also important along with training and awareness building.

The strength of functionally-based collaborative approaches lies in the relatively high level of empowerment of participating community groups. Because project implementation and financing remain more clearly in community hands, loss of project “ownership” and poor cost recovery do not become problems. The most important difficulties concern coordination and linkage between the “internal” facilities and the government-sponsored “external” facilities.

- *Process-based strategies*, which take the entire process of infrastructure management as their frame of reference. The basic objective is to improve the efficiency, demand responsiveness, and accountability of infrastructure service management through a general **decentralization** of delivery processes. Decentralization implies a double movement of, on the one hand, devolving decisionmaking processes and operational responsibility to more local bodies and, on the other hand, opening management functions at each level to the exchange of information from “below.”

Privatization of specific service delivery tasks and other forms of public-private partnerships are important decentralization strategy measures. Decentralization strategies depend upon measures of institutional development to increase responsibility and authority to local bodies and develop their capacity. The strength of a decentralization strategy derives from both its mobilization of creative capacities at all levels of society, and its more productive use of available capacities and potentials.

Applying Participation

ix. A review of case studies demonstrates the particular strengths and weaknesses of each strategic approach. It also reveals a complementary relationship between them; the strengths of one approach tend to counteract the weaknesses of another. In practice, an evolution of one approach into another is frequently observed. This evolution may go in either direction, and it is possible to begin with any suitable approach. Due to their complementary nature, it can be beneficial to employ all approaches simultaneously.

x. Opportunities exist for improving service delivery through user participation in each infrastructure management function. For example, users' direct financial contribution to the **implementation** of facilities has proven to be quite feasible. Furthermore, user involvement in supervising the implementation of infrastructure improvements may significantly increase the value for money achieved. Careful attention to the links between public, informal, and private facilities may increase the effectiveness of implemented systems. User participation may likewise enhance **operation and maintenance** by making better use of existing infrastructure facilities, reducing maintenance requirements, and mobilizing user contributions to maintenance functions. The willingness of users to contribute to both implementation and operation and maintenance may be promoted through user participation in systems planning, public information, and the choice of appropriate technical solutions.

xi. Only after users acquire a real voice in the **investment programming** phase will the decisionmaking process reliably reflect the real benefits of anticipated investments to society. **Long-term planning** requires the involvement of the public as a whole, as well as the direct participation of interest groups and the communities concerned. The role of participation in demand-oriented service planning is particularly crucial in the case of poverty. Careful consideration must be taken, not just of the "willingness and ability to pay" but also of the specific conditions under which low-income service users are able to express and exercise their demands. Often it is not just people's inability to pay that is crucial, but the inability—and sometimes, the **unwillingness**—of municipal government to supply services that address the actual level of demand and conditions of service access. Informal solutions are often more successful because they adapt service supply processes to the prevailing **demand characteristics**.

Organizational Requirements

xii. Participatory strategies must determine whether development activities should be channelled through existing organizations or whether new organizations need to be established at the community and/or government levels.

xiii. The *community-based approach* relies largely on community initiatives, and existing CBOs are clearly at the center of the strategy. The **area-based approach** encompasses a wider range of partnerships and divisions of authority; the need for new organizations will depend upon the tasks and responsibilities to be assumed by the community, and the form and capacity of existing local organizations. Because correspondence between the responsible social group and the relevant infrastructure system is particularly important, existing organizations appear less appropriate to the **functionally-based collaboration strategy**. The **decentralization approach** is concerned with the relationship between all types of user and community organizations and government authorities. In principle, the strategy may apply to all forms of existing organizations. Where specific inputs to government planning processes are anticipated, appropriate organizational capacities may have to be established at the community and/or district levels.

Conclusions

xiv. To increase the capacity for demand-oriented service delivery, governments must become less bureaucratic, more flexible, more incentive-driven, increasingly decentralized, and more accountable to service users. User and private sector participation are important to each of these requirements. To contribute effectively, infrastructure users must be provided with the basic right to self-help improvement, better security of tenure, organizational and technical support, an environment conducive to enabling and supportive policies, and a larger voice in the process of infrastructure service planning and management.

xv. In many cases, participatory strategies depend on bottom-up processes whereby successful public-private partnership models, which have evolved out of trial and error activities at the most local level, are progressively elaborated and institutionalized. To promote this process, governments should adopt policies that enable and facilitate the participatory activities of infrastructure users and community-based organizations. Participatory approaches require time, resources, organizational procedures, and skills, and these factors need to be made available where appropriate. In some cases, special purpose organizations may be used to carry out pilot programs for participatory infrastructure development. Responsibility for infrastructure management functions should be decentralized, and the scaling-up of successful models of participatory management actively promoted.

I. SIGNIFICANCE OF PARTICIPATION IN INFRASTRUCTURE MANAGEMENT

Potential and Constraints

Introduction

1.1 The supply of infrastructure services in developing countries is advanced in many ways by service users themselves. User contributions to service provision take many different forms, ranging from the purchase of electrical generators by enterprises to the construction of on-site pit latrines by poor, unserved households. In the conventional sense of participation, users often contribute to the planning and implementation of infrastructure development projects. Even more important than project-based activities are contributions made by residents of informal settlements, who join with their neighbors to construct footpaths and drains, organize community level services, and petition the government for improvements to infrastructure.

1.2 In most cities in developing countries, the dramatic pace of demographic, economic, and social change severely overburdens the capacity of local authorities to provide urgently needed infrastructure services. In fact, the challenge of providing adequate service cannot be met through investment in technical facilities alone; the required funding is just not available and the needs and problems themselves are evolving too rapidly. In these circumstances, service provision depends very much on an efficient organization of service delivery processes and the best possible use of available material and human resources. It is mainly a question of management, which calls for active cooperation between government agencies and infrastructure users, as well as private sector actors.

1.3 Beneficiary contributions to development projects, informal processes of service improvement, and people's cooperation in infrastructure management are all forms of **user participation**. In this sense participation in developing countries is already an important factor in urban infrastructure service provision. However, the potential contribution of participation is not being realized due to numerous constraints and shortcomings in the policy environment.

1.4 The purpose of this paper is to describe and illustrate a range of participatory strategies to assist urban managers in expanding the role and effectiveness of user participation in the provision and operation and maintenance of infrastructure. To demonstrate how participation has been effectively employed in various circumstances, numerous case studies are cited. Finally, measures and steps are outlined that could be instrumental in realizing participatory strategies.

Audience

1.5 This paper is addressed to political decisionmakers at the national, provincial, and municipal levels with responsibility for infrastructure development, and to urban managers and their senior staff with responsibilities for planning, development, and operation and maintenance of urban infrastructure service systems. Other target audience groups include: community leaders; development professionals and non-governmental organizations active in the field of infrastructure development and management; project officers of national and international

development organizations; and the faculty of academic institutions concerned with development issues.

Content of the paper

1.6 Chapter I stresses that participation is already an important factor in the provision and operation and maintenance of urban infrastructure systems in developing countries. At the same time, the chapter describes the constraints that limit its use and effectiveness. The need for improved management of urban infrastructure service systems is emphasized and the role of participation in management reforms identified. The closing paragraphs describe the essential characteristics of participatory infrastructure development as a form of public-private partnership.

1.7 Chapter II outlines the main elements of participatory strategies, beginning with the major groups of participants at the community, intermediary, private enterprise, local government, and external support agency levels. The interests and capacities of each partner group are described. A working definition of participation is then proposed, with particular reference to the question of empowerment. The cost and risks of participation—as well as the potential benefits—are considered. A general management concept, composed of six main management functions, is then outlined as a basis for discussing the relationship of participation to infrastructure service management. Finally, the chapter defines four main strategic orientations as a framework for considering the available options and their requirements and determinants of success.

1.8 Chapter III outlines the main objectives essential to the application of participatory strategies, and discusses the issues that may arise as well as possible responses in the light of available experience. The principle objectives dealt with in Chapter III concern the conditions and forms of participation, the role of participation in each management function, and the organizational basis of participation at the community, intermediary, and government levels.

1.9 Chapter IV stresses the importance of participatory approaches within broader programs for improving and reforming infrastructure management. A general framework for action is outlined, and the essential principles for the application of participation are reiterated.

Potentials of participation

1.10 The concept of participation in development activities is certainly not a new one. In rural development, community participation has been recognized as an essential component at least since the early 1950s. The importance of participation in urban development activities has lagged behind. One reason may be that rural projects are mainly production-oriented, and it is quite evident that the beneficiaries—as producers—must be involved in the development of production systems. In urban projects, beneficiaries have been seen primarily as consumers of services, and their role in developing supply systems has therefore been accorded less importance (Moser 1987:311).

1.11 By the 1970s, however, the dynamic growth of informally constructed urban residential areas and squatter settlements in the cities of developing countries had made it clear

that low-income urban residents do play a major role in shelter production—including the provision of infrastructure services. For example, Villa El Salvador, a desert site on the outskirts of Lima, Peru, was transformed between 1971 and 1976 into a thriving community of about 130,000 inhabitants possessing basic services, largely through the self-managed activities of the residents themselves (Box 1.1).

1.12 Strategies aimed at using the potential of self-organized residential development have taken two main directions: (i) sites and services schemes for new housing development and (ii) slum upgrading for existing settlements. A project implemented by the Lusaka City Council with World Bank support between 1974 and 1981 is one of the earliest urban projects to incorporate both strategic directions (Box 1.2).

1.13 In this case, participation was limited in the planning phase but focused on labor mobilization and cost reduction in the implementation phase. The modest cost-savings achieved in the project contrasts with the more positive experiences of other projects in which the beneficiaries were more intensively involved in project planning, and where project objectives encompassed community development as well as cost-savings. FUNDASAL in El Salvador (Box 3.5) and the Orangi Pilot Project in Karachi (Box 2.6), for example, have achieved very good cost-savings and cost-sharing performance (Moser 1987:300-344).

1.14 Experience with participatory infrastructure development demonstrates that community-based organizations and infrastructure users can make important contributions to the provision and operation and maintenance of infrastructure systems. Benefits derive not only from cost reduction and resource mobilization, but also from better targeting of project measures to peoples' real needs through their involvement in the planning phase. User participation is an integral aspect of demand-oriented infrastructure development. Furthermore, participation enhances the “ownership” of the facilities by the user community and thus ensures more extensive and efficient use of facilities, better maintenance, and more reliable operation. Studies of the Kampung Improvement Programme (KIP) in Jakarta, Indonesia, demonstrate, for example, that the level of community-managed maintenance of local drains and roads is considerably higher in communities that were involved in project planning, as compared with communities that were not involved (Box 2.5).

1.15 Beyond the context of individual development projects, the experience of countless informal low-income residential areas such as Villa El Salvador (Box 1.1) demonstrate that the “participatory option” in which community-based development processes are enabled and supported by government policies and investments is far more effective than the available alternatives: isolated, self-help development of spontaneous settlements on the one hand; and entirely government-directed provision of housing and services for low-income households on the other.

Constraints

1.16 In spite of the apparent advantages of participatory approaches to infrastructure service provision, it is fair to say that participation is employed to a quite limited extent by municipal authorities and infrastructure development projects. The reasons for this may be

Box 1.1. Government supported self-managed development: Villa El Salvador in Lima, Peru

The settlement of Villa El Salvador began in April, 1971 as an organized invasion of government-owned desert lands in the outskirts of Lima, Peru. The original invasion of 180 families triggered subsequent occupation of adjacent private land by nearly 9,000 households. After trying unsuccessfully to evict the settlers, the military government, which professed a policy of support to local action, finally negotiated a relocation with the settlers and assisted them in moving to an alternative site. Within two months, 20,000 households occupied the new site on unserved desert land about five kilometres from the outskirts of Lima. Five years later, in 1976, Villa El Salvador had become a well organized settlement of about 130,000 people with water and electricity connections, street lighting, a community-run bank, basic health center, and commonly owned production enterprises.

Although the leader of the original invasion was jailed, the government, which was seeking to build a popular following, advanced essential support to Villa El Salvador. A newly founded National Office for the Development of Young Towns (SINAMOS) was instrumental in organizing the settlement on the basis of participatory decisionmaking. Cooperative production facilities were promoted and local administration was established under an autonomous body named CUAVES (Autonomous Urban Community of Villa El Salvador). Self-management comprised three tiers above the individual household: the block (or neighborhood unit), a residential group (a grouping of blocks), and the settlement itself. Each level of organization assumed responsibility for certain functions of management and service provision, for example: house construction at the household level; garbage collection at the block level; open spaces and community centers at the group level; and health care and general policy on matters such as employment generation at the settlement level. The government—as partner and facilitator—provided trunk services, social and community development support, access to building materials and, most importantly, an environment in which participation could work. Within five years, the self-managed efforts of the people had provided over 200 classrooms, teachers, an adult literacy campaign, a health campaign, a community bank, a building materials store, a bus fleet, a cultural center, a park and community centers. As the community expanded and developed, demands on the government for service improvement also grew. Street lighting, electricity distribution, domestic water connections in the place of communal taps, and the beginnings of a sewer system were provided.

Following the take-over of a conservative government in 1975, the activities of SINAMOS were sharply restrained and CUAVOS was seriously weakened, along with its economic activities. Subsequent executive elections at CUAVOS produced a leftist leadership, which turned its main attention to national party politics. Demands for a voice in national economic policy making were strongly rebuffed, however. At the same time, the neglect of grassroots community interests by CUAVOS led to a resurgence of neighborhood level associations. With important inputs from people who had previously worked for SINAMOS, and support from UNICEF and USAID, school improvements, health care, and a nutrition program were introduced. Some felt these externally supported programs weakened the community organization of CUAVOS and “de-politicized” the residents. Nonetheless, following CUAVOS elections in 1978 a new development plan for Villa El Salvador was prepared. With the municipality’s cooperation, further improvements were implemented in the areas of trunk water supply, road surfacing, health care, tree planting, and community facilities. The interplay of national and local interests in Villa El Salvador presents a complex and changing pattern. Along with material concerns, differing ideals and visions of societal development played an important role in community organization and mobilization. The policies of successive governments, on the other hand, were based on national power politics as well as pure developmental concerns. Nonetheless, the remarkable history of Villa El Salvador demonstrates the enormous potential of self-managed housing and service development by low-income communities. It shows, in particular, that the **participatory option**—based on collaboration between self-managed communities and government authorities—is far more effective than either isolated self-help squatter development or government-sponsored “low-cost” housing provision (Turner 1988:153-160; Peattie 1990; UNCHS 1991).

traced to legal, regulatory, and technical constraints, as well as to inappropriate policies and the absence of required management capacities at the municipal and community levels.

1.17 **Legal constraints.** The fact that a high proportion of the residents of informal residential areas (which often constitute up to one-half of a developing city’s housing units) do not possess legal title to their plot constitutes an important constraint to their participation. As service provision amounts to de facto recognition of property rights, it is a step which the

Box 1.2. Participatory sites and services and area upgrading: the World Bank-assisted Lusaka Project

The Lusaka Project in Zambia is one of the earliest large-scale attempts at participatory urban housing and infrastructure development within a government-sponsored housing development project. Implemented between 1974 and 1981 by the Lusaka City Council with funding from the World Bank, the project provided physical and social infrastructure for 17,000 dwellings in one of the major squatter settlements of the city. In addition, some 12,000 new plots were prepared and serviced, either fully or with water supply alone. These were made available to households displaced by the upgrading program as well as by new residents.

The project aimed to promote participation in certain types of planning decisions as well as the provision of investment and labor. The extent of participation was limited due to the planners' concern for rapid project implementation, a reluctance to involve the people in many technical decisions, and the fear that rising expectations might be frustrated by project delays and lead to social discontent.

A Road Planning Group, which was established to design portions of the site layout, enabled a certain degree of interactive participation. Community representatives did not, however, include women. For example, while the resulting grid-iron layout gave each plot considerable privacy, the design made it impossible for women to simultaneously do housework and watch their children play, or to have the neighbors watch the house. In the implementation phase participation was more intensive as the project aimed to use household and community labor to the maximum. However, project managers stipulated that contractors would be hired if the self-help activities began to interfere with the implementation schedule.

Project evaluation shows that self-help labor significantly lowered the cost of individual housing for the beneficiaries and for the government. There were no cost-savings with regard to civil works, however, and the attempt to mobilize collective labor inputs was not justifiable on economic grounds. The lesson seems to be that participatory strategies which aim *only* at cost-savings through labor mobilization—with no capacity-building objectives and only minimal participation in the planning phase—are not likely to produce community organizations which are sufficiently strong to actually produce cost-savings through community level inputs. Other cases which attributed much more importance to community development as an objective in itself, such as the FUNDASAL in El Salvador (Box 3.5) and Orangi Pilot Project in Karachi (Box 2.6), have achieved far better cost-savings and cost-sharing performance (source Moser 1987:300-344).

“technical” agencies responsible for infrastructure service provision are neither willing nor authorized to take. In São Paulo, Brazil, this was an important factor which inhibited the water and sewerage authority (SABESB) from providing water supply in the *favelas* (Box 2.4).

1.18 To resolve this problem, governments may create special programs for “regularizing” informal settlements, meaning the legalization of land tenure, layout corrections, and service upgrading. In the Province of Sindh in Pakistan, for example, the government has established the Sindh Katchi Abadi Authority (SKAA) to regularize those *katchi abadi* or squatter settlements which had been registered for legalization. An important idea behind the program was that the sale of long-term tenure rights (leases) would provide necessary resources to finance service upgrading in the area. In fact, the results of the program have been quite poor. In Karachi, only 28,000 leases out of a total of 223,000 were issued in spite of considerable efforts during the period 1974-1988 (Hasan 1990). Analysis of this disappointing performance revealed that, while legalization of tenure was an essential step, the link between tenure and upgrading should not have been assumed. In fact, most residents felt that the registration of their *katchi abadi* already ensured security of tenure and there was thus no great pressure to acquire a formal lease title. On the other hand, the ten-step leasing procedure was quite complicated, time consuming, and costly.

1.19 While most residents were generally willing to pay for service upgrading, on the basis of past government performance they had little confidence that their payment would be

employed to upgrade infrastructure facilities. In these circumstances it appeared advisable to streamline the leasing procedure and drop the linkage between tenure legalization and service upgrading (Hasan 1990). Subsequently SKAA has introduced “one-window” lease camps and gone ahead with upgrading programs independently of leasing, both with considerable success. While legalization of tenure and upgrading are closely related, programs must respect people’s perception of their relative priority and linkage. In cases where de facto tenure is secure, upgrading programs such as Indonesia’s KIP (Box 2.5) have usefully separated tenure legalization from the upgrading process.

1.20 ***Regulations and technical standards.*** Further constraints to participation derive from the regulations and technical standards which municipal governments apply to infrastructure construction. Full compliance with prevailing infrastructure service regulations and standards often raises the price of infrastructure services beyond the means of low-income households. While a certain level of subsidy is sometimes required, genuine participation is only possible when the applied solutions are more or less affordable.

1.21 In the case of São Paulo (Box 2.4), professional attitudes of the technical staff, the authority’s fear of higher maintenance costs, and the regulations themselves all effectively inhibited technical innovation by the responsible water and sewerage authority (SABESB). Only through the intervention of a multi-purpose agency, the Bureau of Social Welfare, was a low-cost solution devised, employing high density polyethylene piping. In this case, the innovation was important not only because of its lower cost but also because it greatly facilitated a solution to the difficult technical problem of installing a pipe network in the densely settled and irregularly structured *favelas*.

1.22 In most cases of successful participatory infrastructure development, introduction of low-cost technical solutions—which required a de facto waiver of existing regulations and technical standards—was essential to project success. (See KIP, Box 2.5; PROFAVELA, Box 2.4; Million Houses Programme, Box 3.3.)

1.23 ***Planning methods.*** Prevailing planning methods and procedures often hinder participation in infrastructure development. The conventional master plan embodies a conceptual approach which is in many ways antithetical to participatory, community-based, bottom-up planning. Employing a sectoral master plan, conventional planning is a top-down process that focuses on the desired future state of a single infrastructure sector, which is viewed as a spatially extended technical network. Implementation is normally organized into distinct stages (projects) that aim to achieve the design capacity by a target date. As infrastructure service users, people figure as parameters, external to the system, but essential to defining its performance requirements for example in calculating liters per capita per day.

1.24 By contrast, the bottom-up participatory planning approach begins with present needs and priorities, and takes an integrated view of all service sectors in a particular location or place. Implementation is organized as a strategy or process of progressive improvement. People are not only consumers but active agents in the service management process. Two infrastructure development projects in Indonesia, for example, illustrate how the master plan approach produces solutions that have a favorable relationship of costs to benefits when viewed from the

perspective of a completed system. Considered from the perspective of present needs and demands, however, it shows an insufficient cost-benefit ratio. In particular, the master plan approach is normally not the best route from present problems to desired future conditions in a way that does justice to the evolving needs and potential contributions of the users (Schübeler 1989; Box 3.4).

1.25 By their nature, participatory development processes are self-regulating and not entirely predictable. Conventional planning methods often have some difficulty in dealing with these qualities. The introduction of more flexible, shorter-term, bottom-up planning and programming approaches (including “community action planning” and “multi-sectoral investment planning”) is thus an essential step toward enabling participation (see Sri Lanka’s Million Houses Programme, Box 3.3 and Peterson et al. 1994).

1.26 *Project management procedures.* Besides planning methods, the administrative procedures and practical interests of external support agencies often restrict the scope of participatory infrastructure development. To control timing of activities and expenditures under a development project, project planners and managers must formulate an implementation schedule and budget in advance. To ensure that these are respected, there is a tendency to limit the beneficiaries’ role in the planning phase to one-way consultation as opposed to genuine participation in decisionmaking—as illustrated by the case of the Lusaka project (Box 1.2). Once the project has begun there is considerable pressure to disburse project resources on schedule, and this often conflicts with the self-regulating dynamics of a demand-oriented, community-managed development process.

1.27 In the Community Infrastructure Project (CIP) in the North West Frontier Province (NWFP) of Pakistan, the need to complete engineering designs prior to appraisal meant that the critical phase of community organization and participatory planning had to be carried out in an accelerated fashion in about one-third of the project sites (a total of fifty-five). However, project resources for the community development component were not yet in place, and the subsequent stages of project implementation in these mobilized communities would in many cases only continue after a delay of one year or more (Box 3.9). Here, as in numerous other examples, the administrative requirements of project preparation may not be conducive to the self-organizing process characteristic of participatory development.

1.28 Practical constraints to participation often arise when a project is scaled up from the pilot or trial phase to a larger-scale application. This was the case in the Indian Urban Community Development (UCD) Project in Hyderabad: the shift from a relatively small-scale program of self-help improvements to a rather large-scale program of self-help housing production involved a change in the operating pattern of the UCD unit toward more directive project management. The role of participants in project planning was reduced rather than expanded (Box 3.1).

1.29 The requirements of project administration and control cannot be waived, of course. To resolve the inherent conflicts between these requirements and demand-oriented, participatory development processes, it may be necessary to increasingly re-orient external inputs. This re-orientation should focus on program support and capacity-building in the responsible local

institutions, instead of directing external resources and inputs to the participatory implementation processes or projects themselves.

1.30 *Absence of a workable model.* The participatory approach usually implies important innovations for the responsible government institution. Bureaucratic resistance to change and the mere fact that it has never been done before, constitute major hindrances to the introduction of participatory approaches. Even when the will to introduce participation is present, lack of knowledge of required inputs of time, skills and resources may lead to unworkable compromises.

1.31 The existence of a workable model is extremely important. In the case of the PROFAVELA project in São Paulo, for example, the water and sewerage authority had little difficulty in taking over the community-based approach once the pilot project had demonstrated its effectiveness and the procedures of working with neighborhood associations has been demystified (Box 2.4). Similarly, the methodology developed by the Orangi Pilot Project over many years of trial and error has proven suitable for relatively rapid replication in many other areas of Karachi and elsewhere (Box 2.6; Hasan 1993).

Participation and Management Reform

The need for reform

1.32 Growing recognition of the importance of participation is part of a more general move toward reform in urban infrastructure service management. In spite of considerable development efforts and investments in the past years, pressures for reform are mounting because too many people have little or no access to municipal services, and the quality of these services is often very low. Among low-income population groups, in particular, this has critical consequences for public health and well being. Inadequate maintenance leads to the deterioration of facilities, high losses, and considerable equipment down time. Inappropriate investment decisions often result in unaffordable infrastructure systems and reduce overall operational efficiency. The capacity to raise revenues is weak and the employment of available financial resources is often ineffective (Box 1.3).

1.33 These shortcomings may be explained in part by the extremely rapid pace of urban growth in developing countries, the associated explosion of service needs, and the prevailing shortage of investment resources and management capacities. The problems are not only quantitative in nature, however. More investment in new infrastructure would not necessarily compensate for the unsatisfactory impact of past investments nor would it improve the poor operating efficiency of existing systems (Israel 1992).

Demand-oriented service delivery

1.34 The central point of infrastructure management reform is to orient service delivery processes more clearly toward the demands of service users. The institutions responsible for infrastructure provision should be managed as service delivery enterprises which are responsive to the demands of service users and ultimately accountable to them. This would be an important departure from the existing situation in which responsible institutions are operated as

Box 1.3. The status of urban infrastructure services in developing countries

Investment volume: In general, in terms of value-added, infrastructure investments account for between 7 percent and 11 percent of GDP in developing countries. Infrastructure investments constitute 20 percent of total investment (and 37 percent of public investments) in low-income countries. Among medium-income countries, infrastructure is even more important, constituting 22 percent of total investment and 58 percent of public sector investments. (World Bank 1994:14).

Service access: Access to infrastructure services in urban areas of developing countries has improved somewhat in recent years. Between 1980 and 1990 the coverage by electrical power distribution rose from 70 percent to 74 percent of the urban population, water supply coverage increased from 77 percent to 82 percent and sanitation from 69 percent to 72 percent. (Israel 1992:14). These statistics depend upon the definition of adequate standards. The World Health Organization estimates that more than 25 percent of the urban population does not have access to safe drinking water and that less than 60 percent of the urban population worldwide had access to adequate sanitation in 1987; less than 30 percent were connected to sewerage systems. Typically, between one-quarter and one-half of the solid waste generated in urban areas is actually collected and disposed (UNDP 1991).

With reference to the entire population in developing countries, access to safe drinking water has improved considerably in recent years, rising from 36 percent in 1975-80 to 70 percent in 1988-91. While drinking water supply has also improved considerably among the least developed countries, the level of access is much lower, having risen from 21 percent in 1975-80 to only 45 percent in 1988-1991. Sanitation service was available to slightly more than one-half (56 percent) of the population of developing countries in 1988-91. Among the least developed countries less than one-third (32 percent) of the total population had access to sanitary services in 1988-1991 (UNDP 1994:132-137).

Service among the low-income urban population is much lower than the average level for urban areas. In Pakistan, for example, 82 percent of the urban population of Pakistan was found to have access to drinking water in 1990. A study of Karachi's squatter settlements (*katchi abadi*) revealed, however, that less than half (47 percent) of the population had access to drinking water in 1989. The quality of this supply left much to be desired and the supply of piped water was in many cases only available for a few hours a day. In Mexico, 50 percent of the poorest fifth of households were found to be connected to the public water supply network in 1989, as compared with 95 percent of the wealthiest fifth. While 84 percent of Brazil's urban population were reported to have access to sanitary facilities in 1990, a study of the *favelas* of Rio de Janeiro in 1982 revealed that only 1 percent of households were connected to a sewer (UNICEF 1992; World Bank 1994:32).

Operating efficiency: Losses and excessive costs resulting from inefficient infrastructure operation are enormous. Studies by the World Bank indicate that the savings which could be theoretically achieved by raising technical operating efficiency of three sectors (power, water, and railroads) up to the level of current best practices would amount to \$55 billion—the equivalent of about one-quarter of the annual infrastructure investment in these countries. Improvement of fiscal efficiency—for example the collection of payment for delivered services which are presently not recovered from users—would raise an additional \$123 billion, equal to about 60 percent of annual infrastructure investment (World Bank 1994:11).

bureaucracies that administer existing infrastructure facilities and are accountable primarily to higher government authorities.

1.35 Demand-oriented service delivery implies that activities of service providers would be increasingly guided by incentives. To bring incentives to bear on infrastructure management three conditions are important:

- Service providers need to operate according to **commercial principles**.
- **Competition** should be introduced into the supply processes.
- Infrastructure users must acquire a stronger voice in management processes, including the means to **express service demands** and relative satisfaction and dissatisfaction with service delivery (World Bank 1994).

1.36 Realization of these conditions and introduction of demand-oriented service delivery normally calls for a range of reforms and innovations, including administrative decentralization, strengthening of local government institutions, more effective planning methods and programming procedures, and increasing involvement of the private sector in certain service delivery activities or functions. The relevant objectives and measures of management reform are discussed in several recent UMP publications including Fox 1994; Gidman 1995; and Peterson 1994.

1.37 This paper does not address the subject of management reform as such; its more limited aim is to demonstrate that service user participation constitutes an essential aspect of demand-oriented approaches to infrastructure service delivery, and to indicate the specific roles that participation can and should play with regard to the main instruments of management reform: **commercial principles, competition, and voice.**

Public-private partnerships

1.38 User participation in urban infrastructure service management constitutes a form of public-private partnership. As such, it may be usefully understood in the context of two areas in which governments are expanding their partnership with private sector actors: (i) support to owner-managed housing development and (ii) privatization of infrastructure delivery. A brief comparison of similarities and differences is instructive.

1.39 ***Owner-managed housing development.*** Having attempted, up until the early 1980s, to meet the housing needs of low-income households through government-directed production of low-cost housing, nearly all governments of developing countries have come to realize that the public sector should not attempt to assume the role of housing provider. As the government of Sri Lanka recognized following the evaluation of its “Hundred Thousand Houses” Programme (1978-1983), the private informal sector produces far more houses, of a quality which is better suited to the residents’ needs, and at much lower costs than the government is able to provide (Box 3.3). Informal housing is more effective because the owner-builder is able to make better use of available resources, including self-help inputs, as well as the skills and labor of informal sector workers, through an incremental construction process.

1.40 The logic of public-private partnerships for housing development implies an enabling role in which government creates conditions that are conducive to these informal processes (for example security of tenure), facilitates access to the essential factors of housing production (such as credit, building materials, utilities, and skills), and strengthens the capacity of the supporting actors (informal construction enterprises, credit facilities, NGOs, and CBOs). How does this situation compare with that of participation in community-based infrastructure development? A similar process of gradual resource accumulation and incremental implementation is also found in the community-based development of local infrastructure and community facilities. The role of informal enterprises in providing technical and management skills, and occasionally credit, is also comparable. On the other hand, the role of the CBO becomes much more crucial in the case of infrastructure. Here it is no longer just a matter of providing support but of actually pooling resources and coordinating the collective activities of numerous households.

1.41 The most fundamental difference between informal owner-managed housing production and community-based infrastructure development concerns the demarcation of responsibilities between the actors, and the correspondence between the social organization and the physical facilities. In the case of housing the demarcation is very simple: the implementing unit is normally the household, and the corresponding facility is the house. Other stakeholders may assume responsibility for individual factors or functions in housing production but the demarcation between these inputs and the housing unit itself remains transparent. The case of infrastructure systems is more complex. A division of responsibility must be established between at least three actors or stakeholders: households, community (or community-based organizations), and government authority. One of the crucial tasks of participatory development is the identification and organization of clear boundaries between these groups' responsibilities.

1.42 The method of demarcation is one of the distinguishing characteristics of alternative participatory strategies. In the case of the Orangi Pilot Project, for example, the lane organization—a unit of about twenty households—was identified as the appropriate social unit, capable of assuming responsibility for self-management and self-financing of the tertiary sewer network (Box 2.6). From the technical viewpoint the lane is too small for effective sewerage development; from the social viewpoint, however, the lane organization proved to be a workable unit. Supported self-help housing projects such as the FUNDASAL program (Box 3.5) often organize house construction on the basis of groups of about twenty households who subsequently manage infrastructure development.

1.43 ***Privatized infrastructure service delivery.*** Many governments are coming to realize that demand-orientation, competition, and accountability in infrastructure service delivery may be more readily achieved through the involvement of the commercial private sector in selected service delivery functions or activities, rather than attempting to incorporate these commercial principles into public sector institutions. The essential condition for these partnerships is that the selected activities or functions be opened to competition among several actual or potential suppliers. In addition it is necessary that the technical and financial requirements of the activity lie within the capability and interest of existing private enterprises.

1.44 Involvement of the private sector mobilizes capital, management capacities, and technical skills. More important perhaps is the introduction of competitive conditions which may transform the behavior of the entire service supply system. Privatization is a form of decentralization of management functions from government to private enterprises. Final responsibility for service delivery remains with the government, however, and effective regulatory systems and control mechanisms must be established to ensure that the supply of privately delivered services is equitable, the quality acceptable, and the price fair (see Gidman et al. 1995).

1.45 How does **community-based infrastructure service provision** compare with privatized service delivery? In both cases the government maintains final responsibility for service delivery. It is necessary to define distinct areas of responsibility and clearly organize task sharing between private and public sector actors. In both cases, the private sector actor must have the technical, organizational/managerial, and financial capacity required for the selected function or activity.

1.46 With regard to this latter aspect, important differences between user groups and private entrepreneurs become evident. The capacity of a CBO is normally quite limited in comparison with that of a private enterprise engaged in infrastructure service delivery. In the first place, the motives are quite different; users are concerned with service access while the private enterprise is interested in earning a profit. In the second place, the organizational structure of a CBO or user group is relatively unstable as compared with most private enterprises.

1.47 Strategies of privatization must not neglect the relationship between users and private service suppliers. It is particularly important that users assume the role of clients or principals of the private enterprise and not only that of consumers. This may take a number of forms, such as communities directly hiring local waste collection workers, or contracting private enterprises to build local facilities or supply services. In other cases, user participation in the supervision of private service suppliers may be exercised jointly with government authorities (Box 1.4). As the directly concerned party, infrastructure users are better placed than government authorities to regulate and control the activities of private sector service suppliers.

1.48 **Conclusion.** Community-based infrastructure management is similar to supported, self-help housing development in that it is self-organized, incremental, and dependent upon informal sector processes. It is similar to privatized service provision regarding the importance of clear task sharing between private and public sector actors, and the fact that ultimate responsibility remains with the government.

1.49 On the other hand, the particular characteristics of participatory infrastructure management approaches that distinguish them from both self-help housing development and privatized infrastructure provision are that they:

- require, as partners and operational units, not only individual households but an appropriately motivated and organized user-association or community-based organization;
- need to establish a workable correspondence between the participating user groups and relevant portions or components of the infrastructure system; and
- must consider the specific interests, changeable organizational structures, and fluctuating levels of engagement of community-based user groups.

Participation and public-private partnerships

1.50 In conclusion, the scope of participatory infrastructure management may be described as follows:

- On the one hand, as has frequently been noted, the city is built by people mainly through the dynamic processes of informal residential construction. The simple fact that a large proportion of the population is not reached by municipal water supply, sewerage, and/or garbage collection services indicates that a great many people are obliged to rely on some form of informal and/or self-managed service delivery, however unsatisfactory. In these circumstances, it is the municipal authorities and planners who need to find ways to participate more effectively in the ongoing informal processes of infrastructure service delivery.

Box 1.4. Community management of private sector infrastructure service delivery

Communities and users of infrastructure services may assume a broad range of functions in managing and regulating infrastructure service delivery by private enterprises:

Direct community engagement of private service suppliers: The simplest case of community-based management involves direct contracting of service suppliers by user communities. In the two-tier garbage collection system which predominates in urban Indonesia, communities commonly manage local collection by direct hiring of private collectors. In the city of Cirebon, for example, the Swiss government-supported Cirebon Urban Development Project (CUDP II) expanded municipal garbage collection from 42 percent to 84 percent of the total generated waste between 1988 and 1993. During this period, doorstep collection by the municipal agency dropped from 13 percent to 6 percent of households, while private, community-managed doorstep collection expanded from 67 percent to 83 percent of households. This shift towards self-management clearly expresses the preference of the population (Colenco/Alpinconsult 1994, also see Box 3.6).

Community management of development through private entrepreneurs: In Orangi, a large squatter settlement in Karachi, Pakistan, small construction entrepreneurs and workers contracted directly by lane-level community organizations have constructed a local sewer network. The NGO which mobilized this activity refused to become involved in the contracting arrangements. Due to this simple correspondence between interests and responsibilities of the participants, problems of accountability have been avoided (see Box 2.6).

Community contracting and subcontracting: Communities may function as the principal vis-à-vis private entrepreneurs even when public funding is involved. This was the case in the slum upgrading program in Sri Lanka. The program initiated community construction contracting in order to overcome the delays, high costs, and poor quality work. In addition, the approach promised to provide employment, skills, and organizational strengthening to communities. Rather than awarding contracts for construction of local facilities (such as wells, toilet blocks, and road surfacing) to commercial contractors, the contract for smaller civil works (up to Rs. 750,000) was left to the community itself. The community could either complete the work themselves, hire skilled workers to assist them, or subcontract the entire work to private entrepreneurs (see Box 3.3).

Joint community-government management of private contractors: Even when responsibility for contracting and control remains with the government, it is often advisable that the concerned users be represented in the public body responsible for contract regulation and supervision. This was foreseen in the Community Infrastructure Project in Pakistan. Having participated in identifying priorities and improvement measures, beneficiary communities contribute 20 percent of the total capital costs and take full responsibility for operation and maintenance. Participation in capital costs means that the community is co-owner of the construction account and co-signatory of the contracts with private contractors. Community representatives are thus members of the Project Implementation Unit and assume partial responsibility for construction supervision. This arrangement is expected to promote community ownership of the project and improve accountability (see Box 3.9).

Community participation in the regulation of private sector service suppliers: Public-private partnerships for service provision are not yet very widespread, and appropriate forms of user participation in the regulatory process have yet to be explored. It is apparent that users are in a good position to provide valid monitoring of service quality. In principle, consumer ratings of service could be employed as determinants of returns to suppliers. In Bangalore, India the basis for this kind of consumer rating is being created in the form of an information data base regarding user satisfaction with telephone, electricity, and water supply services. Another alternative would be to grant representatives of user groups membership in the regulatory body itself. (World Bank 1994:71).

- On the other hand, government authorities are responsible for planning, programming, implementing, operating, and maintaining infrastructure systems-management functions, which they accomplish with varying, and often unsatisfactory levels of efficiency and effectiveness. Improved management depends upon the clearer orientation of service delivery processes toward the demands of infrastructure users. The point, elaborated in more detail below, is that demand-oriented service delivery requires appropriate forms of participation in each function of infrastructure service management.

- Between the two extremes—government participation in community-based development on the one hand; user participation in government-based management processes on the other—various forms of involvement and/or collaboration in infrastructure service planning, development, and operation are possible (see section on Scope of Participatory Strategies in Chapter III). Besides spanning a broad range of activities and encompassing a variety of forms, participation is characterized by considerable dynamics; with evolution of the developmental circumstances of the people and communities concerned, one form tends to transform itself into another.
- For infrastructure planners and policy makers, it is important that each form of participatory development pose particular requirements in the legal and regulatory context, and with regard to organizational structures, technical systems, and resource inputs. Governments need to set realistic objectives regarding participatory infrastructure development, while adopting enabling policies and allocating the required manpower and resources accordingly.

II. ELEMENTS OF PARTICIPATION

2.1 This chapter describes and characterizes the main elements or components of participatory strategies, including:

- the participants and other stakeholders, their likely interests with regard to infrastructure systems, and the consequences for participatory activities;
- a working definition of the concept of participation, including a consideration of the significance of empowerment to participatory strategies;
- reflection on the risks and costs of participation, as well as the potential benefits;
- an outline of the constitutive functions of infrastructure management, and the potential role of participation in relation to each; and
- a proposed definition of four main participatory strategies.

Who are the Participants?

Infrastructure users, communities, and community-based organizations

2.2 Every inhabitant of the city is an infrastructure service user. With regard to residential users it is common to refer to “community participation” in development activities. It is important to note, however, that the basic unit of decisionmaking and action regarding infrastructure is always an individual or, in practical terms, a household. In addition to residences, infrastructure users include private enterprises and institutions. While important in economic terms, enterprises are less numerous and, with regard to many forms of participation, less relevant than residential users.

2.3 Governments are responsible for providing infrastructure services to **all** urban residents. Because low-income residents suffer more from failing public facilities, and because they embody the greatest potential for participatory development, it is to their roles and interests that the main attention of this paper is directed.

2.4 As customers in infrastructure systems, the main activities of households and private establishments include registration for services, connection of private facilities to the municipal network, consumption of services, and payment of bills. Beyond the role of customer, individual households also produce services through the construction and use of on-site facilities, such as sanitary latrines or wells. However, the potential for user participation of an individual household or establishment is quite limited. To establish and maintain facilities and services that go beyond the private household level—for example footpaths, local drains, community wells, sanitary facilities, and waste collection services—a certain level of organization among users is necessary. At the same time, if local authorities wish to influence the behavior of users—for example to improve the way in which they employ municipal facilities or gain their participation in a development project—they will need to relate to users not as individuals but as groups.

2.5 ***Community-based organizations.*** As a sociological entity, the “community” is seldom a functional unit for common, infrastructure related activities; for communal efforts that relate to infrastructure services, people normally form more specific types of user associations or community-based organizations (CBOs). While the distinction between a large CBO and a local non-governmental organization (NGO) is not always clear, the determining characteristic of a CBO is that it is organized by local residents themselves. An NGO, by contrast, is normally initiated by people who originate outside of the group or community with whom the NGO collaborates. NGOs are thus “supra-local” organizations that may indeed work directly with people, but more commonly work through, and thus depend on, CBOs.

2.6 The emergence of a CBO is a natural process when neighbors meet, become acquainted, and begin to share the same problems and aspirations. In the context of low-income urban settlements, the factors underlying CBO formation often include residential and developmental problems of security, housing improvement, utilities, environmental quality, and social services. Low-income households struggling to acquire shelter, essential services, better environmental conditions, and basic social facilities will soon reach the limits of individual actions. Only through association with neighbors is it possible to obtain required information and skills, pool resources and energies, coordinate activities, and present a strong and united front in negotiations with outside authorities.

2.7 In addition to residential and developmental concerns, recreational interests, religious activities, and cultural expression are also important to CBO formation. In the often hostile urban environment, CBOs further the search for sociocultural orientation and identity among marginalized, low-income urban residents. Employment-related interests usually play a less explicit role in CBO activities, but they are always relevant, even when the CBO is oriented toward other concerns such as development, recreation, and/or culture.

2.8 The population of most urban residential areas—particularly low-income areas—is composed of people with various regional, ethnic, religious, and/or cultural origins, diverse socio-economic status, and differing political associations. This heterogeneity may give rise to differences and divisions within a community, which evidently affect the cohesiveness and stability of community organizations. Programs that depend on community involvement need to take these factors into account when considering the organizational basis of participation. Where existing CBOs are associated with divergent factions within a community, it is often advisable to establish new, more functionally oriented organizations. The potential effectiveness of this approach is demonstrated by the experience in Hyderabad, India, where local organizations established by the Urban Community Development upgrading program proved effective in reducing tensions between Hindu and Muslim communities in times of tension (Cousins and Goyer 1979; Box 3.1).

2.9 It is often assumed that CBOs formed to improve infrastructure conditions will disband once the desired improvements have been attained. However, experiences show that a CBO may demonstrate considerable tenacity and constancy. In the *favelas* of São Paulo it was found that over a period of time the focal point of CBO interest shifted, and external mobilization tended to be cyclical; as the priority of each issue became acute. The people on whom the CBOs

depended sustained their engagement over many years and the organizations were thus able to achieve a progressive advance in skills in the areas of community management and negotiation with the government (Box 2.4).

2.10 *Interests of users and community organizations.* Ultimately, the engagement of infrastructure users in participatory activities depends upon their infrastructure related interests, and the extent to which these interests may be promoted through participation. Infrastructure users are primarily concerned with the **level of service access** and the **reliability and quality** of the available services. Together, these factors contribute to the comfort, attractiveness, and hygiene of living conditions—in other words, to the quality of life. In economic terms, users are concerned with the relative **cost** and **affordability** of services. Beyond these factors, property owners are interested in the impact of infrastructure services on **property values**. While service access is not necessarily related to tenure, connection to a municipal service network may enhance the de facto **tenure security** of the residents of irregular settlements by signaling official recognition. Finally, there are many social and political interests that may be promoted through participatory provision and operation of infrastructure services. These include the effectiveness of *community organizations* and *leadership* in dealing with local problems and the influence that the community acquires in its dealings with government authorities.

2.11 Participatory activities of communities and other user groups will normally contribute to improved infrastructure access, either directly or indirectly, by influencing the flow of public resources. Through their inputs of material and labor, communities and user groups may extend service coverage. Participation in the planning of government-sponsored infrastructure improvements will enable people to direct investments toward their real needs and priorities, and ensure that the resulting services are affordable. Economic benefits such as increases in property value tend to follow as a consequence of improved service access.

2.12 In some circumstances, however, infrastructure users may feel that participation does not serve their interests. For example, poorly served urban residents may blame the government for not providing adequate services. The focus of their efforts, which may be supported—and sometimes used—by local politicians, is to lobby the government for the required service improvements. In these circumstances, people are likely to feel that from their point of view, self-help efforts would only make it easier for the government to avoid its obligations toward them. In this they have a point: participatory efforts may not be worthwhile if they simply substitute a service delivery which the government should and could have provided in the first place.

2.13 In the early phase of the Orangi Pilot Project in Karachi, for example, the NGO was able to mobilize the people to undertake self-help activities only after it had convinced them that the government was **not** going to make the required improvements in the foreseeable future (Box 2.6). To this end, it was necessary to counter the arguments of local politicians who were attempting to gain a following by brokering between the people and the government through promises that they would deliver government-financed improvements. In the long-term, of course, it is not productive to mobilize community self-help activities by convincing the people to “give up” on the government; the preferable aim should be to establish a clear division of

responsibilities—based on a realistic assessment of mutual capabilities—so that each stakeholder knows what to expect of the other. This is the only way to ensure that the efforts of community members will be complemented by government actions, and will not be a mere substitute for steps which the government itself should have taken. As a form of partnership, participation implies the realization of solutions that would not otherwise have been possible.

2.14 **Leadership.** Community leadership plays a vital role in the organization of all forms of participatory infrastructure development. There are many types of CBOs, and accordingly many kinds of leaders may be present in a community: traditional or ethnic; tribal and/or religious leaders; leaders whose status depends on connections with external authorities; leaders who mediate or broker between the community and the authorities; “positional” leaders representing political parties; and elected local officers and informal activists whose roles derive simply from their engagement on behalf of community interests (Ward and Chant 1988).

2.15 Whatever the origin of their role, one of the primary functions of community leaders is to represent the community in dealings with government authorities or other external influences. An infrastructure development program will normally deal with the community through the existing leadership. When a project introduces new forms of interaction and/or new issues, the role of certain leaders may be enhanced at the expense of others, thus causing resistance. Care must be taken that leaders represent all segments of the community and show sufficient concern for the functional issues of infrastructure development as opposed to other individual interests. For example, in the community of Guasmo Norte in Guayaquil, Ecuador, community leaders appeared to support a proposed World Bank financed water supply project that was rejected by the community. Participant/observer investigations later revealed that, through their failure to pass on valid information to community members, the leaders had in fact undermined the project. The underlying reason for this behavior seemed to lie in the leaders’ leftist political orientation and their unwillingness to become promoters of a project administered by a government of the opposite political persuasion (Salmen 1987).

2.16 The general lesson is that care must be taken to engage all segments of the community rather than relying excessively on leaders who may represent special interests and may not be legitimate in the eyes of the people (Salmen 1989:273-291).

Women’s participation and gender-balanced development

2.17 Because women normally organize the household’s access to drinking water, sanitation, and waste disposal services they are more directly concerned with problems of infrastructure services than men. Furthermore, through their childcare functions, women tend to be more aware of environmental conditions and the impact of these conditions on health. As a result, women will often initiate pressure for an improvement in service access. Beyond the key role of women as service **consumers** it is important to recognize that, with regard to infrastructure, women also play crucial roles as **producers** and **managers** of community affairs.

2.18 As illustrated in the case of San Judas, a community-based housing upgrading project in Managua, Nicaragua (Box 2.2), women can make substantial contributions to the planning and

Box 2.1. Women as community managers: the case of Guayaquil, Ecuador

The role of women in the management of community affairs with regard to environment, infrastructure, and services is critically important. A case study of a spontaneous settlement in Guayaquil, Ecuador, illustrates the vital role of women in the *barrio* committees, leading the struggle for security and service access. Due mainly to their somewhat different pattern of motivation, women were generally found to be more effective than men as community mobilizers. While men were often engaged in political activities, women were found to be more directly concerned with improving the living conditions of their families.

These findings with regard to the difference between men's and women's roles in community management are comparable to those in São Paulo, Brazil (Box 2.4). Here, too, the continuity and tenacity of neighborhood associations was found to depend very much on the contribution of women. Women actively supervise the day-to-day functioning of service systems, and push continually for improvement; conversely, men tend to become active only in periods of mobilization, for example, when people take to the streets.

In spite of their greater dependability and trustworthiness, the women leaders in Guayaquil faced tremendous personal difficulties in assuming leadership roles in the community. Besides the practical difficulty of combining community work with childcare and employment duties, married women sometimes faced resistance from their husbands. In addition, other women were often hostile toward women leaders, who thus paid for their leadership positions with a certain informal isolation. In spite of these difficulties, the women of Guayaquil's *barrios* were able to make major contributions toward community mobilization, organization of self-managed improvements, and petitioning the government for services. As in Managua (see Box 2.2), experience indicates that successful community-based actions—and popular movements in general—are also directly linked to the more general struggle to overcome gender subordination in society at large. (Moser and Peake 1987:166-194).

actual construction of housing, including the **production** of basic infrastructure facilities. With regard to local environmental quality, infrastructure, and services the role of women in the **management** of community affairs is certainly more important than the production role. A case study of a spontaneous settlement in Guayaquil, Ecuador (Box 2.1), illustrates the vital role of women in the *barrio* committees that lead the struggle for security and service access. Largely due to their somewhat different pattern of motivation, women were generally found to be more effective than men as community mobilizers. While men were often engaged in neighborhood mobilization for ulterior motives related to personal prestige, promotion of their business interests and/or direct profit, women were found to be more directly concerned with improving the living conditions of their families.

2.19 With regard to the differences between men's and women's roles in community management, these findings are comparable to those in São Paulo, Brazil (Box 2.4). Here too the continuity and tenacity of neighborhood associations was found to depend very much on the contribution of women, who actively supervise the day-to-day functioning of service systems and push continually for improvement; conversely, men tend to become active only in periods of mobilization, for example, when people take to the streets. In spite of their difficulties, the women of Guayaquil's *barrios* were able to make major contributions toward community mobilization through organization of self-managed improvements and by petitioning the government for services. As in Managua (Box 2.2), experience indicates that successful community-based actions—and popular movements in general—are directly linked to the more general struggle to overcome gender subordination in society at large (Moser and Peake 1987:166-194).

Box 2.2. Women as infrastructure producers: the case of San Judas in Managua, Nicaragua

San Judas, with a population of approximately 37,000, is one of the oldest and most densely settled of Managua's *barrios*, or shanty towns. Housing and service access were very poor. Following the Sandinista victory in 1979, the San Judas self-help scheme became one of the first government-supported housing improvement projects. The project was coordinated by the Department of Home Improvements within the Ministry of Housing and Human Settlements (MINVAH). The project was initiated mainly by women, who made up one-half of the membership of the San Judas *barrio* committee. After organizing immediate reconstruction and clean-up activities after the war, the committee turned to the main problems of housing and employment. Under a women leader who was elected to be responsible for housing and community development, a census was carried out, financial support was organized through a church-related NGO, and plans were drafted for self-help housing construction in cooperation with MINVAH.

Since the men preferred to wait until the "real" work began, the crucial planning and design phase was dominated by women. A practical layout was achieved, and by increasing the self-help input for sanitary facilities and other components, the number of housing units which could be provided was expanded by 25 percent, to 60 houses.

To qualify for housing allocation, women—many of them heads of households—were expected to make an equal contribution to housing construction. In spite of childcare and work obligations, women's attendance was high. There were many conflicts, however. While men complained that the women slowed the construction process, women were very critical of the way in which men were continually shouting orders instead of sharing the work. Women wanted to allocate housing on the basis of need, while the men saw time and labor inputs as the main allocation criteria. At the same time, the men tended to under-value the contribution which women made to project organization and management.

The project was completed as planned, and clearly demonstrated that women could successfully acquire construction skills and contribute significantly to shelter production. Their contribution was made in spite of ideological constraints derived from their subordination to male authority, as well as practical constraints derived from their parallel employment (production) and childcare (reproduction) activities. As studies conducted in similar settings have shown, women's engagement in production and reproduction activities may consume up to 15 hours per day (see UNCHS Community Participation Training Programme in Bolivia, Box 3.8). It is clear that a gender-balanced approach needs to go beyond the simple promotion of women's rights to participation in project implementation and management, to consider the specific characteristics of their roles in the society, and the additional constraints which they face in assuming tasks of participatory development (Vance 1987).

Non-Governmental Organizations

2.20 Non-governmental organizations (NGOs) may be understood as a "third system" between the public and the private; they are semi-autonomous, external to political power structures, and non-commercial in their motives. NGOs normally originate outside of the communities with which they work. The **interests** of NGOs may be cultural, humanitarian, and/or embedded in a vision of social and economic development. While not associated with party politics, NGOs may promote politically relevant programs. In recent years, development-oriented NGOs have become increasingly effective in promoting practical approaches toward development problems.

2.21 NGOs usually concentrate their support at the community level while at the same time seeking to promote improved communication and cooperation between communities and government authorities. Their specific **contributions** may include: awareness building and mobilization, strengthening the organizational capacity of CBOs, provision of technical know-how, enabling access to credit, establishing communication channels, and assisting communities

to play a more active role in public planning and decisionmaking processes. The main roles of NGOs are that of **mediator**, **consultant** and, occasionally, project **manager**.

2.22 **Mediation** is always an important function of NGO activities in the fields of environment, housing, and service improvement. Even where participatory infrastructure development is implemented by a government department, the function of local NGOs as a bridge between the government and community organizations may still be a very important one (see Boxes 3.3, 3.9, and 3.11).

2.23 The People's Responsible Organization of United Dharavi (PROUD) in Bombay, India, is an important example of an NGO which has primarily focused on the role of mediation between the people and government authorities. PROUD began in 1979 as an exercise in training and community mobilization and supported communities in the analysis of their problems, identifying concrete improvement measures and petitioning the government for improvement. The main aim of PROUD was to give voice to the unserved population of Dharavi through popular mobilization, organization, and training of organizers. Channels of communication between the government and the people were thus established, which improved the government's capacity to accomplish its tasks of service provision.

2.24 The Orangi Pilot Project (OPP) in Karachi, Pakistan (Box 2.6) demonstrates the potential effectiveness of an NGO in the role of **consultant** to communities. From the outset, the OPP recognized research and extension work as the core of its approach. Working in a large, poorly served *katchi abadi* (squatter settlement) near the outskirts of Karachi, the NGO began not with a survey, but with countless discussions with residents and community leaders. Local priorities and the concept of a sanitation program emerged out of these discussions. Research turned to the technical and economic problems of devising appropriate low-cost solutions and an effective organizational structure to facilitate community management of program implementation. The main component of the program was a self-built sanitary sewer system, implemented by lane-level organizations and with technical and organizational support from the NGO. Although certain requirements of the lane organization were stipulated, the exact form of the organization was left open; lane organizations selected their own leaders, were entirely self-financing, and took complete responsibility for works-contracting and site supervision. As a consultant, the OPP provided advice and technical support only; it did not involve itself in the internal affairs of the lane organizations, handle people's money, or become involved in the relationship between community organizations and their private contractors (Hasan 1993).

2.25 Occasionally, an NGO may function as the **manager** of a development program. FUNDASAL in El Salvador (Box 3.5), is a successful example of a large-scale NGO-managed housing and service development program. Working in close collaboration with the government, the NGO oversaw the production of about 1,400 housing units per year in the late 1970s, on the basis of cooperative community organization and aided self-help.

Private enterprises

2.26 Private sector actors range from individual garbage collectors hired at the neighborhood level to large enterprises that may be entrusted with the task of operating or

developing whole segments of an infrastructure sector such as waste collection or water supply. Between these two extremes, private enterprises may be contracted to fulfill specific functions such as bill collection and facility maintenance. As is normally the case for private sector enterprises, participating firms are primarily concerned with the **profitability** of the activity, **job security**, **working conditions** and, possibly, the **social status** that may be associated with particular jobs.

2.27 Particularly in the area of solid waste collection, privatization may lead not only to increased employment and earnings, but also to social rehabilitation and elementary social security for an important group of informal workers who are subjected to severe socio-psychological pressures of ostracization and serious health hazards. The examples of privatized waste collection in Porto Alegre, Brazil (Box 2.3), and the “Asociación Nacional de Recicladores” (ANR) in Colombia (Box 3.12), demonstrate the importance of organization among microentrepreneurs in the waste sector. Having organized nearly one-half of all Colombian scavengers—a total of 25,000 families—the ANR has been able to sign contracts for waste management with fifteen cities. The earning power, health, security, and social standing of the informal waste collection workers has improved markedly as a result.

2.28 Besides influencing the relationship between the government and private sector enterprises, participatory approaches may also alter the relationship between users and private enterprises. As already noted, a wide range of links is possible (Box 1.4). Perhaps the most important is when participation places users in the role of principal or client vis-à-vis private enterprise. Provided that the users are appropriately organized, this arrangement may have a major impact on the accountability of supplying enterprises. Compared with the responsible government agencies, infrastructure users are more directly concerned with the quality of service delivery and thus have an important contribution to make to the process of regulating private sector suppliers. Direct responsibility to users may relieve private enterprises from pressures of collusion (kick-backs) that sometimes arise in the relationship between private contractors and government agencies.

2.29 In the Ghaziabad settlement of Orangi Township in Karachi, Pakistan, for example, main sewers have been installed by the municipality with financing from the Asian Development Bank. The new sewer lines collect effluent from the tertiary network that the people had previously constructed with NGO support (Box 2.6). The lane organizations, experienced in local sewer construction, regularly supervised the work of the municipality’s contractors. On discovery of a considerable number of faulty manholes, the lane organizations succeeded in forcing the municipal engineers and the contractors to demolish and reconstruct the faulty works. In the experience of the municipal engineers, it was the only known case in which construction supervision had achieved this level of quality control and actually compelled reconstruction of faulty works (OPP-RTI 1994:69–70).

Local authorities

2.30 On the government side, functions and interests differ somewhat between the technical (line) agencies responsible for the implementation and operation and maintenance of

Box 2.3. Private sector solid waste collection in Porto Alegre, Brazil

Municipal solid waste collection in Porto Alegre, a city of over 1 million inhabitants in southern Brazil, is fairly well developed, with close to 80 percent of the population served. In 1990, a program of waste recycling was launched to reduce the volume of materials for disposal, provide employment, and improve the macro-ecological balance of waste management. The official program collects 20.4 tons of recyclables daily, representing a diversion of 3.4 percent of total household wastes generated in the city.

The initial success of the program led to its extension in 1994 from the original fifteen to seventy-four districts. At present, eighteen city-owned trucks visit each district once a week. More remarkable is the fact that some 5,000 organized groups of private sector scavengers or *catadores* collect about four times as much *recyclable* volume as the official program. With the cooperation of the local government, and the support of church groups and NGOs, five *catadores* associations have been formed since 1991. These associations work to improve the marketing of *recyclables* and ensure a steady income of about \$100 to their members—currently numbering about 112. This significantly reduces the task of municipal waste disposal. (*Cempre News* 1994).

infrastructure facilities and services, and local political authorities responsible for overall urban management and development. These local political authorities are, in addition, politically accountable to the public.

2.31 **Technical infrastructure agencies.** For technical agencies (for example, water supply companies, public works departments, waste collection agencies) the main interests include **trouble-free operation** of infrastructure facilities; **low operating costs**; **adequate revenues**; and required **expansion** of facilities, staff, and agency responsibilities.

2.32 The participation of infrastructure users in systems development and operation and maintenance normally promotes these interests by fostering the proper use of facilities, reducing operation and maintenance costs, and—through greater user satisfaction—improving fee collection and revenues. Nevertheless, technical agencies may find that user participation is accompanied by disadvantages if, for example, it leaves them saddled with responsibility for the maintenance of low-cost infrastructure facilities that need more maintenance and are prone to breakdowns. Besides increasing operation and maintenance costs, participatory programs may reduce the average revenues per customer if as a result the agency's customer base includes a larger proportion of low-income households who pay lower fees or no fees at all. While these negative consequences are not inevitable, it is clear that the advantages of participation for the technical agencies depend very much on the impact of the participatory program on operation and maintenance arrangements.

2.33 The case of PROFAVELA in São Paulo, Brazil, illustrates the apprehensions of a technical agency with regard to cost-saving technical innovations that, though essential to participatory strategies, may threaten to increase maintenance costs and problems (Box 2.4).

2.34 Although low-cost infrastructure solutions may lead to a higher level of maintenance, the potential for user contribution to such maintenance activities often will be higher. As illustrated by the Kampung Improvement Programme in Jakarta, Indonesia, roads and drains planned with user participation were, on the average, much better maintained than similar facilities that were provided with little user participation (Box 2.5).

Box 2.4. From confrontation to partnership: the case of PROFAVELA in São Paulo, Brazil

Service levels in the irregular settlements or *favelas* of São Paulo, Brazil are extremely low. In 1979, only one-fifth of the *favelas* received some form of piped water supply, consisting of communal taps installed in the 1950s and 1960s. Most received no piped water supply at all, and less than 1 percent had even rudimentary sewerage service.

In the late 1970s, a process of political openness introduced by Brazil's military regime led to mass mobilization in support of a return to democracy and improved living conditions for the poor. Between 1979 and 1985, neighborhood associations mobilized regular protests on the doorsteps of SABESP, the authority responsible for water and sewerage services. In this period, SABESP did in fact completely revise its policies towards irregular settlements. Water service in the *favelas* was vastly expanded and major gains were made in sewer services. How did this happen? Were the protests directly responsible for service improvements?

While main protests of neighborhood groups were directed towards SABESP, various legal, technical, and conceptual constraints prevented any positive response by the large technical agency. Instead, it was the smaller, multi-purpose municipal Bureau of Social Welfare (COBES) and the Development Agency (EMURB) which, with strong political backing, initiated a pilot project, named PROFAVELA, for improving services to *favelas*. The project introduced a new, more flexible, and lower-cost technical solution employing high density polyethylene piping for the water distribution network. Community associations were involved in surveying the neighborhoods, planning the network, organizing the right-of-way for pipelines, and managing physical implementation. Important cost reductions were achieved, not only because of the new technical solution and the occasional contribution of labor, but mainly because of the reduction of transaction costs. The complex process of mediation between government agencies and individual final service users (which was beyond the capacity of the authorities) was provided essentially free of charge by the neighborhood associations. In addition, the efficiency of project implementation was significantly improved by active participation of neighborhood members in construction supervision. With their intense interest in the quality of the completed works, the community groups ensured the rejection of inferior works, and a reduction in irregular payments for contract acquisition.

Once the success of the approach had been demonstrated, it was gradually adopted by SABESP. To facilitate the departure from conventional technical standards and procedures, SABESP handled the new approach through a special *favela* team. Continued pressure from neighborhood associations and active political support remained essential to scaling up the approach. The result is impressive: before the PROFAVELA project in 1979, there were 2,130 *favela* water connections. In 1982, after three project years, this had expanded to 27,000. By 1985, three years after adoption of the approach by SABESP, there were 70,000 *favela* connections. Significant, if far less extensive, advances were made in sewerage services as well.

Community groups play a crucial role in mediating between service provider and the final users, and significantly reduce the burden on the supplier by restructuring the service demand into a form with which the agency is able to deal. Community groups also provide essential management functions normally carried out by the government such as surveying, negotiating rights-of-way, and supervising construction.

The successfully mobilized neighborhood associations did not evolve into broader politically active movements; nor did they simply fade away as soon as service improvement was attained. Instead, the associations have demonstrated remarkable continuity and tenacity. Their interest has tended to shift successively to other community issues such as sanitation, health services, schooling, and erosion dangers. Periods of relative inactivity are followed by waves of mobilization as the subsequent issue becomes critical. The continuity of the neighborhood associations and their leadership—which owes much to the more constant inputs of the women—has enabled the associations to become increasingly sophisticated in their dealings with government authorities (Watson 1992).

2.35 On the revenue side, the extent to which the interests of technical agencies may be promoted by participatory infrastructure development depends (i) on the degree to which their revenues are based on user payments—as opposed to fixed budget allocations—and (ii) on the willingness and ability of the newly served customers to pay for the expanded range of services.

Appropriate participation in project planning should reduce risks in this regard by ensuring that the users are willing and able to pay for the provided services.

2.36 ***Local government authorities.*** The responsibility of local government authorities encompasses all infrastructure sectors, social services, and general urban economic and spatial development and is therefore broader than that of technical agencies. Ideally, the infrastructure related interests of local government authorities correspond to the overall goals of urban development itself, and include such factors as the **welfare and quality of life** of the population, **development of the local economy, environmental protection,** and public processes of **governance**. In economic terms, local government authorities are concerned with the **financial viability** of the municipal administration and the **mobilization of investment funds** for urban infrastructure development. In political terms, the local government is concerned with the **level of satisfaction of the population** with municipal services, **civil peace,** and possibly the **approval of higher government authorities.**

2.37 The participation of infrastructure users in infrastructure development may in varying degrees be beneficial to all of these concerns and interests. By enabling wider access to services, participation is mainly relevant to the goals of welfare and equity. Participatory approaches to urban sanitation that promote environmental health awareness and support the improvement of individual and local sanitary facilities may produce a far greater improvement in public health conditions per unit of investment than conventional approaches to the development of urban sanitation.

2.38 A legitimate apprehension that local government authorities may have toward user participation relates to the possible mobilization of dissatisfied, poorly served users and a subsequent multiplication of their demands and increased pressure on the government. Participation is not always harmonious. There is often a backlog of stored-up resentment among poorly served residents, and government agencies whose hands are tied by various legal, economic, and technical constraints. In the case of São Paulo a period of agitated protest preceded the PROFAVELA pilot project. Political liberalization and the presence of well organized but poorly served communities led to unrest; only after a workable technical and organizational solution had been found was it possible for a collaborative relationship to emerge between the neighborhood associations and the government (Box 2.4). The case illustrates that a favorable political climate and the availability of a workable model are both necessary conditions for turning a stand-off into a collaborative relationship between neighborhood associations and the government.

2.39 Capacity-building at the community level may yield important benefits in the more general sense of effective governance. In Cirebon, Indonesia, the local government had some initial apprehensions regarding a community program designed to mobilize environmental awareness and local self-help improvements in low-income residential areas of the city (Box 3.6). In practice the program produced a significant volume of self-managed and for the most part self-financed local physical improvements. In addition, it improved the level of population awareness and thus significantly increased the effectiveness of their participation in the government's annual RAKORBANG process of bottom-up investment programming (Box 3.6).

External support agencies and project managers

2.40 From the viewpoint of the managers of a development project, the potential benefits of participation derive, above all, from improved **targeting**, a better fit of investments to the real needs and demands of the beneficiaries, and the realization of **lower-cost, affordable solutions**. Through participation, beneficiaries acquire a higher degree of project ownership, which in turn expresses itself in a **higher rate of use, lower maintenance costs**, and greater long-term **sustainability** of the system.

2.41 In spite of evident benefits it is often noted that infrastructure development project managers have a problematic relationship toward participation. As discussed previously, the reasons usually lie in the frequent contradiction between the requirements and criteria of time-bound projects and the social dynamics of participatory processes. The benefits of participation take more time to mature than the more easily quantifiable measures of physical implementation. To realize these benefits in the project context it is essential that appropriately flexible methods of planning and programming are introduced, and that the skills and organizational capacities required for effective participation are recognized as objectives in their own right. If the necessary time and resources are not provided, difficulties and scheduling problems are likely to arise.

What is Participation?

Toward a definition of participation

2.42 Having considered participation in terms of its potential and constraints, and having identified the concerned parties, it will be useful to attempt a more formal definition of what is meant by participation:

Participation in infrastructure service management is a process whereby people—as consumers and producers of infrastructure services and as citizens—influence the flow and quality of infrastructure services available to them. Participation is based on voluntary relationships between various actors, which may include government institutions, individual infrastructure users, community-based organizations, user groups, private enterprises, and non-governmental organizations.

2.43 While this definition is limited to the management of infrastructure service it nevertheless expresses a concept of participation that is somewhat broader than that commonly employed (see in particular Paul 1987). With regard to the context of participation, the concerned actors, orientation toward processes, and the nature of relationships that it involves, its implications may be described briefly :

- *Context:* Participation is not limited to development projects but includes many activities that take place in normal day-to-day city life outside of the project context. These range from the micro-scale, including such activities as community-based maintenance of local drains, to the macro-scale, including public support for government-sponsored environmental protection programs. Although isolated self-help activities as such are

not regarded as “participation,” participatory strategies build on existing processes of informal and self-help infrastructure development—supporting them where possible and rendering them more effective by linking them to formal infrastructure systems.

- *Process*: Participation refers to a process and not a product. What counts, in other words, is not simply the share of benefits that participants receive but the role they play in determining the evolution of delivery of infrastructure services.
- *Actors*: The participants concerned are not limited to residential communities; they may be any grouping of infrastructure users or even individual users and also include private sector enterprises in particular.
- *Relations*: Participatory infrastructure service management depends on voluntary relationships between two or more groups, actors, or stakeholders. This implies that participation is a two-way process; it is concerned not just with the inputs of beneficiaries to a project or program but with the interaction on a continuing basis between beneficiaries, government, and others. Participatory relationships are **voluntary** and their effectiveness will depend on each stakeholder being convinced that the process serves his or her interests.

2.44 This description points to the political significance of participation. Through participatory activities people obtain a greater voice in the allocation and use of resources. Participation thus alters the relationships between individuals and communities, as well as between communities and the government. These newly established relationships often persist; the impact of participatory infrastructure development thus goes beyond the immediate situation to enhance people’s capacity to manage their own affairs and confer a greater voice in other areas of civic life. Participation is inseparable from **empowerment**.

The issue of empowerment

2.45 The issue of empowerment is of central importance to participation and its justification. On the one hand, managers may consider empowerment to be the main purpose of participation. In this view participation appears as an **end** in itself, justifiable even when temporarily compromising other objectives—such as the efficient implementation of infrastructure improvements. The increased self-sufficiency of the concerned groups or communities is held to be more important than short-term physical improvements and participation is considered a matter of principle.

2.46 More commonly, participation is considered to be a **means** for achieving other objectives, such as cost reduction in the construction of new facilities or improved maintenance of completed facilities. In this view the issue of empowerment may be played down or even ignored; participation is seen as a matter of practical advantage and expediency.

2.47 The position of this paper accepts certain aspects of both viewpoints while rejecting the contradiction between them:

- *Participation should be justified on the basis of its contribution toward the objectives of infrastructure management.* While participation may also serve broader social and political goals, the decision to employ a participatory approach must in the first place be based on the contribution of this approach toward the goals of infrastructure systems and the effectiveness and efficiency of service delivery.
- *Participatory infrastructure management requires that user communities and responsible institutions have both the capacity and the opportunity for participation.* While this may seem self-evident it raises the crucial point that participatory processes have specific requirements in terms of resources, time, and skills; the necessary capacity must be established and adequate opportunities for participation created.
- *Participation is always associated with empowerment of the participants.* Being concerned with the mobilization and use of resources and the users' voice in decisionmaking processes, participation necessarily involves some degree of empowerment.
- *Empowerment entails the expansion of power and not only its redistribution.* As a constituent function of social systems, the exercise of power (in the sense of governance) depends on communication, shared values, and organization. In the appropriate political context, participation may expand power by enhancing the integration, productiveness, and problem solving capacity of a society; participation is not a zero-sum game.

2.48 Whether participation should be justified as a matter of principle or expediency is a question for policy makers and the participants themselves. The crucial point is that the nature, potentials, and requirements of participatory processes need to be adequately understood, respected, and applied by infrastructure managers. Under these circumstances, the distinction between participation as an **end** and participation as a **means** may become insignificant (see Moser 1987:304).

Costs and risks of participation

2.49 The potential benefits of participation have been discussed in relation to the specific interests of each stakeholder. However, it is important to recognize that participation, as any process of socioeconomic development, involves costs and risks as well as benefits. It is a process of give-and-take in which each side must surrender certain current positions and assume additional costs in the interest of a greater overall benefit. It is therefore normal that arguments against participation will arise on both sides of the public-private partnership.

2.50 ***Participation as an unfair burden.*** To the poorly served inhabitants of low-income residential areas, it may not be clear why they should participate in a government-sponsored development process:

The inhabitants of poorly served, low-income, informal residential areas (squatter settlements or shanty towns) have built their own houses—usually including some of the essential infrastructure facilities—through their own efforts, working through informal and subsistence (non-monetized) processes and realizing improvements

incrementally, according to resource availability. The settlements that they have built provide inexpensive housing for large numbers of people, including tenants, who work for low wages throughout the city. The informal settlement thus constitutes an important contribution to the urban economy.

The inhabitants of low-income settlements work long hours in diverse employments to scrape together a livelihood. Why, then, should they donate additional time, effort, labor, and money toward the development of local infrastructure systems that the government has been unable to provide? Can this be justified in view of the provision of adequate infrastructure services to middle- and upper-income areas with no additional participatory efforts or inputs from the residents?

2.51 *Participation as an unnecessary nuisance.* Urban managers may interpret the situation quite differently:

Government authorities are confronted with a backlog of infrastructure needs and a gaping shortage of investment and operating resources. To ensure the viability of infrastructure systems, they are obliged to provide services to those population groups who are willing and able to pay for services—either directly or indirectly through taxes. This demand comes for the most part from middle- and upper-income residential and commercial areas.

In low-income residential areas—where there is often no legal tenure—practically no tax revenues are generated, and the capacity to pay for services is very low. Providing services in these areas may actually encourage further illegal land occupation. In spite of this dilemma humanitarian and public health concerns require that services be provided to the residents of these areas. Furthermore, if people are granted a voice in infrastructure service management they may begin to put pressure on the government in other areas.

2.52 There is some truth in both of these hypothetical positions. For the residents of low-income residential areas, participation involves additional burdens and may be seen as further expression of a basically exploitative situation. However, if the situation is transitional, and if people can share in the process of economic accumulation through improvements in their living conditions and the value of their housing, participation may very well be worthwhile. In certain circumstances it may simply be the only way to improve service access and quality.

2.53 For government institutions participation involves both advantages and disadvantages with certain risks and costs. The most apparent risks concern possible delays in program implementation, difficulties in adapting planning methods and operating procedures to the requirements of user participation, problems of finding and/or training staff capable of participatory management, and the risk that pressure from user communities, once mobilized, may grow more rapidly than improvements can be realized. Finally, it is possible that inappropriate forms of participation may in some circumstances complicate management processes, raise costs, and serve the interests of neither infrastructure users nor the government.

2.54 **Conclusions.** The numerous cases of effective infrastructure development and management cited above—and in the following chapter—illustrate that participation can yield important benefits for each stakeholder. In the right circumstances these benefits can far outweigh the costs and risks involved; however, there is no general formula that will predict in advance when this will be the case. In practice each stakeholder will have to make this determination for himself or herself in the particular situation.

Infrastructure Service Management Functions

2.55 Infrastructure service management is primarily the responsibility of designated government institutions that do not work in isolation but are involved in numerous processes, interactions, and relationships. Other actors, particularly users, also play important roles in shaping the processes and relationships concerned. It will be useful to look more closely at the content of these management processes to explore the role of users in this more general concept of infrastructure service management.

2.56 In simple terms, infrastructure service management may be viewed as a cyclical process that, beyond the operation and maintenance of existing facilities, comprises the interrelated functions of goal setting, planning, programming, implementation, monitoring, and evaluation. The main management functions are:

- formulation of goals and policies;
- long-term planning;
- medium-term investment programming;
- implementation of system construction and extension;
- operation and maintenance; and
- monitoring and evaluation of system performance and relevant conditions.

2.57 While participation is normally applied only to the functions of implementation and operation and maintenance, it does have important contributions with regard to each management function. The following definitions of management functions are borrowed, with some modification, from the Yogyakarta Urban Development Programme, EWI 1993 and Colenco 1994:174–186.

Participation in policy formulation

2.58 A primary function of urban management is the formulation of development goals, policies, and strategies. At this level, infrastructure systems must be considered in terms of their potential impact on the broader values and goals of society and in particular on the goals of urban development.

2.59 While many policy goals are complementary, conflicts between them are still possible. Industrial promotion might be facilitated by a relaxation of environmental standards

regarding emissions, for example. It is often necessary to choose between a high level of service and environmental quality for a limited segment of the population and lower levels of service and environmental quality for a larger portion of the population. The policy making function must therefore establish fair and workable procedures for dealing with conflicting interests and priorities.

2.60 Policy formulation is also concerned with questions of jurisdiction (the clear division of responsibilities between the various agencies and organizations) and with the elaboration, introduction, and enforcement of regulations to control and enforce certain aspects of development policy.

2.61 **Participation.** With regard to urban development and specific service needs, development goals should, in principle, express the values, needs, and aspirations of the people and interest groups concerned. The process of defining, prioritizing, and mobilizing support for development goals thus implies a two-way process of public information and consultation. A principal objective of this process is to build a constituency for the identified goals and strategies.

Participation in long-term planning

2.62 Long-term planning is concerned with the transformation of development goals, policies, and strategies into technically and economically feasible plans for both urban spatial and physical development, and the provision of required infrastructure facilities. It must be based on an understanding of the prevailing natural conditions and resources and an estimation of future demographic and economic growth. A time horizon of twenty years is typical.

2.63 Long-term planning normally comprises an urban structural development plan, which indicates the future organization of an efficient and productive urban spatial system, as well as sectoral master plans that present, for each sector, a coherent and efficient technical system adequate to the service needs and demands of future populations and economic activities, and a phased schedule for implementation and financing.

2.64 **Participation.** As noted in the section on constraints in Chapter I, long-term planning methods may constrain participatory development processes. Long-term planning is often conceived as a technical exercise to be carried out by professional planners operating in relative isolation from the operational government institutions and the population concerned. Urban and sectoral master plans have thus proven to be relatively ineffective instruments; they are often not implemented and may result in blueprint, supply-driven solutions (see Peterson et al. 1994).

2.65 Nevertheless there is a real need for long-term planning activities to establish the resource base and natural parameters for urban development (such as water resources); to project the general spatial structure of land use, major infrastructure facilities, and installations; and to develop a general strategy for the technical development, evolution, and coordination of infrastructure systems. Long-term plans for infrastructure development should be based on real market demands and should also respond to policy goals for infrastructure systems in the areas of urban development, environmental protection, and equity. Users may contribute effectively to

this process both with regard to market demand and, more importantly, with regard to the transformation of general development goals into infrastructure development strategies.

Participation in medium-term investment programming

2.66 Medium-term investment programming is a process for fixing immediate development priorities, deciding on infrastructure investments to be implemented in the medium-term (three to five years), and identifying sources of financing for these investments. Existing structural development plans and sectoral master plans provide the general framework for programming, however, actual priorities must be established through consultative processes.

2.67 Beyond the consideration of individual investment alternatives within each sector, the programming function involves coordination and trade-offs between sectoral alternatives. Therefore a crucial task is to match investment requirements with available financial resources. Resource requirements for operation and maintenance must be considered at the same time with the overall objective of minimizing the expected life-cycle cost of service delivery (Fox 1994). Multi-sectoral investment planning (MSIP), a combination of planning and budgeting techniques, is an important practical approach toward resolution of these tasks (see Peterson et al. 1994).

2.68 ***Participation.*** Medium-term investment programming is basically a bottom-up process that depends upon a flow of information concerning infrastructure demands, needs, and problems in each sector, from each locality in the city. The quality and relevance of information received from the constituent local units depends on the level of information available to them. Communication channels are thus required in both directions.

Participation in implementation

2.69 Implementation encompasses the realization of physical improvements and extensions to infrastructure facilities as well as organizational, economic, and/or social development programs. It includes detailed design, organization, and supervision of implementation; cost control; and commissioning the completed works.

2.70 ***Participation.*** Implementation involves people as users and as producers of infrastructure services. As users, people influence implementation processes through their decisions to avail themselves of a service—for example by purchasing a water or sewer connection that will then require the construction of an appropriate distribution network.

2.71 As producers, people are involved in the implementation of infrastructure systems in a variety of ways that relate to public as well as private facilities, and may be considered both “formal” and “informal.” Formal participation in the implementation of public facilities involves direct user contribution of financing, labor, or material into a government-sponsored and directed process of infrastructure construction. Formal participation in the implementation of private facilities comprises the provision of a whole range of individual facilities and equipment required to use public infrastructure facilities. To use piped water supply, for example, a household must construct some form of domestic plumbing; the use of a sewer system requires a water-seal

latrine; and the usefulness of a road will depend on some kind of vehicle. Coordination between the public and private components of formal infrastructure systems is thus very important.

2.72 Participation in the implementation of informal systems involves those user-provided facilities that function more or less independently of the public facilities; on-site water supply and sanitation or locally organized waste disposal are obvious examples. However, informal systems are never entirely autonomous; through their impact on the natural environment (for example ground water conditions) or public services (for example, waste collection), they will inevitably affect the formal public infrastructure systems. This interface is particularly important when an upgrading of informal systems is anticipated, and an appropriate strategy must be devised to improve the linkages between existing informal systems and an expanded public system.

Participation in operation and maintenance

2.73 The operation and maintenance function comprises all those activities required to deliver urban services and maintain the condition and operational capacity of infrastructure facilities, equipment, and organizational systems. Requirements for adequate operation and maintenance include technical capacity, financing, clear assignment of responsibilities, adequate information regarding the system functioning and condition, and incentives.

2.74 ***Participation.*** The linkage between suppliers and users occurs most directly through operation and maintenance. Employment of public infrastructure systems—water supply, sanitation, drainage, roads, and/or solid waste disposal—implies particular patterns of behavior on the part of the users. These use patterns influence the degree to which facilities satisfy people's needs. A well used public water tap may serve the needs of a number of households and remain reliable for years, for example; poorly used, it may waste much of the provided water and be constantly in need of repair. Besides the more explicit economic criteria, the way in which public infrastructure facilities are used is determined to a large extent by people's values, attitudes, and levels of awareness. An awareness of basic principles of public hygiene, for example, may strongly influence the way in which people employ sanitary facilities, maintain local drains, and dispose of solid waste.

2.75 The patterns of payment for infrastructure services are also influenced by people's attitudes, and on their relative satisfaction with the quality of services provided. Institutions may influence the payment discipline of users by involving them in the processes of system management (such as participation in the planning of local level extensions and consultation regarding future developments) and responding to customer concerns (such as complaints). In other words, there is a large scope for the elaboration of participatory strategies with regard to the function of operation and maintenance.

Participation in monitoring and evaluation

2.76 Monitoring and evaluation are those activities in the management cycle that close the link between planning, programming, and implementation functions on the one hand and policy formulation on the other. In principle, the conditions that evolve as a result of system planning,

development, and operation are measured and compared with the ideal state of affairs as defined by policy goals, with subsequent possible modification of plans, implementation measures, and/or operation and maintenance procedures. This leads to a change in policy goals and strategies.

2.77 **Participation.** The scope of monitoring and evaluation encompasses the whole of infrastructure or service delivery systems—including physical facilities, institutions, and user activities—as well as the relevant natural, socio-economic, and institutional contexts in which these systems operate. Being in direct contact with most of these factors, users are in a good position to contribute to the monitoring of system performance.

Scope of Participatory Strategies

2.78 Participatory infrastructure service management, as described in the preceding paragraphs, encompasses a variety of processes and a broad range of relationships between user communities, government institutions, and private sector actors. In the present section, a simple typology of four participatory approaches is proposed as a general framework for considering and comparing options for participatory infrastructure service management.

Community-based support strategies

2.79 **Basis and objectives.** In the most elementary case, participation comprises **community-based** activities to develop or improve local infrastructure systems. The residential community is the basic unit for organizing development activities. The main objective of participatory activities is to enhance the community's capacity to manage the development and operation of local infrastructure services and to render these efforts more effective through enabling and supporting measures.

2.80 **Characterization.** The orientation of the public-private relationship is in this case from the government toward the community. Government agencies or representatives provide certain inputs and, in a sense, participate in community-directed development activities.

2.81 In practice it is very often an NGO that takes the initiative in this kind of participatory development work. The activities tend to be innovative but of relatively local scale. In some cases, though the scale can become very extensive, government support and enabling activities may have an extensive impact in cities where a large portion of the population lives in informal squatter settlements. The interface of the public-private partnership is focused on the function of physical implementation and possibly operation and maintenance of facilities at the local level.

2.82 **Measures.** Capacity-building normally implies organizational and technical support to community groups. Enabling measures involve recognition of people's right to occupy and develop their residential areas, formal regularization of tenure rights, as well as public information and awareness building measures to enhance the interest in and attractiveness of community-based and individual improvements. Finally, planned public infrastructure

investments may be adapted to better complement and link up with locally managed facilities and services.

2.83 *Examples.* Many projects that have evolved into other forms also began as community-based approaches: the Kampung Improvement Programme in Surabaya, Indonesia (Box 2.5) and the Orangi Pilot Project in Karachi, Pakistan (Box 2.6) are two examples.

Area-based involvement strategies

2.84 *Basis and objectives.* Activities of the involvement strategy are normally government-managed and structured with regard to a particular area to be provided with services or upgraded; the strategy is area-based rather than community-based. The main objectives are to improve the effectiveness and efficiency of development activities through appropriate inputs into the development process by the people concerned.

2.85 *Characterization.* The relationship between the public and private sectors is, in a sense, the reverse of the community-based support approach in that the **community** is mobilized to make specific inputs into a **government-managed** activity. The population of an area, or their representatives, may thus be involved in assessing local needs, demands, and willingness-to-pay, and in selecting priorities, mobilizing financing, implementing, and possibly operating and maintaining the completed facilities and services.

2.86 This strategic orientation includes the conventional case of participatory development projects. The focus of public-private interactions is somewhat broader than in the support strategy, including the function of investment programming—the selection of measures to be implemented—as well as implementation and operation and maintenance.

2.87 *Measures.* Typical area-based approach measures center on mobilization of community participation in the planning of infrastructure development and implementation of system improvements. The financial contribution to implementation and community inputs with regard to operation and maintenance functions may be organized. Measures to build the community's capacity to participate in infrastructure development and manage local services, together with an awareness of building measures and social programs, are often part of the involvement approach. The physical measures themselves normally comprise an integrated package of investments for upgrading water supply, streets, street lighting, drains, sanitation, and solid waste management.

2.88 *Examples.* Indonesia's Kampung Improvement Programme (KIP), a large-scale, area-based upgrading program, is one of the foremost examples of the involvement strategy (Box 2.5). The Community Infrastructure Programme (CIP) in the North West Frontier Province (NWFP) of Pakistan aims at a more active participation of communities in the planning process than does the KIP, but is also an area-based approach (Box 3.9).

Box 2.5. Indonesia's Kampung Improvement Programme

Kampung, which means "village," is the term used for Indonesia's informally constructed low-income urban residential areas. Indonesia's Kampung Improvement Programme (KIP) emerged in the late 1960's out of diverse experiences and concepts with regard to community-based *kampung* upgrading. The program has become a very large-scale and highly successful program of urban residential upgrading.

Important originators of the present KIP program were the M.H. Thamrin KIP in Jakarta and the W.R. Subratman KIP program in Surabaya. In response to an initiative of *kampung* residents, the municipality provided basic construction materials (concrete slabs and gutter elements) that were installed by community members through their own resources and labor. While the initial results were modest, they generated an awareness at both the community and government levels of the potential of community-based development. Further improvements ensued in the areas of roads, drains, footpaths, street lighting, community centers, and mosques. A second stage of the program began in 1974 when the municipal government earmarked a fixed sum in its development budget in response to improvement requests from *kampung* residents. The program required that initiatives come from the community and that residents generate about one-half of the total construction costs. Technical assistance for project planning and design was provided by the Public Works Department. In the first five years of this phase, from 1974 to 1979, a total of about \$1.26 million worth of improvements were realized, of which about 54 percent was self-financed by the communities themselves.

In 1974, parallel with Surabaya's W.R. Subratman KIP, a nationwide KIP program was initiated with World Bank financing. The first projects were realized in Jakarta, and in 1976 the program was extended to Surabaya and other cities. By 1980, some 200 cities of Indonesia had ongoing KIP programs based on national government budget allocations.

The purpose of KIP from the outset was to promote equity by improving living conditions and service access in predominantly low-income *kampungs*. The programs have focused entirely on physical improvement—no social or economic components were included. Roads and footpaths have made up over two-thirds of the total expenditure, while water supply has accounted for less than 20 percent and sanitation for less than 5 percent of the investment. At Rps. 3 million, or about \$4,300 per hectare (1979), the level of input was relatively low and the intention was to attain as broad an impact as possible. To simplify planning procedures, the improvement package was highly standardized. While a process of consultation with *Kampung* residents was foreseen, the degree of actual participation varied considerably depending on the engagement of project staff and local officials. No component for land regularization was included in the program, as this would have delayed the implementation process. KIP made no provision for cost recovery beyond the expectation of higher property tax revenues resulting from land value increases. In 1990, KIP adopted the "Tribina" principle, integrating the physical infrastructure development with social and economic development. Small credit scheme, job creation, small business assistance, training and capacity building were included in the KIP. Jakarta invited NGOs to prepare and organize the projects.

The quantitative achievement of the program is impressive: in Jakarta alone about 7,500 hectares were upgraded in the five years up to 1979, and about 3.3 million residents had benefitted, representing about 70 percent of the total *kampung* area and population of the city. Within fourteen years, practically all of the eligible *kampungs* in Jakarta had benefitted from the program.

Evaluation of the impact of KIP in Jakarta has shown that subsequent private investment in home improvement was more than twice as high in the KIP areas (averaging \$550 per household) as compared with the control areas (\$247 per household). Considering the median public investment of only \$160 per household in the test area, this represents a significant "multiplier." KIP communities with a high level of participation, (i.e., consultation prior to program implementation) show a significantly higher level of maintenance of facilities than the communities with low participation, (i.e., no consultation). For example, the maintenance of walkways was classified as "good" in 68 percent of cases in the consulted communities, while walkway maintenance was classified as "good" in only 43 percent of cases in communities that were not consulted. (Silas 1987:398-404; Taylor 1987).

Functionally-based collaboration strategies

2.89 ***Basis and objectives.*** As a model of public-private partnership, the collaboration strategy is somewhat more advanced than the previous two strategies. Rather than one

stakeholder providing input to or participating in activities directed by the other, activities are organized based on clearly designated areas of responsibility for each stakeholder. Within their area of responsibility, stakeholders may exercise their own capacities and pursue their own interests with regard to infrastructure service provision in an essentially self-managed way. However, channels of interaction between the different stakeholders are clearly defined and the areas are structured to enable coordinated, complementary, and mutually advantageous activities. This is normally achieved through a functionally-based organization of tasks and responsibilities.

2.90 **Characterization.** Numerous applications of this general strategic orientation are possible. The process of infrastructure service delivery may, for example, be broken down into distinctive functional domains, such as: (i) on-site, individual facilities and actions; (ii) very local or tertiary segments; (iii) the secondary or collector level; and (iv) the primary or trunk level of the hierarchy. Such a hierarchical organization of functions is characteristic of most infrastructure systems such as water supply networks, sewerage or drainage systems, or solid waste management systems. An appropriately sized social unit (e.g., the lane, neighborhood, or community) is taken as the unit for organizing user groups for self-management of a particular functional level of the infrastructure system, including planning, financing, implementation, and operation and maintenance. In most cases organizational and technical support is provided to the user group to build its capacity for this internal development. The government meanwhile takes responsibility for the complementary development and operation of adjacent external segments of the system.

2.91 A functionally-oriented CBO is a common form of participant organization. However, the cooperative society is also a very appropriate form for this participatory strategy. The range of management functions that figure in the interface between public and private sector actors is somewhat broader than in the previous cases. Given the need to regulate the performance of its private sector partners, government interaction will be concerned with monitoring and evaluation, operation and maintenance, and the functions of investment programming and implementation.

2.92 **Measures.** The collaboration approach normally focuses on measures to build community management capacity. Community development programs and organizational and technical support, as well as training and awareness building activities, are central to this approach. Accessible credit facilities and community-based savings and loans schemes may be initiated to enable investments in shelter. Research and development work may be required to develop appropriate low-cost technical solutions. Technical support may also be extended to small-scale enterprises active in the area.

2.93 **Examples.** The Orangi Pilot Project in Karachi, Pakistan, which employs the concept of internal and external facilities to establish a clear basis of collaboration between communities and government agencies, is a good example of the collaboration strategy (Box 2.6). Sri Lanka's Million Houses Programme also demonstrates basic characteristics of a collaborative strategy (Box 3.3).

Box 2.6. Orangi Pilot Project, Karachi, Pakistan

Orangi is a predominantly low-income residential area extending over about 8,000 hectares on the western outskirts of Karachi. The site is, for the most part, irregularly settled (squatter or *katchi abadi*); the estimated population is about 900,000 people. The Orangi Pilot Project (OPP) was established in 1980 through the efforts of an eminent social scientist with the financial support of a Pakistani philanthropic institution. The OPP sees research and extension work as the core of its approach. Research aims at identifying crucial problems, sensitizing the population concerned, and developing appropriate technical and organizational solutions. Extension work aims at mobilizing self-help organizations and providing technical inputs such as plans, equipment, training, and technical supervision as required. The financing, implementation, and management of facilities and services remain the responsibility of the community-based organizations themselves; the NGOs relationship to these community organizations is that of a consultant.

Work began not with a survey, but with countless discussions with residents and community leaders. Out of these discussions an understanding of local priorities and the concept of a sanitation program emerged. Although external UN advisors proposed an on-site sanitation solution, the OPP was convinced of the superiority of water-borne sewerage. While water supply was not really sufficient for sewerage, the NGO rightly anticipated that improvements would soon ensue. Most importantly, the sewerage solution corresponded to the aspirations of the people. A dynamic strategy was thus introduced, in which "bottom-up" development of a sewer system would eventually oblige the government to formalize the network through "top-down" connections, enabling a very low-cost overall solution.

A sewerage sanitation system consists of four levels: (1) in-house facilities, (2) tertiary (lane) sewers, (3) secondary sewers, and (4) primary sewers and treatment facilities. In Orangi it was found that the people were prepared to assume responsibility for levels one, two, and, in some cases, three. The municipal government was requested to assume responsibility for the third and the fourth level of primary sewer lines. The program thus evolved the concept of "internal" and "external" services as the basis for dividing responsibility between community and government authorities. To make the selected strategy feasible, research concentrated on the technical and economic problems of devising appropriate cost solutions and an effective organizational structure to facilitate community management of the program. Considerable cost reductions were achieved through design simplification and rationalization of the construction processes. While design standards were relaxed somewhat, the reduction was not radical. Community-managed implementation brought even more important savings, by means of a reduction of overhead and corruption. The OPP estimates the sanitary system to cost about 25 percent of the conventional municipal sewerage system.

As a basis for project implementation, lane-level organizations were introduced. While technically not optimal for planning a drainage system, the lane (20 to 30 households) proved to be a workable self-managed social unit with sufficiently strong common interests. Certain requirements of the lane organization were stipulated, but the exact form of the organization was left open. Lane organizations selected their own leaders and took complete responsibility for works-contracting and site supervision as well as subsequent maintenance. The OPP has not provided any credit for sewer implementation; all investments were financed "up front" by the lane organizations through collections from their members. As the consultant, the OPP only provided advice and technical support; it did not mix in the internal affairs of the lane organizations, nor did it handle people's money or become involved in the relationship between community organizations and their contractors.

The demonstration effect of successful sanitary improvement has led lane after lane to apply for support: as of March 1993, 72,070 houses out of a total of 94,122 had constructed sanitary latrines; 4,701 lanes out of 6,230 were served by underground sewers; and 367 secondary drains have been constructed to lead sewage to the open streams (*nullah*). The total self-financed investment is placed at \$2.13 million. OPP places the cost of its inputs for administration, research, and extension work at \$127,000. OPP's activities have spread beyond the sanitation program into the areas of women's welfare, income generating programs, low-cost housing, health programs, and educational activities.

At the outset of the project, relations with local government were distant and even antagonistic. The cooperation of local politicians has gradually improved and in the wake of the OPP's considerable success, government recognition has been forthcoming and a more collaborative attitude seems to be emerging. A project is currently underway with Asian Development Bank financing to construct secondary and trunk sewers to intercept the sewage that now flows into the *nullah*. In the mid-1980s, the OPP was regarded in government circles as an interesting experience that succeeded due to its charismatic leadership, but that was hardly replicable. More recently, however, the OPP approach has come to be recognized by policy makers as the "only viable way" to upgrade low-income urban areas in Pakistan. The NGO is presently disseminating the methodology in collaboration with provincial and local government agencies and communities in several *katchi abadi* in Karachi and other cities of Sindh. (Khan 1991; Hasan 1991, 1986 and 1993; GHK/MRM International Ltd. 1991)

Process-based decentralization strategies

2.94 ***Basis and objectives.*** In the fourth strategic orientation, activities are also government-sponsored. In this case, however, it is not merely a specific area, but the entire process of infrastructure service management—normally on a city-wide scale—that forms the basis of activity organization. People, both as users of infrastructure services and as citizens, participate by way of specific inputs to government-directed management activities. To enable this opening toward participation, the focus of decisionmaking and management processes shifts toward increasingly local bodies. The general objective is to bring infrastructure management closer to the users and to increase the responsiveness and accountability of these processes to them.

2.95 ***Characterization.*** In principle, participation may contribute to all main management functions. Setting general infrastructure and urban development goals and policies is, for example, a political function. The responsible authorities seek to express the aspirations and values of the population. For this, a process of public information, consultation, and consensus building is needed. Policies for environmental protection and improving public health conditions require broad public support if they are to be effective. The participatory task in this area is to build a constituency for a proposed program of environmental protection. A further example concerns the function of investment programming for infrastructure development, which should reflect the needs and priorities of each user group and community. The programming function is thus ideally structured as a bottom-up process for collecting, weighing, prioritizing, and integrating initiatives and proposals that originate among local user groups.

2.96 Public-private partnerships, including full privatization, are important components of the decentralization strategy in which operational responsibility for infrastructure service delivery is transferred from government authorities to private enterprises. It is noticeable that privatization embodies many aspects of the collaboration strategy described above in that stakeholders assume responsibility for self-managed activities in a clearly defined functional domain. Besides practical matters related to the different motivations and organizational structures of private enterprises as opposed to CBOs (see the section on public-private partnerships in Chapter I), the main distinction is the dependency of the privatization strategy on higher level policy decisions to devolve responsibility to the private sector. Apart from improved efficiency of privatized activities, this will also expose public service provision to the stimulus of commercial mechanisms. In general, decentralization implies all functions of infrastructure service management in some form or another.

2.97 ***Measures.*** At the user and community levels, decentralization strategies build upon the same kind of enabling and capacity-building measures employed by support, involvement, and collaboration strategies. Beyond these, use is made of broader measures to promote public awareness and build constituencies for infrastructure programs in relation to urban development and environmental protection goals. Public information and media campaigns, school programs, and training programs may be employed. The need to establish more effective channels of communication between users and responsible authorities calls for the elaboration of participatory monitoring, planning, and investment methods and procedures. Programs for

Box 2.7. Decentralization is a two-way process: Indonesia's IUIDP

By the early 1980s it had become clear to policy makers that the prevailing project approach to urban infrastructure development, with its sectoral focus and heavy reliance on central government administration and financing, would be unable to respond to the growing pressure for urban services. Influenced in part by successful urban development projects in several larger cities (Surabaya, Medan, Bandung), the Ministry of Public Works embarked in 1985 on the Integrated Urban Infrastructure Development Programme (IUIDP). Differing from the more comprehensive concept of Integrated Urban Development—which is being applied in larger metropolitan urban centers—IUIDP focuses on a limited number of infrastructure sectors, including water supply, sanitation, drainage, roads, and *kampung* improvement. The program has been initiated in hundreds of cities and districts throughout the country.

The key features of the IUIDP are **decentralization of responsibility** for infrastructure service provision to local government, strengthening the local governments' **capacity to mobilize resources** for infrastructure development, and an emphasis on **multi-sectoral, medium-term investment programming** as a primary vehicle for managing infrastructure development.

The main objectives of the medium-term investment program are to increase the effectiveness of service provision by orienting investments more closely to local needs and to increase the efficiency of fund utilization by avoiding overlap and improving the technical coordination between sectors. The investment program is rolling, with an approximately five-year planning horizon. Within this framework, annual investment programs are assembled in a flexible consultative manner that engages urban communities (*kelurahan*), wards (*kecamatan*), and the municipality in a bottom-up process of identifying needs, setting priorities, and selecting a sectorally integrated package of investments.

The IUIDP recognizes that responsibility cannot be decentralized without a corresponding increase in the capacity of local government institutions. Emphasis is therefore given to action programs for enhancing municipal revenues and strengthening local government institutions, as well as related training, human resource development, and technical assistance inputs programs.




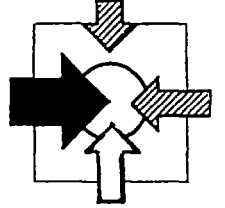



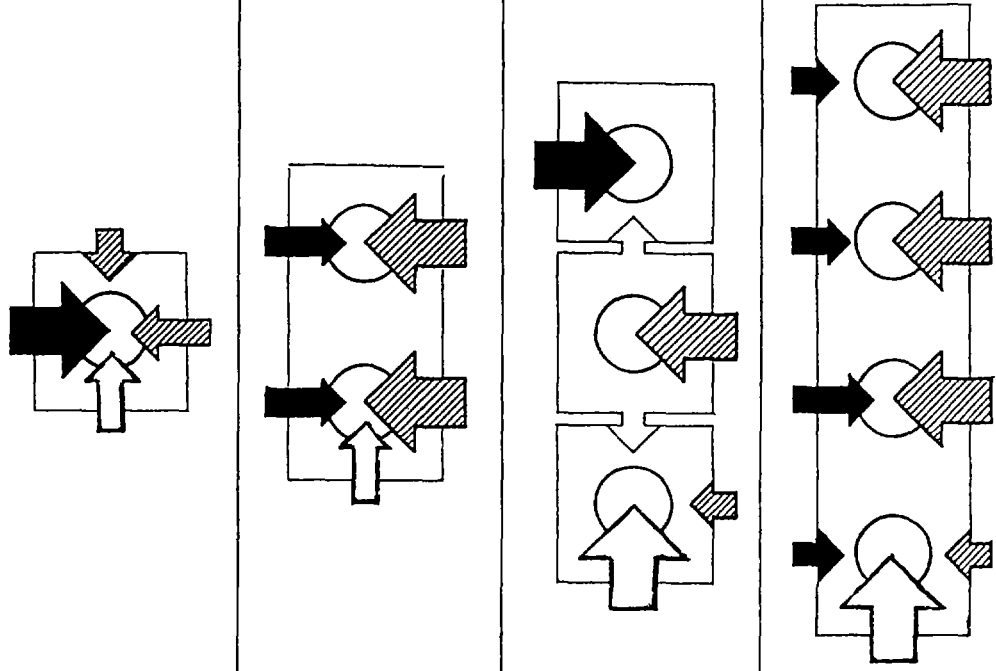
While a good start has been made, it will evidently take many years for the main objectives of IUIDP to be achieved. True decentralization of responsibility and authority will only occur when pressure from below puts life into the opportunities created by central IUIDP policy decisions. In principle, the process implies important changes in the relationship between communities and the local government, as well as those between local and higher government authorities.

public-private partnerships including privatization require a review of existing service delivery processes to determine which functions or activities may be contestable and otherwise suitable for involvement by the private sector. Procedures for the transfer of operating responsibility and establishment of adequate regulation and control instances are then required.

2.98 Most importantly, decentralization strategies depend on measures of institutional development to decentralize responsibility and authority to local bodies and to develop the capacity of these bodies to assume these responsibilities.

2.99 *Examples.* A prominent example of an ambitious decentralization strategy for infrastructure management is Indonesia's Integrated Urban Infrastructure Development Programme (IUIDP) (Box 2.7). Sri Lanka's Million Houses Programme, which has moved towards a decentralization of government-sponsored development processes, also illustrates aspects of this strategy (Box 3.3).

Figure 2.1: Strategic approaches to participatory infrastructure management

Legend	Approach:			
	Community-Based	Area-Based	Functionally-Based	Process-Based
Actors  Community  Private Sector  Public Sector				
Roles  Management/Direction  Participation/Support  Consultation/Coordination				
Strategic Basis	Social group or community	Residential area	Service delivery functions	Management process
Objectives of Participation	Support & enable self-managed infrastructure development by user communities	Involve users in government-directed infrastructure development programs to improve their effectiveness	Collaborate with user and community groups on the basis of clear and coordinated division of tasks and responsibilities	Decentralize management functions to improve demand-responsiveness; privatize selected service delivery functions
Orientation of Public-Private Partnership	Government (and NGO) inputs to community-based development	User inputs to government-directed processes of infrastructure development	Coordinated, self-managed activities of various stakeholders	User and citizen inputs into government-based infrastructure management processes
Scope of Participatory Management	<ul style="list-style-type: none"> • Implementation 	<ul style="list-style-type: none"> • Programming • Implementation • O & M 	<ul style="list-style-type: none"> • Planning • Programming • Implementation • O & M 	<ul style="list-style-type: none"> • Policy making • Planning • Programming • Implementation • O & M • Monit. & Eval.

III. APPLYING PARTICIPATORY STRATEGIES: LESSONS OF EXPERIENCE

3.1 This chapter outlines the main objectives addressed by participatory strategies, identifies the critical issues which arise with regard to each objective, and discusses the appropriate responses in light of available experiences.

3.2 The primary objective is to establish a clear and workable division of tasks and responsibilities between stakeholders, i.e., to define the conditions and forms of participation. The four strategic approaches introduced in the section on scope of participatory strategies in Chapter II are discussed here as basic options available to meet this objective. The strengths and weaknesses of each approach are also considered.

3.3 A number of operational objectives are then considered, relating to the application of participation to the six main functions of infrastructure service management: (i) formulation of goals and policies; (ii) long-term planning; (iii) investment programming; (iv) implementation; (v) operation and maintenance; and (vi) monitoring and evaluation. Finally, the objective of establishing an adequate organizational basis for participatory management is examined at the community, intermediary, and governmental levels.

Conditions and Forms of Participation

Objective 1 Basis of participation

To establish a basis for participatory infrastructure management that allows a clear division of tasks and responsibilities between the stakeholders.

3.4 The four basic participatory strategies of infrastructure service management encompass a range of cooperative relationships or partnerships between the parties concerned. As in any partnership, the basic purpose is to create mutually advantageous interactions and synergy in which the strengths of one partner balance the weaknesses of the others; together, partners should be able to achieve results that would not have been possible independently. It must be stressed that the value of participation derives not only from mobilizing additional community resources but, more importantly, from the greater effectiveness with which available resources are used. The primary objective of a participatory strategy is therefore to establish an appropriate basis for this division of tasks and responsibilities; in other words, to frame the partnership in such a way that it is clear who should do what, and how the various activities will be coordinated.

3.5 As suggested in the general typology of participatory strategies outlined in Chapter II, four general strategic approaches may be identified. It is important to recognize that these approaches are not mutually exclusive and that they may occur on a parallel basis. In fact, aspects of more than one approach are often present in a particular program and the strategic focus often evolves from one approach to another over the life-cycle of the program. The purpose of the proposed typology is not to suggest that participative approaches must fall into a

predetermined pattern. On the contrary, participatory approaches are highly dynamic, creative, self-organizing, and thus essentially unpredictable. Nonetheless, it is believed that the typology will assist in understanding important aspects of the dynamics involved in participatory infrastructure management.

Determining the basis of partnerships

Issue 1.1 Applicability of the different participatory approaches

What are the main advantages, disadvantages, and risks of the community-based, area-based, function-based, and process-based approaches to participatory infrastructure management?

3.6 **Support: community-based approach.** Support strategies represent the elementary form of participation. At the core of the strategy is a self-help activity initiated by the people themselves. As in the case of the spontaneous low-income community of Guayaquil, Ecuador (Box 2.1), a community-based organization generally underlies these cooperative self-help development activities.

3.7 Participation normally grows out of contact between existing CBOs and development-oriented NGOs. In the case of Nylon, Douala, for example, the Institut Panafricain pour le Développement played a vital role in promoting the identity and self-confidence of the CBOs and in helping them to clarify their role as leaders in the community and representative bodies in relation to external authorities.

3.8 The community-based approach is applicable in the most poorly served, marginal low-income settlements. The principal advantages of this approach are its maximum use of the self-organizing and self-managed potential of the community. Because the community is the main actor, there is little difficulty in demarcating responsibilities and tasks. The external agent remains in a supporting role, catalyzing organizational development and providing technical assistance where required. The external agency may in principle be a government agency [as in the case of Villa El Salvador, Lima (Box 1.1)] and in the early Urban Community Development Programme in Hyderabad (Box 3.1). The case of PROUD, in Bombay, demonstrates how a relatively minor input from an external agent may catalyze a considerable process of community organization, without the agent necessarily playing a long-term role in the community-based activities.

3.9 Because it follows an open-ended procedure of trial and error in which the community members themselves remain the active agents and subjects of the experience, the community-based approach has great creative potential. The people-centered process is evidently a crucial precondition for the generation of new models of community-government cooperation. The PROFAVELA project in São Paulo, Brazil (Box 2.4) and the Orangi Pilot Project in Karachi, Pakistan (Box 2.6), are two important examples of the model building potential of the community-based approach.

3.10 At the same time, the community-based support strategy has important limitations and risks. Based on existing (and not necessarily representative) community organizations, the

support strategy does not always succeed in introducing representative and functionally-oriented organizational forms. In marginalized, low-income communities, the local leadership often enjoys a privileged position through its representative functions; the leadership may actually assume a buffer role between the community and urban society, hindering rather than promoting change (Schübeler 1979). In Sri Lanka's Million Houses Programme this type of problem arose in several communities, particularly when the restructuring program threatened to cut into leaders' land holding interests (Yap 1993). In the community-based approach, such resistance may mean that no significant change will be brought about in the relationship between the community organizations and external authorities. However, without an evolution of community-government relationships, the project remains an isolated exercise with no broader policy consequences.

3.11 The bottom-up community-based approach faces inherent difficulties in linking the locally developed infrastructure systems with the municipal networks. In principle, one of the most important measures that authorities can take to promote this strategy is to adjust investment programming, technical solutions, and service delivery patterns to foster such linkages. In practice, however, individual community-based projects seldom have the political leverage to mobilize the required adaptations.

3.12 The community-based approach is for the most part dependent upon self-financing, but is seldom able to mobilize more than a modest volume of resources. Scaling up development efforts often produces difficulties. In the case of the Indian Urban Community Development Programme in Hyderabad, for example, the progression from small-scale measures of aided self-help to a large-scale upgrading and housing program—financed through credit facilities—led to a weakening of community-directed activity; the program became increasingly supply-driven and paternalistic. People's roles in planning functions as well as cost recovery performance seriously declined (Box 3.1).

3.13 In the Nylon zone of Douala, scaling up from an aided self-help program took the form of a large-scale, World Bank-financed, externally directed infrastructure improvement program. The existing, well experienced structure of CBOs greatly facilitated project implementation. Nevertheless, the social dynamics of the community organizations were partly undermined by the influx of large-scale investment resources that served municipal-scale interests more than certain local needs. When investment in technical infrastructure greatly exceeds the capacity of the existing social organizations, and no corresponding input is made at the organizational level, a social disinvestment is likely to result (Cernea 1991).

Box 3.1. Indian Urban Community Development Programme, Hyderabad, India

India's Urban Community Development Programme (UCD) began in 1958 with a pilot project in Delhi supported by the Ford Foundation. Based on rural community development experiences of the early 1950s, the program aimed at improving the extremely poor living conditions and infrastructure services in low-income urban communities through supported self-help endeavours. The program was subsequently extended to Ahmedabad (1960), Baroda (1965), Calcutta (1966), and several other cities.

Institutionally, the UCD was conceived as a part of municipal government which acted as a bridge between the government and the people. Its main aim was to strengthen community organization in low-income residential areas and to enable community groups to plan, finance, and implement self-help projects. The approach was based on the postulate that every community, no matter how poor, has some capacity for self-help improvement, and that communities should, in principle, seek outside assistance only after they have exhausted their own resources.

The UCD Programme in Hyderabad began in 1967. Water supply, sanitation, waste disposal services, and housing conditions in Hyderabad, a city of about two million inhabitants, were then woefully inadequate. The municipal government—strapped with a large budget and weakened by tax evasion and arrears—was hardly able to maintain existing facilities, let alone expand service coverage.

The first program activities targeted a low-income neighborhood of about 7,000 families. Community groups were assisted in the identification of needs, planning, and implementation of small self-financed improvement projects. The first projects were quite modest, involving such items as street light repair and provision of waste collection bins. By 1974 activities expanded to include water and sanitation, health and nutrition programs, pre-school education, income generation, and shelter improvement.

The second phase (1977-1982) focused on shelter improvement. After motivation and survey activities, house designs were prepared in consultation with the concerned households. The UCD obtained land titles and the project was submitted to HUDCO (Housing and Urban Development Corporation) for loan approval. Work groups of about 20 households were then formed to undertake construction under the supervision of a municipal engineer. Material provision was facilitated by the program, while members provided labor at below-market rates.

From 1981 onwards, the program was significantly expanded with ODA financing. The target was to provide housing for 150,000 families over a ten-year period. With the scaled up approach, the role of the people in planning and implementation was considerably reduced; the UCD acquired the more directive role of project manager.

In the early years of the program, when the UCD operated at a relatively small scale, significant impacts were achieved through the improved coordination between government agencies and community organizations, and significant volumes of community resources were generated for physical and economic improvement programs. The community organizations that were developed proved capable of a variety of project activities. The CBO also contributed to the reduction of tensions between Muslim and Hindu communities in periods of communal strife. The approach of the UCD has been criticized as being somewhat paternalistic and, for the advancement of self-help activities, many communities remained dependent on constant inputs from the community organizers. In general, however, mobilized community organizations did significantly increase people's capacity to play an active role in local development processes.

Evaluation of the large-scale housing program shows modest cost-savings of about 15 percent through beneficiary labor inputs and material salvaging. Cost recovery performance in this program—estimated at about 45 percent—has not been satisfactory, however. Many beneficiaries appear to have considered the loan as public funding that will ultimately be written off due to political pressures. Poor cost recovery and dependence on outside financing (UNICEF and ODA) thus raise questions regarding the program's replicability.

On the positive side, a considerable private investment multiplier effect was achieved; beneficiary contributions of labor and money amount to over 90 percent of the total public sector investment. This seems to suggest that the people were willing and able to pay for services or components where no government input was to be expected. Where the government was prepared to invest, however, and the people perceived that they would suffer no negative consequences from non-payment, they tended not to pay. Ex post facto cost-sharing in a government-directed project in which the people have a minimal voice in planning and decisionmaking is shown to be problematic (Cousins and Goyer 1979; Shah 1989).

3.14 ***Involvement: area-based approach.*** The area-based involvement approach usually results from a government-sponsored initiative to upgrade services in poorly served low-income areas of the city that in many cases are illegally settled. The approach is thus often associated with the objective of legalizing the tenure status of the residents and integrating them into the administrative and civil fabric of the city. As in the case of the Indonesian KIP in Surabaya, the program may be the outgrowth of an earlier, more community-based approach (Box 2.5). The content of the area-based approach is usually a multi-sectoral package of infrastructure improvements (such as water supply, streets and footpaths, street lighting, drains, sanitation, and solid waste disposal), selected and planned with intensive involvement of the concerned people.

3.15 In some cases community involvement is limited to a one-time consultation, so that the experience passes by with little lasting impact on community organization and management capacity. In other cases, considerable effort may be expended to build lasting CBOs capable of contributing substantially to the planning, implementation, and subsequent operation and maintenance tasks.

3.16 The area-based approach may resolve certain shortcomings of the community-based approach. Normally directed by government institutions, the area-based approach is better suited to channelling larger volumes of resources and to ensuring a more effective linkage between local level developments and municipal systems.

3.17 The approach is open to quite a broad range of interpretations regarding such crucial program characteristics as: (i) the intensity of participation in decisionmaking processes; (ii) the relative emphasis placed on community development; (iii) the degree to which the program is demand-driven as opposed to supply-driven; and (iv) the form and proportion of cost-sharing. These aspects are interrelated. A demand-driven approach in which a high intensity of participation in planning decisions and a significant level of cost-sharing are anticipated will normally require a considerable input into the formation of functionally oriented CBOs. As the experience of the Lusaka, Zambia, project has demonstrated (Box 1.2), it is not advisable to attempt a high level of participation in implementation without preparatory organizational strengthening during the planning phase.

3.18 The Community Infrastructure Programme (CIP) in NWFP, Pakistan, employs a demand-oriented approach with a reasonably high level of community participation in project planning and substantial cost recovery amounting to 20 percent of total investment costs paid up-front. The CIP will work with existing CBOs when these are present, but anticipates a considerable volume of organizational strengthening inputs. The program is essentially an area-based involvement approach as opposed to a collaborative approach since implementation is clearly government-directed (Box 3.9).

3.19 Supply-driven programs with a modest level of participatory decision making may function quite well with minimal community development inputs. Indonesia's KIP is a successful example of this (Box 2.5), however, direct cost recovery was not an objective.

3.20 The involvement approach also has limitations and risks. As was occasionally the case in the Indonesian KIP, the package of improvement measures may become standardized and supply-driven to the point that people lose ownership of the project and neglect to use and maintain, or even resist implementation of, the project measures.

3.21 The main risk inherent in this approach concerns cost recovery. Numerous examples confirm that programs that seek to achieve efficient implementation by reducing participation in the planning phases tend to have poor cost recovery performance (see, for example the Lusaka Project, Box 1.2 and the Indian Urban Community Development Programme in Hyderabad, Box 3.1). The least problematic approach in this case is to follow the example of the Indonesian KIP and ignore the direct cost recovery and look instead toward indirect cost recovery by way of rising land values and associated property tax increases. This is not always affordable, however, and also increases the risk of poor targeting of project measures. Direct sharing in investment costs is a valuable procedure because it ensures that the selected investments meet the real demands of the people, promote project ownership, and create a solid basis for subsequent community-based maintenance of the facilities.

3.22 Where capital cost-sharing has worked well, it has usually been accomplished in advance of implementation, as in the case of the Khuda Ki Basti scheme in Hyderabad, Pakistan (Box 3.2). As noted, credit facilities employed in the UCD project in Hyderabad, India, also met with quite limited success regarding repayment rates (Box 3.1).

3.23 A further general difficulty with the involvement approach concerns the organizational complexity that inevitably arises when the attempt is made to involve community organizations at various stages of the planning and implementation process, engage their contribution in some share of the investment cost financing (for example joint accounts), and devolve substantial responsibility for operation and maintenance to the CBO. The experience of Sri Lanka's Million Houses Programme illustrates that this complexity can be mastered by means of clear, simplified procedures, and modular training and capacity-building methods (Box 3.3). Similarly, in São Paulo's PROFAVELA project (Box 2.4), a standardized procedure developed within a pilot phase proved capable of efficient implementation on a larger-scale.

3.24 Finally, it should be noted that the area-based approach does not necessarily solve the problem of technical and operational linkages between locally developed facilities and municipal networks. The integrated package of local facilities is normally implemented through a special purpose organization.

Box 3.2. Reaching the poor: Khuda Ki Basti incremental housing scheme, Hyderabad, Pakistan

In Karachi, Pakistan, the Karachi Development Authority developed about 165,000 new plots on the outskirts of the city between 1978 and 1983 to meet the demand of low-income households. By 1987 about 20 percent of these plots had been provided with infrastructure services; however less than 1 percent of the plots were actually occupied. Overall it was estimated in 1986 that there were a total of 380,000 developed but vacant plots in Karachi, covering an area of over 4,850 hectares. In Hyderabad, a city of about one million inhabitants, the situation was similar. Of the 56,000 plots that had been developed by 1986, about 52,000 remained vacant. This anomaly arose in the face of an extremely high demand for urban housing, as demonstrated by the very rapid expansion of illegally occupied *katchi abadi* in both cities. In Karachi, for example, new *katchi abadi* were estimated to have added about 217,000 dwelling units to total housing stock from 1972 to 1986.

In 1986, the director of the Hyderabad Development Authority (HDA) and his colleagues set out to duplicate the success of the informal/illegal housing development process (without its shortcomings) within the HDA sites and services scheme at Gulshan E Shahbaz. They began by identifying the basic reasons for the failure of the government programs and the relative success of the informal program. These concerned the **targeting** of the beneficiaries, **affordability** of the plots and services, administrative **procedures**, and **timing** of the process. The analysis and the response to the scheme, named Khuda Ki Basti, were as follows:

Targeting: Government programs, though normally intended for low-income groups, make it practically impossible for low-income households to participate. By announcing a scheme, collecting advance payments from plot buyers, and then improving the land, the state has in effect assumed the role of developer. The process may take up to ten years, however, and is thus targeted mainly toward middle-income people looking for an investment hedge against inflation, and not low-income households with immediate housing needs.

In the Khuda Ki Basti, the essential criteria for plot allocation is the physical presence of the family and actual construction of a house on the site. Transfer of title is separated from physical possession of the plot. Only after a house has been constructed and occupied without interruption, and all installment payments are completed, is the actual transfer of title made.

Affordability: Government schemes sell serviced plots with roads, drains, water supply, sewers, and electricity. However, the cost of land plus services is beyond the reach of low-income households.

In Khuda Ki Basti, as in most *katchi abadi* settlements, the site is occupied first and infrastructure services are developed incrementally as the capacity of the inhabitants allows. At the outset, basic needs for water are met by tank truck or public water taps. Transport facilities are arranged through private informal mini-bus operators. Plot purchasers make a down-payment of Rs. 460 (later raised to Rs. 1,000 or 10 percent of the total cost) and pay the remainder over a period of eight years.

Procedures: The allocation of government-sponsored plots is generally accomplished through a complicated balloting procedure requiring application forms and formalities; these procedures are beyond the capability of most marginally literate low-income households. In Khuda Ki Basti, the physical presence of the household is the crucial step in applying for a plot. To facilitate the process the scheme has built a "reception area" consisting of a series of one-room houses where applicants can stay while awaiting plot allocation and subsequent construction of the basic housing unit ("live and build").

Timing: The long wait between advance payment and land possession, common to government programs, is totally eliminated in the Khuda Ki Basti scheme; possession is immediate.

Results: The experimental incremental housing scheme has been very successful. At the outset it was necessary to revoke the occupancy rights of some applicants with speculative interests who did not begin construction. Once people saw that the project meant business, the targeting procedure began to work as planned. By September, 1988 (after about two years) 3,241 plots had been allocated, 2,525 families were living on the site, and 2,481 *pucca* houses had been constructed. This contrasts with the remainder of the Gulshan E Shahbaz site, where all 11,600 plots were still vacant.

A certain experimentation was also required regarding the provision of common facilities. When segments of the provisional nylon water pipe network began to disappear, the scheme stopped providing facilities centrally. Instead, inhabitants were organized at the lane-level to collect the necessary funds and replace the pipeline, which then remained undamaged. For the provision of other facilities such as sewerage, drainage, and internal roads, inhabitants have been organized at the level of blocks of about 250 households. Improvements were only implemented after residents had collected the required capital. Other facilities such as electric power were organized at the settlement level. By September, 1988, self-managed infrastructure development had provided 10,970 meters of water supply network, 90 public standposts, and 4,870 meters of sewerage line. About 60 percent of the housing units had soak pit latrines. There were eight mosques, eleven health clinics, fifteen schools of various levels, and twenty-nine regular teachers active in the settlement. A family enterprise scheme had created employment for 117 people, including 48 women.

Cost recovery on the plot investment, reviewed in 1989, was reasonably good, with 60 percent of the residents paying regularly, 28 percent paying with some irregularity, and 12 percent not paying. By 1992, however, it appeared that the repayment rate had declined. In principle, land title is only granted after payment is complete. The slower rate of recovery means that the scheme will be running into cash flow problems in the planned "external" infrastructure investments. The development remains entirely self-financed. Only administrative overhead is paid for out of the HDA budget. (Siddiqui 1988; Van der Linden 1989; TP O'Sullivan & Partners/PADCO 1991; and Sultan 1993.)

3.25 A more consequential response to the problem of linking integrated area development with sectorally segregated municipal management involves the introduction of sectoral integration at the municipal level. Indonesia's IUIDP is attempting just this. In effect, the successful experience of the KIP in integrated area development, and difficulties in coordinating this development with individual sectoral agencies, constituted formative inputs into the design of the IUIDP (Box 2.7).

3.26 ***Collaboration: functionally-based approach.*** The collaboration strategy may appear in many respects to be quite similar to the involvement strategy. The crucial difference lies in the fact that people (either user groups or CBOs) are not only involved to varying degrees in the government-directed process of infrastructure development, but also assume full responsibility for self-management and as a rule the self-financing of a limited portion of the infrastructure systems.

3.27 As with the Orangi Pilot Project (Box 2.6), the collaborative approach may evolve from a community-based approach. It may also emerge from a government-directed, area-based approach. This seems to have occurred to some extent in Sri Lanka's Million Houses Programme (Box 3.3).

3.28 The collaborative approach requires: (i) a relatively high level of technical and organizational capacity on the part of the community-based organizations, and (ii) a clear designation of each functional portion of the infrastructure system as the basis of the division of responsibilities. The practice of community-managed local garbage collection, which is common in urban Indonesia, is a good example of this kind of division of responsibilities. As a consequence of the relatively high level of technical and managerial competence required at the community level, the approach tends to focus on one infrastructure sector at a time and is rarely multi-sectoral. Based on successful experience in one sector (sanitation or waste collection, for example), the CBOs may then branch into other sectors or other areas of development or social activities. This evolution has clearly occurred in the case of Orangi (Box 2.6).

3.29 The strengths of the collaborative approach complement the difficulties and risks encountered in the area-based involvement approach. In particular, the loss of project ownership due to the supply-driven implementation of a standardized package of measures is hardly likely to occur under the collaborative approach, as control of the basic decisions remains more clearly in community hands. The collaborative approach generally leads to a considerable degree of empowerment and a growth of community management capacity.

3.30 The more comprehensive management responsibility assumed by the community in a collaborative approach generally encompasses self-financing of the facilities concerned. Cost recovery, therefore, is seldom a problem. The experience of the Khuda Ki Basti Scheme in Hyderabad, Pakistan, illustrates that self-financed incremental improvements are feasible even among very low-income communities (Box 3.2).

3.31 It may be noted that the privatization of particular service delivery functions or activities possesses many characteristics of the collaborative approach. Here, too, the private stakeholder assumes full management responsibility for a limited functional domain of

infrastructure service delivery. Privatization involves more fundamental measures at the policy level, however, and is considered to be an alternative measure of the decentralization strategy.

3.32 The collaborative strategy also has certain shortcomings and risks. The most important difficulties concern coordination and linkage between the relatively independent community-managed provision of “internal” facilities and the government-sponsored provision of the corresponding “external” facilities belonging to the municipal networks. In most cases, the existence of suitable primary or trunk facilities is a precondition for the internal development of the secondary or tertiary segments of the network. In the initial experience of the Orangi Pilot Project, this problem was avoided to some extent thanks to the existence of numerous natural streams in the area that served as provisional trunk sewers. In the replication of the OPP approach in other cities such as Hyderabad, the provision of trunk sewers by the municipal authorities was a precondition for internal development. In spite of considerable good will on the part of the municipality, together with coordinating efforts by the Provincial Katchi Abadi Authority, SKAA, and mediating efforts by the OPP, the coordination of these external works has proven to be a complex and time consuming task. The resolution of this difficulty is to be found in the next strategic approach, the progressive decentralization of infrastructure investment programming and management processes.

3.33 *Process-based decentralization approach.* The decentralization strategy, as noted in the section on the Scope of Participatory Strategies in Chapter II, applies to the entire process of infrastructure management and may be termed “process-based.” Decentralization implies a double movement: the shift of decisionmaking and management functions toward local levels, and the opening of these processes downwards, thus making them more responsive and accountable to the users.

3.34 The Indonesian program for decentralizing responsibility for infrastructure development, the Integrated Urban Infrastructure Development Programme (IUIDP), is a good example of this approach. Beyond the shift of development programming functions from the central to the local governments, the IUIDP introduces a bottom-up process for annual investment programming that is employed by the municipality. Beginning at the neighborhood level and working up through three stages to the municipal level, investment needs are identified, potential projects prioritized, sectoral components coordinated, and the selected investment package matched against available financial capacities (Box 2.7).

3.35 To function effectively, this decentralized model of infrastructure management requires two conditions: a top-down flow of information to the local decision making bodies—to enable them to formulate workable proposals in relation to the technical and economic circumstances—and a basic planning and programming capacity at the community and district levels. In most cases, neither of these conditions is fulfilled, and although the procedures are in place, the actual dynamics of bottom-up planning do not yet function very effectively. In time these weaknesses may be overcome through capacity-building measures assisted by continued application of collaborative and area-based strategies. It is possible that some simplification of the bottom-up programming procedures will be required.

Box 3.3. Sri Lanka's Million Houses Programme

Background: Until the early 1980s, the government of Sri Lanka attempted to solve the drastic problems of inadequate housing by constructing low-cost housing units. The Hundred Thousand Houses Programme, which operated between 1978 and 1983, fell far short of its objectives. An evaluation conducted in 1983 revealed some of the program's weaknesses: exceedingly high standards, high unit costs, and failure to recognize the actual financial and manpower constraints. Most importantly, the evaluation noted that during the project period informal owner-managed construction had produced many more and much cheaper houses that were better suited to the needs of low-income households. The government recognized that its proper role was not to provide housing, but rather to enable and support private housing development. The main vehicle of this new strategy became the Million Houses Programme (1984-1989).

Program description: The basic principles of the program were to minimize government intervention and maximize support to and involvement of the owner-builder family. The program aimed at reaching as many households as possible with a minimum level of essential support. Standards and regulations were to be adapted to enable low-cost solutions, and decisionmaking, planning, and implementation were to be decentralized as far as possible to the local authorities, communities, and individual households.

The program included rural as well as urban components. While the rural component concentrated mainly on extending small home-improvement loans to low-income households, the urban component concentrated more on planning and building regulations, area-wide upgrading, and infrastructure services. The urban program began in 1985. Its basic approach, termed "community action planning," was formulated and refined over a considerable period of experimentation by project authorities and the communities themselves.

Institutional framework: The program was implemented through the Urban Housing Division (UHD) within the National Housing Development Authority (NHDA). Support for program development and training was provided by a Danish-funded UNCHS project, the Danida/UNCHS Community Participation Training Programme, and UNICEF's Urban Basic Services Programme.

Each participating urban local authority was expected to establish a Housing and Community Development Committee (HCDC) for program implementation. The main functions of the HCDC were to identify action areas, prioritize tasks, allocate resources on an annual basis, and coordinate and monitor program activities. At the community level, the program was implemented through a Community Development Council (CDC) composed of three officers and ten ordinary members elected by the community on an annual basis. Each council was expected to represent about fifty to sixty households, so that larger communities would have more than one council. Formation of the CDC was an important instrument of capacity-building; the CDC's main purpose was to build the community's confidence and ability to manage development activities and function as a full partner of the government in project implementation. The CDC's were to function as: (i) a forum where the people could discuss problems, identify possible solutions, and decide on courses of action; (ii) a channel of communication between residents and government; and (iii) a basis for organizing peoples' activities during program implementation.

Approach and methods: The community level program began with a two-day community action planning workshop that enabled residents to gain a comprehensive view of the community's socio-economic situation, identify the main concerns and priorities, assess the available opportunities and resources, and identify the constraints and obstacles to be overcome. The outcome of the workshop was a concrete plan of action that spelled out who would do what, when, and how, as well as a system for monitoring implementation of the action plan.

To assist the community in dealing with the many more technical questions that arose during implementation, a series of issue-specific workshops were made available on demand. These covered such subjects as planning principles and technical guidelines, community-building guidelines, housing information services, small house loan disbursement and recovery, community contract systems, and community management and maintenance of services.

Resources for implementing selected actions were made available in the form of loans for: (i) house upgrading, (ii) new house construction, (iii) utilities, and (iv) sites and services. All programs contained a certain subsidy. The interest rate was generally 6 percent and repayment periods varied according to the type of loan (five to fifteen years).

One of the more interesting innovations of the program was the use of community construction contracts. Rather than engaging a private contractor, a construction committee of the CDC was granted the contract for certain types of infrastructure works, the benefits of which were a rise in local employment, the promotion of technical and management skills, a lowering of costs, an improvement in construction quality, and a guarantee of long-term community-managed maintenance of the facilities.

Results and assessment: With the construction of 258,762 rural and 45,976 urban households between 1984 and 1989, the program target of 270,000 rural and 50,000 urban households was very nearly met. Of the 20,685 shanty units identified in Colombo, 13,401—nearly 65 percent of the total—had been covered by 75 upgrading projects prior to 1990. More than 200 workshops were carried out employing the community action planning approach (136 involving the communities and the rest with government officials).

Community action planning proved to be a very effective and replicable method for structuring the cooperation between communities and government agencies for a community-based development process. Nevertheless the project experience exposed numerous problems implicit in government-community collaboration. First, it showed that considerable re-orientation was required by professions in government agencies before they were able to respect the views and initiatives of low-income residents. The personnel responsible for mediation (the social workers or *Praja Sahayaka*) generally found themselves in an uncomfortable situation. Although as community organizers they evidently owed basic loyalty to the community, the Urban Housing Division tended to place them in the role of "field assistants" for the technical offices. To resolve this conflict, the *Praja Sahayaka* constituted themselves as an independent NGO which then worked with the NHDA, but which was able to identify more clearly with the objective of supporting self-management of the communities.

The community organizations themselves, the CDC, also experienced a certain ambiguity in their role. While they were clearly representatives of the people, their functions within the project often put them in the position of representing the government in its dealings with the people. In most cases, the CDC leaders were able to cope with this ambiguity. In some cases, however, the organization became non-functional—CDC leaders were normally made up of the traditional community leadership and/or positional leaders who owed their position to their contacts with outside authorities (brokers), so that problems tended to arise when the leaders viewed the project as a threat to their position or to their interests.

Cost recovery is certainly the main weakness of the program. There was an element of "urban populism" in the government's policy, and the Million Houses Programme clearly served the government's political interests. The government was thus more interested in disbursing loans than in pressing the people for recovery. Loan repayment data is generally not available; recovery is estimated at about 50 percent.

While decentralization was a major program objective, progress in this respect has been slow. The experienced staff of the National Urban Housing Division were often reluctant to pass on their role of project managers to local authorities; given the limited capacity at the local government level, they found good reasons for not doing so. Although sustainability of the approach in the long-term depends on the capacity of resource mobilization at the local government level, no such capacity was developed.

In spite of these difficulties, the program produced very positive results in terms of physical improvements, community management capacity, and capacity of the government to support community-based development. Based on this overall success, a follow-up was launched in 1989. (Yap 1993; Hosaka 1993, and UNCHS 1993).

3.36 Capacity-building for decentralized and participatory infrastructure management may best be approached through a combination of training and other human resource development and/or practical trial and error activities. Training and institutional strengthening are integral parts of the Indonesian IUIDP. At the institutional level, the main instruments are the Local Institutions Development Action Plan (LIDAP) and Revenue Improvement Action Plan (RIAP). The IUIDP recognizes the need for a certain degree of experimentation, and variations of the basic approach are being developed in different cities (Box 2.7).

3.37 In Sri Lanka's Million Houses Programme, decentralization of administrative and even financial responsibilities has proven to be less problematic than the devolution of skills. Although the urban local authorities have taken over the administration of the program in their area from the National Housing Development Authority (NHDA) and are responsible for implementation of the community action plans, the Urban Housing Division of the NHDA retains responsibility for the training program. Training and implementation—which should be integrated into one process—have thus become separated. The subsequent phase project will emphasize decentralization of training capacity (Box 3.3).

3.38 In quite a different setting, the Zambian Training Programme for Community Participation is also applying a combination of training activities for district level government officials and community level project activities, in order to create a broad, institutionalized capacity for decentralized, participatory infrastructure management (Box 3.11).

Applicability of alternative approaches

Issue 1.2 Conditions and requirements of alternative approaches

In a specific situation, which criteria will determine the applicability of a particular participatory approach to infrastructure management?

3.39 The overview of the four strategic orientations reveals an evolutionary relationship between them; the weakness of one strategy may, in general, be overcome by a transformation to the next strategic approach. This kind of evolution is often experienced in practice: in Orangi, an initial community-based support approach evolved into a collaborative program; in Indonesia, the initial community-based Surabaya KIP evolved into a large-scale area-based approach, which subsequently contributed to the comprehensive decentralization strategy of the IUIDP. In Nylon, Douala, a supported community-based approach was transformed into an area-based approach; some of the resultant problems relate to a failure to evolve a locally-based management capacity as a decentralization strategy would have required.

3.40 Collaborative approaches may be derived by way of evolution from community-based and area-based experiences or induced from above through institutional development and training programs, as with the Zambian Community Participation Training Programme (Box 3.11) and the similar program in Sri Lanka (Box 3.3).

3.41 The factors which would, in principle, influence the selection of an appropriate strategy when starting participatory activities depend on the level of physical and economic

development of the city, as well as the resources available, the degree of organization in communities, and institutional skills and capacities. With regard to the evolutionary relationship between the four approaches, it appears logical that support and involvement approaches would be more applicable to situations in which physical and economic levels are less developed. However, it is possible to commence at different points in the strategic "field" and evolve in different directions. Approaches are generally complementary. Indeed, there is no reason why a decentralization strategy should not be pursued simultaneously with support strategies.

3.42 The most critical factor determining the applicability of these strategies is the political climate and, in particular, the interest of the government in actively supporting participation. As demonstrated in Villa El Salvador, Peru (Box 1.1), and PROFAVELA in São Paulo, Brazil (Box 2.4), a positive policy framework and appropriate enabling measures will have a major impact on the effectiveness of community-based service provision. In the following sections, the potential application of participative strategies to each management function is considered, beginning with implementation.

Implementation

Objective 2 Participation in the implementation of infrastructure development

To promote the efficiency and effectiveness of infrastructure development through appropriate forms of user participation in implementation.

3.43 The basis of formal infrastructure systems comprises **public** municipal facilities and services. Informal systems include all facilities and services provided independently from these official municipal infrastructure systems.

3.44 **Private** infrastructure provision occurs in two forms, the formal and the informal. **Formal** private provision includes all facilities and equipment that are essential to the operation of municipal systems. Piped water supply requires in-house plumbing, for example, and electricity supply requires wiring and electrical equipment. Conversely, **informal** private provision encompasses facilities and services that substitute for public facilities and are implemented precisely because the public facilities are either unavailable, too expensive, or for some other reason inaccessible.

3.45 The scope for participation in the implementation of infrastructure systems therefore includes: (i) purely informal infrastructure provision; (ii) the link between informal and formal systems; (iii) user contributions to the implementation of public facilities; and (iv) private provision of formal infrastructure facilities.

Informal and self-help implementation

Issue 2.1 Self-help provision of informal infrastructure services

How can the potential contribution of self-help activities to infrastructure development be enhanced?

3.46 Informal self-help provision is the most elementary contribution of infrastructure users to the provision of facilities and services. This type of activity may be individual (for example, the construction of an on-site soak pit latrine) or communal (for example, the local organization of neighborhood solid waste collection). In most cities in developing countries, this type of service provision is of considerable importance.

3.47 The first step that governments should take toward supporting informal infrastructure provision is to recognize that people have the right to informal self-provision when public systems fail to serve them. Numerous enabling and support measures are possible, including the regularization of tenure rights to encourage private investment and the provision of information on local physical conditions. Further measures include the present and future availability of the infrastructure network to facilitate planning of local improvements, development and dissemination of appropriate technical solutions, technical extension services, training for informal entrepreneurs, organizational support to facilitate community-based improvements, credit facilities for self-help improvements, and so on. These measures may apply to all four strategic orientations and not only to the support strategy.

3.48 While some of the above measures appear to be somewhat transitory, seen as a whole they are very important. In fact, a fundamental but often ignored policy issue is at stake: Are municipal agencies only responsible for the operation and maintenance of existing public facilities, or are they responsible for the quality of service accessible to the entire population, including those people not currently reached by municipal facilities? The attitude of many service supply agencies often corresponds to the former case. However, if authorities were to accept responsibility for the entire population—as public health policies might require—appropriate strategies would be needed for improving infrastructure conditions in every locality in the city, including areas that will not be reached by municipal services for many years to come. Of necessity, such strategies would be based on informal processes of service provision. An area-specific action plan for the immediate improvement and gradual upgrading of services toward a level of regular provision would be designed for each locality in collaboration with community groups. This plan would be adapted to the specific constraints of available formal facilities, environmental conditions, physical development, and population needs and demands. Support for the implementation of such upgrading strategies would include most of the measures noted in the above paragraph.

3.49 The Yogyakarta Urban Development Project, an IUIDP project in Indonesia, is taking this direction. The master plans for water and sanitation include intermediary on-site solutions for areas lying beyond the municipal network. At the same time, a local NGO is working at the community level to raise awareness of alternative community-based solutions and providing credit facilities for on-site sanitary facilities (EWI Engineers and Consultants 1992).

Linking informal and formal systems

Issue 2.2 Interface between informal and formal infrastructure systems

What measures should be taken to enhance the effectiveness of infrastructure service delivery by improving the interaction and coordination between formally and informally provided systems?

The effectiveness of informally provided infrastructure facilities depends very often on their linkage to the available formal network. In many cases, however, the responsible technical agencies will ignore the existence of informal systems, which are considered to be substandard. A coherent resource conservation strategy would preferably seek to enhance the effectiveness of existing informal facilities (both individual and communal), upgrading them where possible and integrating them progressively into the regular municipal system. This approach often requires a reassessment of the design and development strategy of the formal infrastructure system. This adaptive approach was employed in the Sewerage Project in Bandung, Indonesia, and resulted in a large reduction of investment costs for the public sewerage system. Even more important were the considerable savings to the private users, who were able to use the existing outlet (Box 3.4).

3.50 In conclusion, the designed expansion of public infrastructure systems in areas where private and informal systems play an important role should:

- survey and analyze the extent and function of existing and potential informal infrastructure services;
- adapt new public facilities so they are compatible with existing informal systems;
- clarify responsibilities for the operation and further development of facilities between individual households, community-based groups, and public authorities; and
- provide needed technical information and support to individuals and community-based organizations in order to facilitate self-managed operation and improve services within their area of responsibility.

3.51 While certainly important to the community-based approach, these measures are particularly relevant to collaborative strategies.

Technical standards and solutions

Issue 2.3 Technical standards and solutions

What adaptations in technical standards and/or innovations in technical solutions are required to facilitate participatory infrastructure development?

3.52 The technical and organizational characteristics of the infrastructure system must be adapted to the social, economic, and cultural attributes of the participants, and not the reverse. In the rapidly growing cities of developing countries where the need to adopt technical solutions to the prevailing social and economic context is particularly urgent, this fact tends to be forgotten. The prevailing technical standards and regulations often hinder the application of alternative solutions that are also functional, affordable, and popular. The majority of successful participatory approaches have employed low-cost technical innovations that did not conform to current standards or conventional design solutions (see PROFAVELA, Box 2.4 and OPP, Box 2.6).

3.53 Relevant criteria and factors to be considered in adapting technical solutions to the given social and economic conditions are:

Box 3.4. Minimizing the private costs of sewerage: the case of the Bandung Sewerage Project

As in the sewerage master plan for Bandung, Indonesia, conventional sewers are located in the street, and the sewer connection of individual dwelling units is thus at the front of the property. Planners of the second phase of the Bandung Urban Development Project (BUDP) noted, however, that the Dutch-built drainage system was generally situated in a service alley (*brandgang*) between the property rows, behind the houses. Most latrine facilities were thus located at the back of the property in order to discharge directly into the open drain.

Project planners thus devised a way of lowering costs by adapting the new sewer network to the layout of the existing drainage system. From the public viewpoint, savings were possible because the tertiary and secondary sewers could be progressively upgraded by repairing and covering the existing open drains or, if necessary, replacing them with a sewer pipe. Even more importantly, property owners could connect their existing sanitary facility directly to the immediately adjacent and improved sewer line, instead of constructing a private sewer connection from the toilet at the back of the property to the street in front—which in many cases would have meant breaking open the floor of the house.

- *Low-cost.* It is more preferable to implement a low-cost solution that is both affordable to and paid for by the users, than to subsidize a standard solution that may not be economically sustainable in the long run.
- *Demand-orientation.* The solution must correspond to the values and aspirations of the users. Too low a standard—such as pit latrines or public toilets where people aspire to water-borne sewerage—will not mobilize people’s willingness-to-pay and may lead to poor maintenance and/or total neglect (see OPP, Box 2.6).
- *Ability to upgrade.* The design should be adapted to the pattern of incremental informal low-income residential development and anticipate impending improvements in the technical (for example the impact of future improvements in water supply on the design of sanitary systems) and economic contexts of the users.
- *Adaptation to physical constraints.* In many cases the population density in low-income residential areas, and the extreme physical characteristics of the site (such as steep slopes and low-lying swampy areas) pose particular difficulties that must be solved by appropriate technical solutions (see the case of PROFAVELA, Box 2.4).
- *Simplicity and amenability to user maintenance.* In terms of construction as well as maintenance, technical solutions should lie within the capabilities of informal construction enterprises and users. For example, the application of a higher construction standard, such as providing more frequent sewer manholes, may facilitate maintenance and cleaning.

Clearly, these factors will apply to all participatory strategies.

Mobilizing user contributions to public services

Issue 2.4 Users’ contribution to formal system implementation

In what ways may users contribute to the implementation of formal infrastructure system development and how may these contributions be promoted?

3.54 The most elementary concept of participation is that the participants should contribute labor, materials, and/or money to the implementation of government-directed

infrastructure improvements. The experience with this type of participation (which applies mainly to the involvement strategy) is mixed.

3.55 In the Lusaka project, for example, it was found that communal labor did not produce cost-savings (Box 1.2). On the other hand, in projects that aimed primarily at building the community's organizational capacity, communal labor did yield cost-savings (see FUNDASAL, Box 3.5).

3.56 Users' financial contributions to the capital costs of physical improvements have proven to be quite feasible in diverse situations. In the W.R. Subratman KIP in Surabaya, Indonesia, it is estimated that the population contributed up to 54 percent of the total capital costs (Box 2.5). In the CIP in NWFP, Pakistan, a community up-front contribution of 20 percent of the total investment costs is planned (Box 3.9). The precondition for substantial capital contribution is a high level of participation in decisionmaking during the planning phase of the project, and an active role in its implementation. In the CIP, for example, community representatives have a formal role in construction supervision as co-financers and principals of the works.

3.57 Through the elimination of irregularities such as kick-backs, reduction of contractor profits, and effective control of construction quality, the role of community representatives in managing project implementation may contribute more to the efficient use of resources than the cost savings that derive from direct user contributions (see the section on non-governmental organizations in Chapter II).

3.58 A valuable form of user contribution to the implementation process is the system of community contracting. This means that the contract for infrastructure construction is granted to a suitably organized CBO from the community concerned, and not to a private enterprise. Besides eliminating contractor profits and generating short-term employment for the community, the system has an important capacity-building impact. The CBO acquires management skills that may be employed in other local development activities and in the operation and maintenance of the new facilities themselves. Community contracting has been used with considerable success in Sri Lanka's Million Houses Programme (Box 3.3). In the CIP's pilot phase in Pakistan, community contracting was found to reduce costs relative to conventional contracting by a total of 23 percent (Box 3.9).

Private formal infrastructure

Issue 2.5 Role of private facilities in the development of formal infrastructure systems

What consideration needs to be paid to private provision of infrastructure facilities and equipment, to ensure the effective extension and use of public infrastructure systems?

3.59 As noted, the use of public infrastructure services almost always obliges the user to acquire certain facilities or equipment and adopt appropriate patterns for their use. Water supply and sewerage require house connections and installations such as in-house piping, taps, drains, and a sanitary toilet, while electric power consumption calls for in-house wiring and appliances

Box 3.5. The NGO as project manager: FUNDASAL In El Salvador

The Fundación Salvadoreña de Desarrollo y Vivienda Mínima (FUNDASAL) in El Salvador is a highly successful self-built housing program. The program, which received World Bank financing, has been largely government dominated. Nevertheless, FUNDASAL remains a private NGO that has assumed the typical government task of **directing low-cost housing production** on a large-scale. By the late 1970s, FUNDASAL was producing about 1,400 housing units per year, or about one-half of the formal housing production in El Salvador. These were, in fact, the only formally produced housing units affordable to the poorest 50 percent of the population.

A central principal of the program was to consider housing not as an end in itself, as but a vehicle for broader social and economic development. FUNDASAL delivered a coordinated package of services that integrated community-based self-help house construction into processes of community-building, cooperative formation, and research. Three stages of project implementation corresponded to progressive phases of community development. In the first stage, groups of up to twenty households were formed to jointly plan and construct housing units. With the assistance of the NGO, the groups confronted a range of technical, economic, social, and political issues—organizing funding, and facilitating the inputs of members. In the second phase, after the units were completed, a viable organizational structure encompassing up to 150 households was created to deal with common service needs and priorities. The organization, which was supported by a social worker, comprised representatives from each of the home construction groups. In the third phase, the NGO withdrew its personnel as the community groups began to develop their own initiatives and take responsibility for development activities.

Crucial to the success of the program was a clear but simple organizational structure and the provision of a sufficient number of adequately trained staff to assist the community development process, not just to supervise housing construction. Focusing on the central objective of community development, FUNDASAL achieved considerable technical effectiveness as well as a high level of cost recovery (Moser 1987:300-344).

(such as lamps or televisions). Road use may presume the possession of some sort of vehicle (a bicycle, push-cart, motorcycle, or automobile); even garbage collection requires a receptacle and a certain discipline in the collection and transfer of household wastes.

3.60 These private preconditions for the use of public facilities are an implied form of user participation. In effect, they mean that the supply curve for public facilities begins only at a certain threshold value, as determined by the private investment requirements associated with a particular service delivery system. The threshold or entrance cost often includes payments—such as a sewer connection charge—to the public sector supplier, as well as private acquisitions and investments, such as the construction of an in-house toilet suitable for attachment to the public sewer. Insufficient consideration of these private conditions for use of public facilities frequently leads to poor cost-effectiveness of public sector investments. For example, private households often fail to purchase connections to a newly constructed sewer network, and households are sometimes unwilling to replace a reliable water supply from local wells with a relatively expensive piped water connection. If municipal services are unreliable or of questionable quality, the reluctance of potential users may be quite difficult to overcome.

3.61 In Cirebon, Indonesia, officials of the Water Enterprise were able to achieve a rapid expansion in the number of water connections and make full use of the newly constructed water supply by paying careful attention to the demand structure of users. A low-cost yard tap was offered that not only reduced the cost of plumbing, but also facilitated connection sharing among neighbors. While this practice had previously been prohibited, it was promoted under the new policy. Credit facilities were also made available to enable customers to pay for the water connection over a period of time. As a consequence, within a period of fifteen years piped water

service coverage in Cirebon had advanced from 20 percent to over 80 percent of the population (Colenco/Alpinconsult 1994).

3.62 The general lesson is that the design of public facilities needs to pay careful attention to the associated private investment costs to ensure that these are affordable to the intended user groups. Beyond this, the willingness of potential infrastructure service users to make the required private investments may be promoted through user participation in system planning, public information, and technical support to facilitate the adaptation of private facilities. Finally, credit facilities are an important measure for lowering the entrance cost of service access.

Operation and Maintenance

Objective 3 Participation in operation and maintenance

To achieve an optimal long-term flow of services from the available infrastructure systems through effective patterns of use and appropriate participation by the users in operation and maintenance functions.

3.63 The most direct link between users and suppliers is in the operation and maintenance of infrastructure facilities and services. The relevant activities of users are: application for service access; consumption of services; payment of fees; interaction with suppliers in the case of difficulties or service interruptions; and contribution to the maintenance of local segments of the infrastructure facilities.

Efficient use of service systems

Issue 3.1 Use of services

What steps should be taken to promote the full, efficient, and sustainable use of the available infrastructure systems?

3.64 The primary aim of participatory operation and maintenance is to ensure that the available public facilities are employed fully to maximize the economic return on the investment (but not excessively) thus ensuring that the distribution of access is in line with actual needs. It is also important that the facilities are used properly so that unnecessary losses and maintenance costs are avoided.

3.65 Full use and appropriate distribution of available services is best promoted by orienting service provision toward the market demand for services and by charging prices that cover the incremental cost of service provision. Incremental costing “manages” demand by ensuring that the benefits of service consumption are at least as high as the cost of providing the service.

3.66 Beyond these economic considerations, the actual consumption of services is also determined by the awareness and attitudes of the users. Benefits are partly subjective, of course. The perceived benefit derived by a household from garbage disposal services depends in part on people’s awareness of environmental health considerations and their attitudes towards acceptable

waste disposal practices. Public information and awareness building measures thus play an important role in promoting the efficient and effective use of services. The Community Participation Programme in Cirebon, Indonesia, began with a public campaign to improve people's awareness of environmental health issues and requirements of system use and maintenance. The fact that the city received the ADIPURA (clean city) award is a result not only of improved public waste management, but also of improved attitudes of the population toward environmental issues (Box 3.6).

Operational effectiveness

Issue 3.2 Promoting effectiveness of operation and maintenance

What are the potential user roles in the efficient operation and maintenance of infrastructure systems by the responsible institutions?

3.67 Within the framework of demand-oriented service delivery, the operating efficiency of suppliers is promoted more through a responsiveness to the customer and incentives to increase user satisfaction than by means of bureaucratic control from above. Linking revenues to user fees is thus an essential mechanism for promoting efficiency of operation and maintenance.

3.68 Nevertheless, the linked pair of service quality and user payments may, in some circumstances, spiral downwards instead of upwards. Unreliable service delivery has a negative impact on payment discipline, for example. If poor payments lead to a lower quality of service, a vicious circle will ensue. The best way to break such a cycle is to establish channels of communication between users and suppliers that enable the unsatisfied users to exert a positive influence on the supply process. An effective and responsive customer relations facility, complaint department, or ombudsman serves the double function of reducing frustration on the part of users and—by giving more weight to the users' voice—increasing accountability of suppliers.

User contributions to infrastructure operation and maintenance

Issue 3.3 User contribution to operation and maintenance

In what ways may users contribute to the operation and maintenance of local public, community, and private facilities, and how should these contributions be promoted?

3.69 Infrastructure users may make important contributions to the upkeep of public facilities. Common examples are the maintenance and cleaning of public drains, sewer, lines and streets, as well as cooperation in waste management. This participation increases the efficiency of system operation and lowers operating costs for the supplying agencies.

3.70 The degree of user participation in the operation and maintenance of local facilities depends mainly on people's attitudes and the effectiveness of community level organizations. Positive attitudes may be promoted by raising general awareness of environmental health issues (Box 3.6). In Bolivia, the Danida/UNCHS Community Participation Training Project developed

Box 3.6. The CUDP Community Programme in Cirebon, Indonesia

With support from the Swiss Development Cooperation, the Cirebon Urban Development Project (CUDP) was initiated in 1978 with the goal of improving water supply. In a subsequent phase, drainage works, sanitation, and solid waste improvements were introduced. The third phase, CUDP III, which began in 1992, included a Community Participation Programme (CPP) and an institutional development program (see IUIDP, Box 3.4) as complements to the main technical components of infrastructure development in the water supply, drainage, waste water, and solid waste management sectors.

The CPP was introduced as a pilot public campaign aimed at promoting the extensive and proper use of newly provided water supply, drainage, and waste collection facilities, and the community-based upkeep of these facilities. By the end of the six-month pilot phase, the program scope had extended to include the following objectives:

- to develop the capacity of the community to take initiatives to ensure a healthy living environment;
- to assist in developing liaison and communication between the community and the local government (including the technical "line" agencies) to promote more effective operation and maintenance of these facilities and to facilitate community-based improvements; and
- to undertake physical improvements at the local level, based as much as possible on community financing.

In collaboration with an Indonesian NGO, the CPP trained a community organizer and several community mobilizers selected from each neighborhood and assisted them in conducting environmental education programs and forming community action groups. The action groups were supported in conducting "self-surveys" of local conditions, identifying priority problems, and designing feasible improvement measures. After a pilot phase in four neighborhoods, the program was expanded throughout the city. By mid-1993, communities managed and to a large extent (68 percent) financed the implementation of a wide range of improvements including local drains, footpaths, garbage collection bins, waste collection carts, and water connections.

An important component of the program was the Schools Programme on environmental sanitation and public health issues. The program generated broader public discussion through the local media response, and certainly had a long-term positive impact on public health awareness and community-based environmental management capacity.

The Community Participation Programme has also had interesting repercussions on other aspects of the CUDP program. First, community management of local improvements has generated a bottom-up pressure on the municipal infrastructure agencies to provide relevant technical information and support. A Community Forum was thus initiated to facilitate vertical communication between community-based organizations and municipal agencies, and horizontal communication between the CBOs themselves. A transitional unit, whose members include all sectoral agencies, sought to introduce organizational and procedural changes which would enable government institutions to respond more effectively to the community's needs.

Second, local political authorities responsible for annual bottom-up infrastructure investment programming processes (*RAKORBANG*) have noticed that the CUDP Community Participation Programme has considerably facilitated their task. The experience of problem analysis and self-managed improvement programs has greatly increased the community's understanding of local conditions and their capacity to play a meaningful role in the investment programming process (Colenco/Alpinconsult, 1994).

educational and awareness building materials, employing local oral traditions as well as modern media. The materials and program activities have raised general awareness and thus promoted a more active role of the population in maintaining the condition of infrastructure facilities and local environmental conditions (Box 3.8).

3.71 Specific responsibility of user groups and CBOs for system operation and maintenance may best be promoted through their participation in the planning of facilities. As noted earlier, a clear positive correlation was found in the Jakarta KIP between the community's level of participation in project design and the level of upkeep of the drains and roads (Box 2.5). In the Community Infrastructure Project in NWFP, Pakistan, communities have agreed to finance

not only 20 percent of the investment cost of local facilities but also 100 percent of operation and maintenance costs (Box 3.9). In all of these cases, participation of the population in planning and implementation phases generated a positive attitude not only toward operation and maintenance contributions, but also toward the technical and organizational capability needed to assume operation and maintenance responsibilities.

Investment Programming

Objective 4 Demand orientation

To ensure that infrastructure investments are responsive to the real demands for infrastructure services through the appropriate participation of users in investment programming processes.

3.72 The critical issues of investment programming concern: (i) identification of the demands for services; (ii) prioritization of projects for infrastructure facilities to meet these demands; (iii) formulation of a coherent investment program (a derived demand for capital); and (iv) establishing equilibrium between investment needs and available financial resources (Peterson et al. 1994).

3.73 While the market is the most effective and important measure of demand, markets do not always express the full value of services to society. In particular, limitations arise with regard to developmental goals, externalities, and questions of equity. These issues are discussed below in relation to the more policy-based function of planning (see section on long-term planning in Chapter III).

Identifying and measuring demand

Issue 4.1 Measuring market demand

How should planners determine the effective market demand for infrastructure services at each locality?

3.74 As with any private good, the demand for services may be measured by means of willingness-to-pay surveys. In the case of infrastructure services, considerable care is required since survey answers depend very much on the expectations of the respondent. Willingness-to-pay will normally be understated, for example, if respondents believe that the answer will be employed to determine future prices (Whittington et al. 1994). While techniques exist for dealing with such difficulties, it is clear that a broader participation of infrastructure users in investment planning decisions allows a more accurate determination of the real demands. For the infrastructure user, there is a fundamental difference between a demand survey, in which he or she figures as an "object," and a decision process in which he or she participates as a "subject." When potential service users are informed of the investment and operating costs of alternative solutions and the share of these costs which they would be expected to bear, their voice in the decisionmaking processes becomes a reliable measure of the potential benefits of investment alternatives.

3.75 Active participation of users in demand assessment is particularly important when managers attempt to optimize efficiency of resource use by differentiating service demand beyond simple service access into various component dimensions (see Fox 1994:15). These dimensions include capacity (the amount of service that would be consumed at a particular price), quality (the service standards demanded and those which consumers are willing to pay more for), and reliability (the degree of service irregularity that may be accepted at a given price). While it may be possible to estimate various dimensions of demand by means of surveys, this would require that potential users absorb a considerable volume of information concerning the characteristics of alternative solutions. By its very nature, differentiated demand analysis implies a participatory planning process, as opposed to a rapid questionnaire survey.

3.76 The demand for a particular service is not a fixed quantity. Demand depends to some degree on the state of information and/or awareness of the consumer. The demand for sanitary facilities or services is influenced by a person's awareness of public health conditions, for example, and household patterns of waste disposal are normally influenced by the behavior patterns and attitudes of neighbors. Demand measurement is thus closely related to demand management. It is a question not only of collecting information from users, but also of information exchange and communication with them.

Toward sectoral integration

Issue 4.2 Selecting investment priorities

How may planners ascertain, for each location, the appropriate package of infrastructure investments in terms of sectoral priorities, suitable technical solutions, and affordable levels of service?

3.77 In the context of community-based and area-based strategies—and subject to the constraints of community level decision making processes and/or project programming procedures—communities participate directly in defining investment priorities, the desired level of services, and the appropriate technical solutions. At the municipal level, however, demand-oriented investment programming requires workable and effective methods for gathering information on the economic demands for services at each locality, selecting appropriate technical solutions, prioritizing these project possibilities, and integrating them into a technically coherent investment program that corresponds to the available financial means. A flexible planning and budgeting process termed Multi-Sectoral Investment Planning (MSIP) constitutes a practical approach to this task (see Peterson et al. 1994).

3.78 A pertinent example of this process is the Indonesian IUIDP, in which MSIP-type procedures are employed to formulate a medium-term investment program (PJM) (Box 2.7). To date, the effectiveness of this procedure has been limited by the insufficient planning capability and inadequate information of the community and ward-level bodies. With experience, this situation may be expected to improve. However, in general the development of participatory bottom-up planning calls for well targeted capacity-building measures and an appropriate top-down flow of relevant planning information. The Community Participation Programme in Cirebon has shown that the experience of community-based environmental and infrastructure

management may contribute significantly to the effectiveness of bottom-up investment programming at the municipal level (Box 3.6).

Long-Term Planning

Objective 5 Planning and development goals

To ensure that the selected infrastructure development strategy promotes society's goals for urban development, environmental protection, public health, and people's well being.

3.79 In the fast growing cities of developing countries, where resources for plan implementation are scarce and the evolution of problems tends to be more rapid than the production of plans, the long-term master plan has proven to be an unwieldy instrument of limited use. The emphasis in planning methods is therefore shifting in the direction of more flexible short-term approaches such as MSIP (Peterson et al. 1994).

3.80 Nevertheless, the function of long-term planning is very important for two main reasons: (i) to establish the natural resource base and physical parameters for spatially efficient development and (ii) to establish the impact and guiding influence of development goals, policy principles, and ideals on the shorter-term demand-oriented management functions.

3.81 In practical terms, policy-based planning is relevant to the demand-oriented approach in three main areas where the market has a limited capacity to reflect the full value of infrastructure services to society. These relate to long-term development goals, externalities, and equity considerations.

Urban development goals and lumpy infrastructure investments

Issue 5.1 Urban spatial and economic development

What measures are required to ensure that demand-oriented infrastructure service delivery adequately reflects the ideals and goals of future urban economic and spatial development?

3.82 Large-scale infrastructure facilities such as power stations and trunk sewers, which represent major investments over a limited period, are expected to deliver services over several decades. This "lumpy" character of infrastructure investments makes it impossible to fit system capacity to the current service demand at any particular point in time; investments in major facilities are thus inevitably based on anticipated future demands.

3.83 In general, future demands may be projected on the basis of expected demographic and economic growth. A purely technical projection of demand is hardly possible, however. Large infrastructure investments themselves influence future development patterns, and the determination of future demand at particular locations always involves a dimension of social values. Development plans are always statements about how the city **should** develop, not just technical projections of how it **will** develop.

3.84 The projection of future demand at each location is in effect a public articulation of demand founded in part on an image of the desired future of the city. In this sense, long-term infrastructure development planning is a very political process, calling for participation of the public at large as well as the direct participation of the interest groups and communities concerned. In this case, the general purpose of participation is to clarify the relevant values and aspirations of the people, to inform the population of the alternatives and consequences, and to build public support and commitment with regard to the selected development goals and strategies.

3.85 It is hardly practical to present a complete master plan for public discussion; the planning process must be broken down into appropriate segments to isolate key principles and alternatives that may then be subjected to consultative processes. The Yogyakarta Urban Development Project (YUDP) in Yogyakarta, Indonesia, has elaborated plans for this kind of procedure, in the form of Cultural Action Plans and Social Action Plans (EWI Engineers and Consultants 1992).

Environmental protection and externalities

Issue 5.2 Dealing with externalities

What measures are required to determine the real infrastructure service needs where, due to externalities, the market demand does not represent the true value of infrastructure services to society?

3.86 It is a common characteristic of infrastructure systems that a significant proportion of the benefits of infrastructure services may be incurred by individuals or groups other than the immediate consumers. The case of waste water treatment is a common example. The market demand for sewer system services as expressed by customers will evidently not include the benefits of clean water (in other words, the costs of polluted water) that apply to populations living downstream of these users. In such circumstances, public processes are required to measure these additional benefits or costs—usually referred to as externalities—and transform them into an effective public demand for service (Fox 1994).

3.87 Every public process that articulates demand will involve some form of private actions. The very first step is recognition of the need for service improvement. This may be accomplished technically by means of government-sponsored environmental impact analysis, employing established norms for the assessment of environmental quality (e.g., chemical and biological quality of ground water) and/or the economic costs of environmental deterioration (environmental impact analysis). It may also be accomplished through a spontaneous public process in which the people pressure the government to make improvements after local pollution and/or environmental conditions have deteriorated to disturbing levels.

3.88 Following the primary expression of a public demand for services, subsequent stages, including demand articulation, planning, programming, and implementation of required solutions also involve different mixes of public and private engagement. At one extreme, the government may simply decide to implement investments in order to redress the problem, paying for such investments out of general public revenues; one example is the public construction of a sewage

treatment plant that meets national standards of waste water effluent quality. Conversely, the government may involve the private sector in the process by setting standards for individual waste water effluent quality and obliging property owners to construct on-site treatment facilities to meet these standards. Active user participation is essential for compliance.

3.89 The public articulation of demand always gives rise to costs that must be borne by some mix of public and private expenditures. In the end, people—as tax payers, infrastructure service consumers, or entrepreneurs—are the ones who pay. The deeper their involvement in public processes of demand articulation, the more effective will be their participation in financing and implementing solutions. This public process will involve redistribution of responsibilities and costs, either through public expenditures from the general budget, the internalization of externalities into private sector activities on the “polluter pays” principle, or some combination of the two. Its effectiveness depends on public support. Participation in this case means the mobilization of a constituency that is aware of the consequences of externalities and willing to support public efforts to control them (Bartone, Bernstein, Leitmann, and Eigen 1994:43-44).

3.90 Possible measures for building constituencies for environmental protection are numerous. They include top-down approaches via public information campaigns and the political process and bottom-up approaches based on local level awareness building with regard to participatory operation and maintenance and investment programming. It has frequently been noted that communities that have organized to confront environmental problems at the local level will, as a result, become more engaged as constituents in broader environmental protection measures at the municipal and national levels (see Box 2.3).

Poverty and service access: the question of equity

Issue 5.3 Equity considerations

What measures are required to ensure an equitable distribution of service access when poverty and the inability to pay prevents many people from expressing their real service needs in the market?

3.91 When people are too poor to pay for certain goods that the society believes they should have for reasons of equity and public health, these goods are termed “merit goods.” As with “public goods,” private demand does not express the full value of merit goods to society. In this case, however, it is the inability rather than the unwillingness-to-pay that necessitates public articulation of demand. Resources to pay for the higher level of services may come from cross-subsidies, progressive pricing, or tax revenues; donor support may also play a role. As with “public goods,” a redistribution of costs and benefits is implied, and public support is a prerequisite for successful implementation.

3.92 It should be noted, however, that the inability of people to pay for services offered by the municipal systems does not mean that there is not some level of service that they can afford. While a significant proportion of the population in cities of developing countries has no access to municipal drinking water, sewage and/or waste disposal systems, people still obtain some kind of service through informal and/or on-site services and facilities. In some cases—for example in

the case of private water vendors—the unit cost of services is actually much higher than that of municipal services. Except in the case of the most destitute, some level of economic demand for essential services is normally present.

3.93 Strictly speaking, therefore, in most cases it is not the inability to pay that excludes many households from service access, but the municipal government's inability (and often, in the case of irregular settlements, their unwillingness) to supply those services that meet the actual level and conditions of demand. Informal solutions are normally more successful because they adapt the service supply process to the prevailing demand characteristics and service delivery conditions of low-income households. In general, they provide relatively inexpensive solutions that may be accessed at very low threshold cost, consumed in small quantities, and improved incrementally as resources become available. Most importantly, informal systems ignore the tenure status of the consumer. The Khuda Ki Basti incremental housing scheme was successful precisely because it was able to emulate many of these informal supply processes that, as well as being inexpensive, corresponded better to users' needs and conditions of service access (Box 3.2). As a result, low-income households have been able to self-finance many of the essential local infrastructure services.

3.94 It is therefore important to recognize that crucial constraints may lie on the supply-side, and not only on the demand-side. The recommended approach thus involves very careful analysis of the levels and characteristics of existing demand among the low-income communities concerned, while at the same time attempting to devise a strategy for service delivery that suits actual conditions and remains open to progressive upgrading in the future. This approach can only be realized with the close participation of user communities in the analysis of needs and payment capacities, and in the planning, design, and implementation of appropriate solutions. The focus is less on capital (the availability of tangible resources) and more on creativity (the capacity to devise new organizational, technical, and financial solutions that meet the needs and conditions at hand. See, for example, PROFAVELA, Box 2.4).

3.95 There is still a place for merit goods. To provide essential services to low-income communities, some degree of support or cross-subsidy is often required, justified, and indeed feasible. Great care must be taken in the targeting and application of subsidies, however, as higher income groups are very often able to acquire access to subsidized services more effectively than the low-income groups for whom they are intended. To reduce market distortions, direct subsidies should be applied as closely as possible to the users, and not the services. Progressive rate schedules, cross-subsidies, and favorable credit systems to reduce "entrance costs" are effective ways of applying and targeting subsidies.

Monitoring and Evaluation

Objective 6 Participatory monitoring and evaluation

To ensure that those responsible for infrastructure management have access to accurate and up-to-date information on the status of infrastructure systems, levels of service delivery, customer satisfaction, and the environment as the basis for management decisions.

3.96 Monitoring and evaluation is intended to provide managers with the information they require for comparing actual and desired conditions and objectives, and for determining changes required in operation and maintenance activities, investment programs, and/or actual goals and policy principles. The scope of relevant information may include the status and condition of infrastructure facilities, financial and general parameters of responsible institutions, service levels and demands, user satisfaction, and relevant environmental conditions.

3.97 With regard to the monitoring and evaluating function, infrastructure users have a double role: (i) they are the passive source of information concerning demand and user satisfaction, and (ii) they may be active suppliers of relevant information about the levels and quality of service delivery, environmental conditions, and so forth.

Participatory monitoring and evaluation

Issue 6.1 Role of users in infrastructure system monitoring

What are the potential roles of infrastructure users in the monitoring of infrastructure systems?

3.98 Infrastructure users are an excellent potential source of information with regard to the quality of service delivery and the condition of infrastructure facilities and environmental parameters. However, an **effective** role for users in the monitoring process must be recognized and promoted, since uninvited comments and complaints are not likely to lead to improvements and may even be perceived as counterproductive.

3.99 A primary precondition for participatory monitoring and evaluation is a commitment by the institutions concerned to increase their response and accountability to users. The capacity to respond to user feedback depends on the establishment of workable procedures and techniques for gathering and channelling monitoring information. Users or user groups must then be invited to participate in the monitoring activity while being provided with the necessary materials, procedures, and necessary skills.

3.100 The most basic form of an information monitoring channel is a customer relations desk, complaint office, or ombudsman. However, user groups, CBOs, or local officials can also be charged with reporting regularly on specific service frequency/quality measures, related environmental variables (such as condition of local drains, local flooding, and uncollected garbage) and indicators of user satisfaction.

3.101 The Community-Based Environmental Management Information System (CEMIS) (Box 3.7) is a much more far reaching program to elaborate an instrument for participatory monitoring.

Formulation of Policies and Goals

Objective 7 Formulating infrastructure development goals and policies

To ensure that the goals and principles of infrastructure development policy reflect people's values, interests, and aspirations, and that they are actively supported by the population.

Participation and policy formulation

Issue 7.1 Role of participation in policy formulation

What role should people, as infrastructure users and as citizens, play in the formulation of infrastructure development goals and policies?

3.102 The first reason for requiring participation in policy formulation is simply that policy goals must themselves express the values, interests, and aspirations of the people. In particular, the policy framework must establish principles by which the conflicting values and interests of different population groups may be reconciled. Because decisions on infrastructure frequently require trade-offs, it is important that people are aware of development alternatives and the consequences of each alternative, and that avenues are available for expressing their opinions. Transparency in practical questions of governance of infrastructure greatly enhances the effectiveness of public decision making and resource mobilization. When governments are able to assemble an informed constituency, the complex tasks of servicing a fast growing population in spite of failing resources and protecting the quality of the environment in spite of mounting environmental loading will become more manageable.

3.103 Numerous experiences demonstrate that democratic decisionmaking creates a climate that is generally favorable to participation. Such a climate enables the mobilization of considerable human resources and community-based problem solving capacity. The example of Villa El Salvador in Lima, Peru (Box 1.1) and the experience of PROFAVELA in São Paulo, Brazil (Box 2.4) are good illustrations of this potential.

3.104 The general risk associated with broadly based participation is that it may transform into an urban populism that becomes linked to a particular political interest and will thus become unstable if and when the political winds shift, as experienced in Villa El Salvador in Lima, Peru (Box 1.1), and in the successful Million Houses Programme in Sri Lanka (Yap 1993).

Box 3.7. Information system for participatory environmental management: CEMIS

Effective partnership between communities and government authorities in planning and developing infrastructure improvements requires that the relevant planning information is available and understandable to both partners and that procedures are established for communicating this information between the partners. For communities, objective current information on the level and quality of available services, local environmental conditions, and the presence of public health risks is instrumental in raising the community's awareness of the linkages among these risks. It also provides the basis for planning and implementing community-based improvements. At the same time, locally generated planning information constitutes a tool for communities for negotiating with authorities about the priority attributable to their area in the allocation of public investment resources. For authorities and infrastructure managers, coherent and comparable information on a city-wide basis is essential for planning technical strategies, programming investment priorities and coordinating sectoral integration on an annual and medium-term basis.

The Community-Based Environmental Management Information System (CEMIS) is a management tool designed to meet these needs. It is presently being developed and applied on a pilot basis by UNCHS in collaboration with the governments of Indonesia and Ghana. CEMIS will both increase communities' capacity for self-determination and environmental management, and strengthen their ability to act as full partners with local authorities. Authorities will, at the same time, be provided with actual information on real demands and the opportunity to use communities' creative problem solving capacities.

The program, which was launched in early 1994 in both Indonesia and Ghana, is composed of eight modules:

- community preparation and mobilization;
- environmental risk assessment and monitoring;
- assessment of technical options;
- assessment of effective demand (as a function of the resource base of the community);
- priority setting for human settlement interventions;
- community action planning and implementation;
- monitoring and evaluation; and
- strengthening the institutional framework.

The approach's pilot application will extend over a period of 18 months, after which further dissemination among grassroots NGOs and CBOs and government institutions is foreseen (UNCHS 1994b).

*Communication and partnership***Issue 7.2 Establishing channels of communication**

What are the potential channels of information exchange and communication for enabling people to play a useful and responsible role in policy formulation?

3.105 Effective partnership in the public process of policy making depends upon the general levels of information and awareness in the population with regard to development, public health, and environmental quality issues.

3.106 Communication is not only important between the government and various population groups, but also between the different population groups themselves. Dominant groups in urban society often limit communication and information exchange between low-income communities and society as a whole. A stereotyped image of the poor is an effective means of constraining communication. In the public mind, slum populations are thus characterized by violence, criminality, and low morale (see Salmen 1987:38).

3.107 While these images usually bear little resemblance to reality, they may have the effect of justifying the authorities' indifference toward the poor. Lack of communication may

thus serve the interests of wealthy groups while augmenting the insecurity of low-income groups. Communication between the different segments of the society is important in generating mutual understanding and tolerance, both of which are preconditions for participatory policies and innovative problem solving approaches. Communication may be promoted along cultural and social channels, as well as in the environmental protection and service access areas.

3.108 Besides their contribution to the general social and political climate, appropriate channels of information and mechanisms of communication are important to the emergence of decentralized participatory environmental management capacities. The Danida/UNCHS Community Participation Training Programme in Bolivia is a good example of a program that focuses clearly on this function (Box 3.8).

3.109 Information flow is the life-blood of management systems. By providing more effective communication channels and capacities, the Bolivian project has taken the promising approach of supporting management processes. The underlying assumption seems to be that better communication may in itself generate a process of institutional development and a growth of participatory management capacity from within.

Organizational Basis of Participation

Objective 8 Organizational basis of participation

To establish appropriate organizational structures and capacities at the community, intermediary, and government levels, that will enable people to play an effective role in infrastructure management.

3.110 The introduction of participatory approaches to infrastructure management presents organizational questions at two main levels:

- What are the organizational forms and capacities required at the **user and community levels**?
- What are the **mediating organizations** required to enable appropriate interactions between community groups and government authorities?

Community level organizations

Issue 8.1 Community organization

What is the potential extent of participatory infrastructure development management by existing community-based organizations; in what circumstances and how should new organizations be promoted for infrastructure management tasks?

3.111 The central question that arises at the community level concerns the degree to which participatory infrastructure development activities may be channelled through existing user or community organizations, and whether new organizations need to be established. In either case, a further question concerns the form of organizational development that may be needed at the community level. The correct response to these questions will depend on the strategic approach

Box 3.8. Danida/UNCHS Community Participation Training Programme in Bolivia

Community participation is very much part of the way of life among the native cultures of Bolivia. However, designers of the Community Participation Training Programme recognized that government activities in the fields of housing, infrastructure, and public health made very poor use of this potential. Designs tended to be standardized, with little adaptation to local diversities and priorities, while beneficiaries played a quite passive role in development activities and had little awareness of their rights and obligations. The program, which commenced in 1986, thus aimed at improving the government's capacity to apply participatory approaches. The first phase sought to sensitize the technical staff of the Ministry of Urban Affairs (MAU) to the need for participation and train them in participatory methods and approaches.

Through its association with the Social Housing Programme, the program acted as a bridge between the authorities—who were still operating according to the traditional top-down planning approach—and the communities. From this perspective, the program staff came to regard information as the key to empowering communities. Information on project plans and technical options had to be available to people in their own language if they were going to participate actively in decisionmaking and planning processes, and not just contribute their labor. Beyond the training of government staff the program began to develop communication techniques and materials based on oral traditions that are still very alive in the country. Theatre, music, puppet shows, as well as comic-style posters and brochures, were created, staged, and distributed. Training materials covered such topics as community organization, technical aspects of water and sanitation systems, women's participation in self-building programs, legal issues, service maintenance, and health and hygiene. At the same time, the institutional procedures of planning and programming were examined to see where community-based decisionmaking could be brought into the process most effectively. By the second phase (1988-1992), the emphasis had thus shifted to the institutionalization of training for community participation in human settlements programs and national development plans, and the training program had been extended to include professionals as well as communities and local leaders.

At the community level, the main effects of the program were a higher degree of community organization, a more active role in project planning and implementation, and a high level of subsequent investments in individual housing improvement. By 1990, the training program had reached a total of 37,000 beneficiaries in 103 communities, 87 of which are urban.

Having developed effective participatory methods and materials, the next major objective was to devise a sustainable basis for the continued implementation of the program. In view of institutional instability and high turnover of personnel, the outlook for institutionalization within the government structure appeared uncertain. In 1993, the program thus decided to transform itself into an autonomous self-supported foundation for promoting human settlements: PRO-HABITAT. The main development objective of the foundation is to provide services and methods that enable public programs to incorporate training and community participation into national housing policies. Since its founding, PRO-HABITAT has secured two inter-institutional agreements for work with the Community and Child Survival Programme financed by USAID and the Ministry of Health, and with the Social Investment Fund for development of institutional and community training in water and sanitation programs.

PRO-HABITAT's dependence on government and development agencies as clients should ensure the program's orientation towards real institutional demands. By building the government's capacity to inform, train, and collaborate with beneficiaries, the program should, at the same time, empower communities to become more active protagonists in shelter programs (Vance 1994).

being applied and the kind of partnership envisioned between user communities and government authorities.

3.112 **Organizational requirements.** The **community-based approach** relies on community initiatives. Existing community organizations are clearly at the center of the strategy. In the Nylon Project in Douala, Cameroon, external support organizations assisted in formalizing and strengthening the existing self-organized community groups, and new organizations were required only in relation to new activities such as the management of a market. In the PROFAVELA Project in São Paulo, Brazil, spontaneous neighborhood

associations became effective partners of the government authorities for planning and implementing water supply and sanitation improvements, and in time, acquired increasing technical and organizational skills (Box 2.4).

3.113 The **area-based approach**, with its wider range of partnership arrangements and divisions of authority, demonstrates a correspondingly broad range of possible organizational forms. The specific requirement depends on the tasks and responsibilities that are expected of the community, and on the form of existing local organizations. In Indonesia, the very well developed local administrative system had established work groups for community development (LKMD) on an almost universal basis in the late 1960s, and these institutions provided a good local basis for the Kampung Improvement Programme.

3.114 In the early support strategy phase of the Indian Urban Community Development Programme in Hyderabad, community work was based on existing community organizations, supported by local voluntary welfare organizations. When self-help activities began to advance, many communities felt the need for more formal organizations, so Basti Welfare Development Committees were formed. In less well organized communities, the project's community organizers simply divided the community into groups of ten households with a chosen representative for each group. The effectiveness and activity of these committees varied considerably. Where traditional leaders were elected, little initiative arose. In other communities, a considerable scope of community-based activity was developed. (Cousins and Goyer 1979.)

3.115 The Community Infrastructure Project in NWFP, Pakistan, is also working with existing organizations. Where there is no existing CBO, its formation is encouraged. As preconditions for participation in the project, clear organizational criteria, including elections, regular meetings with minutes, and bookkeeping have been established (Box 3.9).

3.116 Existing organizations appear to be less suited to the **collaboration strategy**, where a correspondence between organizational characteristics (size, geographic area, purpose, and skills) and the infrastructure system (functional requirements) is particularly important. Sri Lanka's Million Houses Programme aimed at building community management capacity through the creation of Community Development Councils (CDC) in each partner community. CDCs were expected to follow established procedures for elections, meetings, and so forth. They served as a forum for community level planning, a channel of communication between residents and the government, and a basis for organizing implementation activities. Training inputs were channelled through the CDC (Box 3.3).

3.117 The Orangi Pilot Project determined that lane organizations—encompassing about twenty households—were the appropriate basis for implementation and maintenance of local (tertiary) sewer lines. In assessing existing organizations, the OPP's main concern was that CBOs had previous experience in initiating works which involved people and that CBOs employed their own resources. A further stipulation was that CBO leadership had not benefitted either politically or financially through intentional disorganization of the people (Hasan 1991). The form of the partner CBO was left open. The main vehicle employed by the NGOs for strengthening local CBOs was their close association with and training of local leaders/activists.

The activists then became the main channel of communication between the program and the people (Box 2.6).

3.118 The **decentralization approach** is more concerned with the relationship between community level organizations and government authorities. The strategy will work with all forms of existing organizations. In cases where the approach has built on earlier area-based or collaborative strategies [as in the Indonesian KIP (Box 2.5) and the Sri Lanka Million Houses Programme, (Box 3.3)], the local organizational capacities created by the **collaboration approach** has proven very valuable. Another good example of cooperation between government and private and popular groups is the Sustainable Cities Dar es Salaam Project (Box 3.9).

3.119 *Organizational issues.* There are three principal characteristics of CBOs which determine their effectiveness in participatory infrastructure development programs: (i) purpose and activities; (ii) representativeness; and (iii) independence.

3.120 It is important that the CBOs have a **development purpose**, rather than merely pursuing some particular interest of a group of people. In this respect, the best indicator will be the activity that a particular CBO has implemented, and whether this activity actually mobilized members' resources to provide some service or improvement. A further indicator will be the degree to which lobbying activities have managed to express people's broad developmental interests as opposed to particular interests.

3.121 It is also important that the organization **represents all members of the community** and not just certain groups or interests. Besides the formal membership, attendance at meetings and broad participation in decisionmaking and resource mobilization are important. In communities where traditional leadership is strong, there is a tendency for the more established and wealthier members of the community to make the decisions and become the sole contributors to supposedly community-financed projects; a traditional concept of welfare is often associated with the leaders' role. However, the orientation of the CBO toward functional issues of infrastructure service provision calls for a broader sharing of power and responsibility. Open elections and affordable but universal contributions of members should be promoted. The method of community action planning (CAP) as practiced in Sri Lanka's Million Houses Programme (Box 3.3), constitutes an effective process for building functionally-oriented CBOs.

3.122 The role of women in community organizations is of utmost importance. In certain societies where women's participation in public meetings and decisionmaking processes is problematic, the creation of separate CBOs for women must be promoted. This is, for example, the case of the CIP in NWFP, Pakistan (Box 3.9).

3.123 Finally, the independence of CBOs from external political association is important. The emergence of effective community organizations can attract the attention of local politicians who may try to use the organization for their own purposes. Politicians can indeed make positive contributions to local level development, but it is important that CBOs remain independent of political associations, in order to avoid divisions within the community and patron-client relationships with authorities. Such problems arose with the UCD program in Hyderabad (Box 3.1) and the Zambian Community Participation Programme (Box 3.11). There is no formula for avoiding such problems; project managers will often need to struggle to maintain the

Box 3.9. Community Infrastructure Project (CIP), NWFP, Pakistan

In 1990-91, analysis of the shelter sector in Pakistan (administered by the World Bank and financed by the Swiss Development Cooperation and Japanese Policy and Human Resource Development Fund) underscored the need to depart from the government's prior approach of providing serviced plots and low-cost housing and shift toward the upgrading of basic infrastructure in low-income settlements. One outcome of the shelter study proposals was the Community Infrastructure Project (CIP) in the North West Frontier Province (NWFP). After some years of pilot development and preparation, the main phase of the project was scheduled to begin in mid-1995.

The CIP aims at improving infrastructure services (water supply, drainage, flood protection, streets and footpaths, sanitation, and solid waste management) in about 55 urban, semi-urban, and rural sites throughout the province, encompassing a population of 60,000 households (420,000 people). A community development component is intended to improve the capacity of the community to participate in the planning, implementation, and operation and maintenance of infrastructure development. The crucial result will be not merely physical improvement, but the elaboration, testing, and institutional establishment of a practical model of community-government cooperation that should greatly improve the targeting of infrastructure investments, the effectiveness of service delivery, and the long-term sustainability of operation and maintenance.

Pilot projects completed at two sites have confirmed the capacity of CBOs to participate in project planning and manage the implementation of physical works under community contracting. High construction quality has been produced at cost-savings of 23 percent as compared with estimates of conventional contracting.

In the main project phase, three main instruments have been designed to structure the relationship between communities and the government's Project Implementation Units (PIUs):

Community Action Plan (CAP): outlines the CBO's status, justification of need, preliminary design of proposed measures, community development activities, environmental assessment, operation and maintenance, financing plan, and arrangements for community project management. The establishment and regular operation of a CBO, as well as completion of a CAP are preconditions for project participation.

Memorandum of Understanding: an agreement between the community and the PIU, detailing the responsibilities for scheme implementation, management, financing, and operation and maintenance.

Community Financing Agreement: a contract between the community and the PIU, specifying the cost, levels of financial contributions, procedures, and payment terms. Communities will contribute 20 percent of all civil works costs (excluding trunk infrastructure) and assume full responsibility for the management and financing of operation and maintenance.

The community development component is being carried out by a team of social organizers attached to the government's Project Management Unit. These social organizers are expected to work with and through local NGOs in each district.

Civil works will be classified into three types according to size and complexity. With the first two being granted mostly to private contractors, the third type, comprising relatively simple works costing up to \$20,000, will be contracted directly to the community (community contracting).

Many difficulties and problems have been overcome during project preparation, including: (i) difficulties in integrating the community organization activities with the technical design process; and (ii) difficulties in establishing the cooperation between and timely inputs from different government agencies. After a lengthy preparation period, all elements are in place for a project that will commence in early 1996. (Source: assorted project documents).

independence of the particular CBO. Successfully completed self-managed development activities remain the best basis for building a CBO's self-reliance.

3.124 **Community development inputs.** Many of the available methods for building the organizational and management capacity of CBOs have been alluded to in this paper. Numerous handbooks and case experiences are available which describe procedures in detail (see, for example, UNCHS; Hasan 1991). The central principle is that organizational development depends on awareness and experience of the group members. The effectiveness of techniques

Box 3.10. Cross-sectoral environmental planning and management in Dar es Salaam, Tanzania

Dar-es-Salaam is one of the cities participating in the UNCHS Sustainable Cities Programme (SCP). As in other cities involved in the program, senior city and national government officials, together with private and public sectors and external consultants, have executed a series of steps to identify, clarify, and prioritize environmental management issues of immediate concern within the city. An environmental profile was prepared based on the identified issues and this was discussed during a city consultation in August 1992.

The consultation resulted in a partnership between the central government, the city council, other government institutions, and private and public sectors. Thirty working groups have been established to work on nine priority issues agreed upon during consultation. These working groups comprise the key stakeholders in urban environmental management and are preparing strategies and detailed action plans to address the most pressing environmental issues.

Each working group has a coordinator responsible for developing a strategy of action, providing technical and logistical support, assisting the preparation and implementation of strategies and action plans, and expanding and integrating strategies into the city's development plan. The involvement of councilors in the working groups has improved coordination and knowledge sharing, and bridged the gap between the different participants in urban environmental management. The project has become a focal point in the city council for the involvement of various stakeholders in managing the city's environmental problems.

With this approach, the SCP has succeeded in widening the basis of participation in development decision making and mobilizing a wealth of local resources through new partnerships among public, private, and community sectors (Mwarika 1995).

such as the "self-survey" and "community action planning" is based on their provision of a vehicle for directing the attention of community members towards local conditions, and to thus promote shared problem awareness as a foundation for organization building.

3.125 Furthermore, it is important to work with those members of the community who are actively concerned with development issues. The effectiveness of these leaders may be enhanced by training and an exchange of experience. When possible, local activists should be given the opportunity to share experiences with other communities and local leaders who have accomplished a specific self-managed development. The demonstration effect is vital to the propagation of social innovations.

Bridging between communities and authorities**Issue 8.2 Bridging between communities and government**

What is the appropriate organizational form for coordinating and linking the activities and functions of infrastructure users and government authorities with regard to infrastructure service management? To what extent can the intermediating structure be government-based? What should be the role of NGOs?

3.126 Some form of intermediary organization is always required to enable collaboration and partnership between CBOs and government authorities. There are essentially three types:

- non-governmental organizations
- special purpose government organizations
- a combination of the above

Box 3.11. Building capacity for community and government collaboration in Zambia: Objectives and Approach

The Danida/UNCHS training program for community participation in Zambia was initiated in 1984. The program concept emerged from the realization that previous large-scale attempts at participatory sites and service development, such as the World Bank's Lusaka Project, 1974-1981 (see Box 1.2), were too expensive and too dependent upon external financing. Attempting to learn from existing self-help initiatives, the program designers recognized that the lack of capacity for community-government partnerships—both at the community and government levels—was a major constraint to effective collaboration for infrastructure development.

The primary target group of the Zambian program comprises mid-level local authority professionals. The goal is to build professional capacity to support the efforts of community residents in settlement upgrading. In the course of a one-year training program and various follow-up activities, participants are taught basic knowledge and skills related to community organization, participatory settlement management, and local level resource mobilization. Theoretical training is conducted at the newly established Chalimbana Training Institute. The training is very much practice-oriented with one-half the training time spent involved in field work on actual upgrading projects. The training program covers the approach, methods, and procedures for community-government partnership in infrastructure service development.

A unique feature of the Zambian program is that in the course of training, actual improvements are realized in the selected settlements. The process of community development starts with a briefing to inform residents on the concept of community participation. Through a series of consultations, community priority needs are established. Technical support from the district council is then obtained for physical planning of improvements. Decisionmaking is vested with the elected community leaders of Residential Development Committees who are responsible for mobilizing, organizing, and managing all improvement activities. Short community-based courses are also conducted for local leaders; workshops constitute the main method for training at the local level.

Organizational Basis

At the **community level**, through a series of workshops and leadership training sessions, a Residential Development Committee (RDC) is formed in each program community. The RDC is non-partisan and represents all CBOs in the settlement. In practice, considerable efforts were required to keep RDC free from the influence of political parties.

The **intermediary function** is assumed largely by the trained local authority staff, assigned to the director of Housing and Social Services. It was found, however, that the performance of the community management program varied considerably from district to district, depending on the degree of commitment of the director. It has thus been recommended that a separate department be created for the program headed by a settlements officer.

At the **national ministry level**, the program is coordinated by a National Steering Committee, which includes members from each participating district as well as the management of the Chalimbana Training Institute. Emphasis is placed on institutionalizing the program on a sustainable basis within the district and national level government structures.

Results and Outlook

In spite of the absence of a "hardware" component, the Zambian program has had a considerable impact at the physical development level. Thirteen district councils are participating and twenty-one squatter settlements have been or are being upgraded, involving a population of about 250,000 people. Improvement measures include the installation of water supply systems, sanitation improvements, roads, clinics, schools, and housing improvements.

The central issue in the present, final phase concerns the sustainability of the training program after the phasing-out of Danida/UNCHS support. Programme evaluation has noted that the program appears somewhat "top heavy," since organizations have been established at various levels of the government hierarchy with no significant change in the allocation of resources to the community level. The scope for participation will be limited if the people find that the program aims only at mobilizing "cheap" community labor, with no corresponding reallocation of public resources. In view of the program's predominant "software" orientation, it may be useful to determine the minimum institutional structure required to support the activities of field extension staff. Increased collaboration with the NGO may bring a reduction in the government hierarchy (Kapopo and Davidson 1993).

3.127 Compared with a governmental agency or department, the NGO can have certain advantages as a mediating organization. As an independent agent, an NGO is able to support the community in its relationship with the government in ways which government organizations cannot. In Dharavi, Bombay, PROUD is an important example of the catalytic impact of a mediating NGO. Due to its independence, PROUD was able to build a network of about 150 CBOs, while establishing effective channels of communication with the government.

3.128 The case of the Million Houses Programme in Sri Lanka offers a good illustration of the advantages of independence of the mediating organization. The program's community organizers often found themselves in an ambiguous position as advocates of the community's interests who, at the same time, were paid by the government and obliged to represent the government's position to the communities. To resolve the conflict of roles, the community organizers established themselves as an independent NGO. They continued to work with the project, but were able to represent the community and promote its objectives of self-reliance more effectively (Box 3.3).

3.129 Another advantage of the NGO is its capacity to experiment and thus create new forms and patterns of organization and new procedures. Experimentation with organizational forms can be very difficult for a government institution. The Orangi Pilot Project is a prominent example of the innovative, experimental capacity of an NGO. Another important example is the ANR, the national association of waste collection workers in Colombia (Box 3.12).

3.130 In some circumstances, a government agency will itself be capable of interacting directly with community level organizations (e.g., the Indonesian KIP; Box 2.5). In fact, the highly innovative Khuda Ki Basti scheme was carried out by the Hyderabad Development Authority, mainly as a result of the efforts of its farsighted management (Box 3.2). Conversely, the government has not adopted the Khuda Ki Basti concept in other situations, and an NGO has been established to replicate the government-sponsored project.

3.131 In most cases large technical institutions responsible for municipal service delivery seldom have the capacity to experiment with new forms of participatory service provision. Where government-based projects have been successful in this regard, it is usually due to the efforts of a pilot approach introduced by relatively small, multi-purpose agencies with some experience in social work. This was the case with PROFAVELA in São Paulo. Once the technical and organizational solutions had been elaborated and tested, larger-scale implementation of the approach could be successfully transferred to the established technical institution (Box 2.4). It is important that the concept for disseminating the outcome of a pilot project is agreed upon and well elaborated.

3.132 The PROFAVELA, OPP, and Khuda Ki Basti experiences illustrate how the capacity of government institutions for mediation between community level organizations and regular management processes may be achieved by scaling up smaller pilot projects originated by either government agencies or NGOs. At the same time, the UNCHS Community Participation Training Programme in Zambia indicates that it is also possible to expand the government's capacity for participatory management capacity through large-scale, top-down, practice-oriented training and institution building programs (Box 3.11).

Box 3.12. Private sector solid waste collection: ANR in Colombia

In Colombia it is estimated that up to 50,000 families live from waste recovery. The scavengers work mainly in the larger cities. Their working conditions are full of health hazards, which mainly affect women and children. Health care facilities and social security benefits are out of reach. Because they work under such inhumane conditions, other members of society tend to treat these people as sub-human. This social exclusion undermines the self-esteem of the waste gatherers. At the family level, long hours and continuous movement make childcare and schooling practically impossible, thus perpetuating the cycle of social isolation. At the economic level, scavengers find it very difficult to collect, store, and market sufficient quantities of recyclable waste to allow them a minimum of savings. Credit sources are not available and thus there is no possibility of improving their working facilities or diversifying. Scavengers remain totally dependent upon middlemen.

The key to progress with regard to all of these problems is organization. Scavengers need to be organized to negotiate with the formal sector suppliers and buyers, as well as local government and social groups. Only then can they develop a common form of social security and overcome the worst forms of social vulnerability. With these ideas in mind, a program for organizing the scavengers of Colombia, the Asociación Nacional de Recicladores (ANR), was launched in 1986 by an NGO, the Fundación Social, operated by a group of private enterprises. The purpose of the program is to socially rehabilitate the scavengers by means of sustainable improvement of their organizational and economic status. The program organizes the scavengers into local associations, trains leaders, helps people establish storage facilities, and improves their working conditions through transport, separation equipment, and facilities. It also directly addresses social problems such as children's education, access to social security systems, and women's issues. The ANR has grown to the point where it now involves 25,000 families, or about one-half of all of Colombia's scavengers.

Most of ANR's local associations have acquired their own storage facilities. The associations work directly with local communities to develop integrated programs for waste management. Organization, equipment and improved techniques have resulted in a 30 percent increase in the scavengers' income.

A social security system for scavengers and other marginal groups has been established by the ANR. Any scavenger family may participate and thus gain access to health care, hospitalization support, and a pension fund. With increasing membership, the system is approaching financial sustainability. In addition, "scavenger houses" have been opened in the main cities. These provide schooling for children, training for adults (especially women), and have become meeting places for scavengers.

The ANR has initiated construction of a pilot plant for solid waste processing in the city of Manizales, with financial participation from public and private sector actors. Fifteen cities in Colombia have signed formal contracts with the ANR in the form of a subcontract or joint venture for waste management (Vanderschueren).

IV. TOWARD PARTICIPATION AND PARTNERSHIP IN INFRASTRUCTURE SERVICE MANAGEMENT

4.1 This paper has considered twenty-one cases of participatory infrastructure development experience in developing countries of Africa, Asia, and Latin America. The focus has been on the needs of poorly served low-income households and communities for whom participatory development of shelter and services is often a necessity. These cases demonstrate that user and community participation in infrastructure service management (i.e., partnerships between communities and government authorities) can yield important benefits for users and government alike. Individual experiences corresponding to each of the four identified strategic orientations have been found to produce positive results. Experience also indicates that the strategies are highly complementary and mutually reinforcing. Participation is most effective when pursued along several pathways simultaneously, in the context of a broadly conceived program to improve infrastructure service management.

Framework for Action

4.2 A central point of infrastructure service management reform is that service delivery processes must be oriented more clearly toward the real demands of infrastructure service users and, in particular, address the demands of low-income households and communities. These service demands arise, for the most part, in low-income residential areas that are often characterized by high population density; irregular tenure status; poor construction quality; and informal, incremental processes of physical development with a high degree of owner involvement in the development process. In practical terms, demand responsiveness requires careful consideration, not just of willingness and ability to pay, but also of the specific conditions under which low-income users and communities are able to express and exercise their demands. Effective provision of services in this context tends by its very nature to be a participatory process.

4.3 In order to increase the capacity for demand-oriented service delivery, government institutions must become less bureaucratic, more flexible, more incentive-driven, increasingly decentralized, and accountable to the users. Users must, at the same time, be provided with the basic right to self-help service improvement, tenure security, organizational and technical support, a policy context supportive of participation, and a larger voice in the public processes of infrastructure service management.

4.4 The main aspects of an infrastructure service management reform program aimed at achieving these conditions are outlined in Figure 4.1. Although the points are numbered from top to bottom, the process should certainly not be seen as top-down or linear. Indeed, it may be initiated at any point on the "field," and should actually be initiated at several points at the same time.

Goals of infrastructure service systems

4.5 A clear definition of infrastructure service goals is required from governments and infrastructure service managers. Under conditions of scarce resources, trade-offs are inevitable and choices should, where possible, be made on the basis of explicit goals and objectives.

4.6 Definition of goals and methods can be a source of confusion. If governments set themselves the goal of constructing a sewage system, they may lose track of the ultimate goal of improving public health conditions. A sewage system is indeed a possible method of achieving this ultimate goal, but not the only one. Alternative methods might include promoting public health awareness and providing credit and technical assistance for private sanitation facilities. These two methods are not necessarily exclusive. However, only after the proper hierarchy of goals has been established will it be possible to determine the most appropriate mix of methods for attaining these goals.

4.7 The main goals of infrastructure service systems normally encompass:

- *quality of life*: public health, well being, security, and comfort;
- *economic development*: productivity and efficiency of economic activities;
- *environmental quality*: sustainability of the natural environment; and
- *governance*: the contribution of infrastructure services to civil harmony and integration.

Performance of infrastructure service management

4.8 The performance of infrastructure service management systems should be examined with regard to:

- *impact*: the degree to which infrastructure service systems contribute to the goals that have been established for these systems;
- *effectiveness*: the extent to which service delivery corresponds to the real needs and demands of society;
- *efficiency*: the extent to which services are being delivered at the lowest possible life-cycle cost; and
- *sustainability*: the long-term physical, financial, and institutional stability of the systems.

Demand-oriented service delivery

4.9 Processes for planning, investment programming, and service operation should be assessed to determine the:

- responsiveness of service delivery to market demand;
- need for public articulation of demand to deal with externalities, normally in relation to environmental quality goals; and

- need for public articulation of demand to deal with equity concerns to ensure that all members of the society have adequate access to basic infrastructure services.

Directions of management reform

4.10 A review of management performance and the demand-orientation of service delivery will lead to an assessment of the strengths and weaknesses of present management systems, including, in particular, the actual and potential roles of the three main stakeholders in infrastructure service management: government institutions, private sector enterprises, and infrastructure service users.

4.11 In principle, therefore, the processes of infrastructure service supply should be broken down and analyzed in relation to the potential and interests of each stakeholder. The general aim is to determine which stakeholder is best qualified to assume each activity or function of service delivery. A coordinated strategy for improving infrastructure service management may then be elaborated, based on an optimum division of roles and responsibilities between government, private enterprises, and user communities. The realization of this strategy implies:

- *institutional development*: including administrative decentralization, mechanisms to promote accountability, and capacity-building;
- *public-private partnerships*: breaking down of activities, determination of contestability, establishment of appropriate forms of public-private partnership, installation of mechanisms for regulation and control; and
- *user participation*: programs for support, involvement, collaboration, and decentralization of participatory infrastructure service management.

Learning by Doing

4.12 The systematic framework outlined above is intended mainly to show how participatory strategies may be embedded in a more general program for infrastructure service management reform. It does **not** suggest that steps one through three must be completed before turning to step four.

4.13 The successful introduction of participatory strategies depends rather on bottom-up processes for the progressive institutionalization of models of partnership between government and communities that have emerged out of trial and error activities at the local level. To promote this process, governments should:

- adapt policies to enable and facilitate the self-help and participatory activities of users and community-based organizations;
- create conditions in which a “learning approach” may be practiced;
- establish special purpose government agencies to carry out pilot programs for participatory infrastructure development and/or replicate successful models developed by NGOs;

- decentralize responsibility for all infrastructure service management functions, in order to facilitate more demand-responsive and participatory approaches;
- ensure that, when the decision is taken to implement a participatory approach, the necessary conditions of time, skills, and resources are provided; and
- actively promote the scaling up of successful models of participatory infrastructure management.

Looking Ahead

4.14 Experience has shown that participation can significantly contribute to more efficient and more sustainable urban infrastructure service management. Although participation is not a panacea, it is almost certain that beneficial results will be achieved.

4.15 To provide sustainable infrastructure services, the local or municipal government will still be a major actor in the process of participatory infrastructure service management. If benefits are to be achieved, it is important that the public sector is prepared to cope with potential change. For the public sector to successfully involve the private sector in providing services, a number of issues need to be satisfied (Gidman et al. 1995) in order to ensure that:

- administrations responsible for providing urban infrastructure services have the capacity to manage the process;
- administrations have the desire, motivation, and commitment, as well as the necessary legal framework, to become involved in the process;
- administrations are able to clearly specify the service and assess and calculate its existing cost;
- the legal framework within the country will permit the process and will not hinder decisionmaking by a private or popular partner;
- the private partner has the necessary interest and skills to undertake public service delivery and measures are in place to prevent a monopoly situation from developing; and,
- administrations acknowledge that the day-to-day decisions will no longer be the responsibility of the public sector in the case where a private partner has taken over the provision of a service. From then on, the public sector will be concerned only with ensuring that the service continues to meet the needs of the different groups of service users, and that the agreed service and quality standards are being met by the private provider. In this respect, the public sector must be prepared to adopt a flexible approach when monitoring its private partner if events, unforeseen at the time of the arrangement, make service provision difficult (for example, major flooding).

4.16 Participatory infrastructure service management can only be successful when local government institutions are willing and able to involve all stakeholders who play a role in infrastructure management. To be effective in the long run, capacity must be increased not only in local government institutions but also in the other partner groups such as CBOs, NGOs, and private sector groups (such as commercial businesses, informal and formal entrepreneurs, research institutions, and consulting firms).

4.17 Capacity-building does not normally require the creation of new institutions, but begins with existing structures and capacities. Experiences of successful practice show that neither a purely bottom-up approach—concentrating on developing instruments at the municipal level—nor a top-down approach of policy change—without the provision of local instruments—can effect rapid reform. Because of the inexperience of many civil servants with the operational modalities of such partnerships, a combined approach has proven to be the most effective and rapid route to improvement (Gidman et al. 1995).

4.18 The Urban Management Programme (UMP) has been involved in a number of initiatives to promote participatory infrastructure service management, including the following:

- a project on “Involving the Private Sector in Municipal Services” in Thailand;
- the UNDP/USAID sponsored “Regional Seminar on Private Sector Initiatives in Urban Housing and Services in Asia and the Pacific” held in Bali in January, 1992;
- through its affiliated “Sustainable Cities Programme” (SCP), the strengthening of environmental planning and management capacity through “city demonstrations;”
- the UMP “Regional Seminar on Public-Private Partnerships in Municipal Infrastructure Services,” held in New Delhi, India in February, 1994;
- the UMP “Regional Seminar on Public-Private Partnerships in Municipal Infrastructure Services,” held in Quito, Ecuador in February, 1995;
- UMP formal publication #13, “Private Sector Participation in Municipal Solid Waste Services in Developing Countries, Volume 1, The Formal Sector,” by Sandra Cointreau-Levine, 1994, and a companion Volume 2 on the Informal Sector which is currently being prepared by UNCHS;
- the policy framework for the UMP Infrastructure Management Component, UMP formal publication #17, “Strategic Options for Urban Infrastructure Management” by William F. Fox, 1994, which has a major focus on public-private partnerships; and
- the UMP working paper No. 4, “Public-Private Partnerships in Urban Infrastructure Services” by P. Gidman, I. Blore, J. Lorentzen, and P. Schuttenbelt, 1995.

4.19 The UMP will continue its efforts to pursue the promotion of participatory approaches in its various activities, and it is particularly hoped that the issue of participation will be increasingly addressed in UMP country and city consultations.

Figure 4.1: Infrastructure management: overview of the policy framework

<p>Goals of Infrastructure Systems: Improve the <i>quality of life</i> of the population and alleviate consequences of poverty Promote <i>economic productivity and growth</i> Protect the <i>urban environment</i> Reinforce the effectiveness of <i>municipal governance</i></p> <p>Performance of Infrastructure Management: <i>Impact:</i> contribution of infrastructure systems to the main relevant policy goals <i>Effectiveness:</i> correspondence of the types, qualities, and quantities of delivered services to the real needs of society <i>Efficiency:</i> lowest life-cycle cost of delivered services <i>Sustainability:</i> long-term technical, ecological, financial, and institutional delivery of service</p> <p>Principles of Demand-Oriented Service Delivery: Responsiveness of service delivery to the <i>market demand</i> for services Public processes to internalize the costs of <i>externalities</i> to society <i>Equitable distribution</i> of service access by adapting supply process to demand patterns of poor users and generating <i>public demand</i> to cover remaining needs</p>								
<p>Directions of Infrastructure Management Reform:</p> <table border="0"> <thead> <tr> <th style="text-align: left;">Institutional Development</th> <th style="text-align: left;">Private Sector Participation</th> <th style="text-align: left;">User Participation</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <p>Enhance management capacity of local government through <i>administrative decentralization</i></p> <p>Establish mechanisms to ensure <i>accountability</i> of infrastructure institutions to users</p> <p>Build the <i>technical, financial, and organizational capacities</i> of responsible institutions</p> <p>Improve the <i>operational capacity</i> of responsible institutions in functions of:</p> <ul style="list-style-type: none"> -Policy making -Long-term planning -Medium-term programming -Implementation -Operation & maintenance -Monitoring & evaluation. </td> <td style="vertical-align: top;"> <p><i>Unbundle</i> service delivery process into the component functions and activities</p> <p>Determine which functions and/or activities are <i>contestable</i> and otherwise suitable for privatization</p> <p>Determine the appropriate <i>form of public-private partnership</i> for each supply process and activity</p> <p>Establish adequate mechanisms for public <i>regulation and control</i> of the privatized service delivery</p> </td> <td style="vertical-align: top;"> <p><i>Support</i> community-based service provision</p> <p><i>Involve</i> the participation of users in area-based infrastructure development</p> <p>Establish <i>programs of collaboration</i> with user communities for infrastructure provision, operation & maintenance</p> <p>Decentralize <i>government-based processes of infrastructure management and open management functions to people's participation</i></p> </td> </tr> </tbody> </table>			Institutional Development	Private Sector Participation	User Participation	<p>Enhance management capacity of local government through <i>administrative decentralization</i></p> <p>Establish mechanisms to ensure <i>accountability</i> of infrastructure institutions to users</p> <p>Build the <i>technical, financial, and organizational capacities</i> of responsible institutions</p> <p>Improve the <i>operational capacity</i> of responsible institutions in functions of:</p> <ul style="list-style-type: none"> -Policy making -Long-term planning -Medium-term programming -Implementation -Operation & maintenance -Monitoring & evaluation. 	<p><i>Unbundle</i> service delivery process into the component functions and activities</p> <p>Determine which functions and/or activities are <i>contestable</i> and otherwise suitable for privatization</p> <p>Determine the appropriate <i>form of public-private partnership</i> for each supply process and activity</p> <p>Establish adequate mechanisms for public <i>regulation and control</i> of the privatized service delivery</p>	<p><i>Support</i> community-based service provision</p> <p><i>Involve</i> the participation of users in area-based infrastructure development</p> <p>Establish <i>programs of collaboration</i> with user communities for infrastructure provision, operation & maintenance</p> <p>Decentralize <i>government-based processes of infrastructure management and open management functions to people's participation</i></p>
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ANNEX A: OBJECTIVES AND ISSUES

Objective 1 Basis of participation

To establish a basis for participatory infrastructure management that allows a clear division of tasks and responsibilities between the stakeholders.

Issue 1.1 Applicability of the different participatory approaches

What are the main advantages, disadvantages, and risks of the community-based, area-based, function-based, and process-based approaches to participatory infrastructure management?

Issue 1.2 Conditions and requirements of alternative approaches

In a specific situation, which criteria will determine the applicability a particular participatory approach to infrastructure management?

Objective 2 Participation in the implementation of infrastructure development

To promote the efficiency and effectiveness of infrastructure development through appropriate forms of user participation in the implementation of infrastructure development.

Issue 2.1 Self-help provision of informal infrastructure services

How can the potential contribution of self-help activities to infrastructure development be enhanced?

Issue 2.2 Interface between informal and formal infrastructure systems

What measures should taken to enhance the effectiveness of infrastructure service delivery by improving the interaction and coordination between formally and informally provided systems?

Issue 2.3 Technical standards and solutions

What adaptations in technical standards and/or innovations in technical solutions are required to facilitate participatory infrastructure development?

Issue 2.4 Users' contribution to formal system implementation

In what ways may users contribute to the implementation of formal infrastructure systems and how may these contributions be promoted?

Issue 2.5 Role of private facilities in the development of formal infrastructure systems

What consideration needs to be paid to private provision of infrastructure facilities and equipment, in order to ensure the effective extension and use of public infrastructure systems?

Issue 2.6 Dealing with externalities

What measures are required to determine the real infrastructure service needs where, due to externalities, the market demand does not represent the true value of infrastructure services to society?

Objective 3 Participation in operations and maintenance

To achieve an optimal long-term flow of services from the available infrastructure systems through effective patterns of use and appropriate participation by the users in operations and maintenance functions.

Issue 3.1 Use of services

What steps should be taken to promote the full, efficient, and sustainable use of the available infrastructure systems?

Issue 3.2 Promoting effectiveness of operations and maintenance

What are the potential user roles in the efficient operations and maintenance of infrastructure systems by the responsible institutions?

Issue 3.3 User contribution to operations and maintenance

In what ways may users contribute to the operations and maintenance of local public, community, and private facilities, and how should these contributions be promoted?

Objective 4 Demand-orientation

To ensure that infrastructure investments are responsive to real demands for infrastructure services through the appropriate participation of users in investment programming processes.

Issue 4.1 Measuring market demand

How should planners determine the effective market demand for infrastructure services at each locality?

Issue 4.2 Selecting investment priorities

How should planners ascertain, for each location, the appropriate package of infrastructure investments in terms of sectoral priorities, suitable technical solutions, and affordable levels of service?

Objective 5 Planning and development goals

To ensure that the selected infrastructure development strategy promotes society's goals for urban development, environmental protection, public health, and people's well being.

Issue 5.1 Urban spatial and economic development

What measures are required to ensure that demand-oriented infrastructure service delivery adequately reflects the ideals and goals of future urban economic and spatial development?

Issue 5.2 Dealing with externalities

What measures are required to determine the real infrastructure service needs where, due to externalities, the market demand does not represent the true value of infrastructure services to society?

Issue 5.3 Equity considerations

What measures are required to ensure an equitable distribution of service access when poverty and the inability to pay prevents many people from expressing their real service needs in the market?

Objective 6 Participatory monitoring and evaluation

To ensure that the instances responsible for infrastructure management have access to accurate and sufficiently up-to-date information on the status of infrastructure systems, levels of service delivery, customer satisfaction, and the environment as the bases for management decisions.

Issue 6.1 Role of users in infrastructure system monitoring

What are the potential roles infrastructure users in the monitoring of infrastructure systems?

Objective 7 Formulating infrastructure development goals and policies

To ensure that the goals and principles of infrastructure development policy reflect people's values, interests, and aspirations, and that they are actively supported by the population.

Issue 7.1 Role of participation in policy formulation

What role should people, as infrastructure users and as citizens, play in the formulation of infrastructure development goals and policies?

Issue 7.2 Establishing channels of communication

What are the potential channels of information exchange and communication for enabling people to play a useful and responsible role in policy formulation?

Objective 8 Organizational basis of participation

To establish appropriate organizational structures and capacities at the community, intermediary, and government levels, which will enable people to play an effective role in infrastructure management.

Issue 8.1 Community organization

What is the potential extent of participatory infrastructure development management by existing community-based organizations; in what circumstances and how should new organizations be promoted for infrastructure management tasks?

Issue 8.2 Bridging between communities and government

What is the appropriate organization form for coordinating and linking the activities and functions of infrastructure users and government authorities with regard to infrastructure service management? To what extent can the intermediating structure be government-based? What should be the role of NGOs?

ANNEX B: DEFINING URBAN INFRASTRUCTURE SERVICES

Sectoral Scope

The term “urban infrastructure services” refers to the services traditionally provided by public works, transport sectors, and utilities (roads and footpaths; mass transportation; water supply; drainage and flood protection; sewerage; solid waste collection and disposal; electric power distribution; street lighting; and telecommunications). In this paper “social infrastructure” such as health, educational, recreational, and cultural facilities are not included in the term “urban infrastructure services.”

Process Approach

The concept of demand-oriented infrastructure management calls for an understanding of infrastructure systems that looks beyond physical facilities and equipment to consider the entire **process of service delivery**. In simple terms, consumers are mainly interested in the **services delivered**, and not necessarily in the hardware required for delivery.

Infrastructure service delivery systems comprise natural, technical, economic, social, and institutional components as well as the processes that combine them and permit their functioning as systems. The general purpose of infrastructure systems is to mediate between human activities and the natural environment, provide needed resources (such as water and energy) and dispose of waste products (such as waste water and garbage). Certain systems, such as transport and communication, will also mediate between people and their activities.

Components and Processes

The “Schema of Urban Infrastructure Systems” represented in Figure B.1 presents a schematic description of an infrastructure system. The main **components** are:

- **government institutions**, the public bodies charged with the task of supplying services;
- **facilities**, physical plants, technical installations, and equipment; and
- **users** of infrastructure services, including households; residential communities; commercial and industrial establishments; and institutions (i.e., people in the role of consumers of infrastructure services).

Two main **processes** link these components:

- **supply (operations and maintenance)**: service provision processes employing available facilities, including activities required to sustain the functional condition of the facilities, equipment, and organizations; and
- **use**: consumption processes based on interactions with the available facilities and supply organizations.

Access to services depends on both supply and use processes. Access is thus influenced by the social organization, behavior patterns, customs, and knowledge systems of the users together

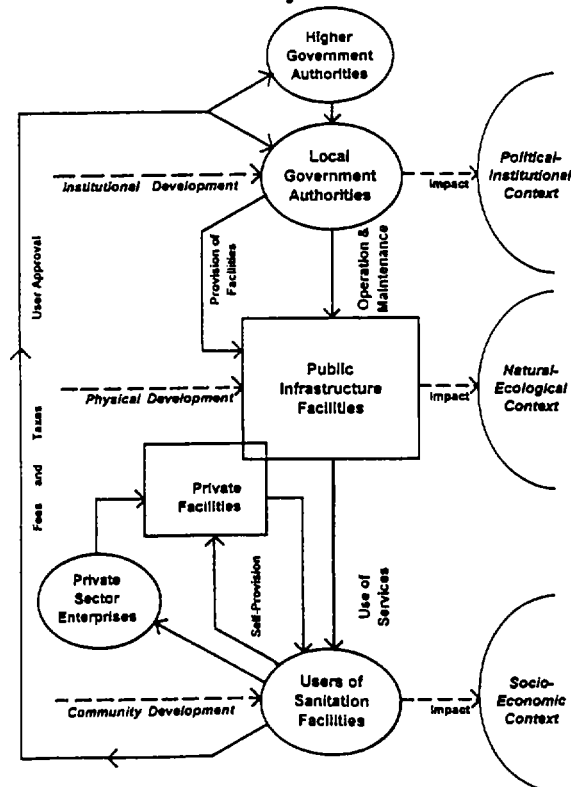
with the capacities, skills, and modes of operation of responsible local authorities. The availability of physical facilities is a major factor in these processes, but not the sole determinant of service access or quality.

The links between service users and infrastructure supply institutions are not only unidirectional; direct payments in the form of user fees, or indirect payment in the form of taxes are the most important form of “feedback.” Feedback from the users may also include various forms of communication with regard to user satisfaction, demands for service improvement or expansion, and maintenance requirements.

Goals of Infrastructure Management

The management of infrastructure systems refers to all activities and functions which seek to direct or guide the main processes of supply and use of infrastructure services. Management is a goal-directed activity (see Simon 1969). Its purpose is to promote those flows of services and “feedbacks” that, through their **impacts** on the socio-economic, natural, and institutional context, achieve the goals of infrastructure management. At the **social and economic** levels, for example, service access would serve the general goals of enabling healthy and secure lives for the population, and promoting the productive and efficient operation of economic activities. With regard to the **natural environment**, the usual goal of infrastructure systems is to keep emissions and environmental loadings down to levels that are low enough to ensure acceptable environmental quality on a sustainable basis. At the **institutional** level, infrastructure systems should produce adequate revenues to maintain the financial stability of suppliers and generate user satisfaction, thus ensuring a positive climate and avoiding public discontent (see Colenco 1994).

Figure B.1: Schema of urban infrastructure systems



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