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Municipal-community cooperation in
urban development

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The Demand for Services

Rapid urban growth in developing countries has created overwhelming demands for services which local governments have generally been unable to meet. Water, sewerage and electricity are usually the responsibility of utility authorities and once established, are extended and improved as demand develops. It is particularly the road and drainage networks and solid waste collection, and demands for their improvement, that create the greatest difficulties for municipal governments. Their financial position is often extremely weak, to the extent that they are barely able to maintain adequate services in the town centres, let alone extend these services to surrounding areas. It is this difficulty in extending and improving access and stormwater/sullage drainage networks that will be addressed in this paper.

Extent of the Service Shortfall

Demands for improvements to access and drainage facilities may derive from all classes of recent urban development. Private developers, having constructed the necessary infrastructure on a site, are usually required to turn over the road and drainage works to the municipal authority for operations and maintenance. In many cases, due to their own limited maintenance capabilities or due to poor construction, municipalities are unwilling to accept these projects and the affected networks fall into disrepair as no-one will accept responsibility for their upkeep. In two major cities in the Philippines it was estimated that 43% of the road and drainage network was in this category. (Gilmore Hankey Kirke, 1982).

Many government housing schemes deliberately and rightly adopt basic levels of service to target the housing to low income groups. However, municipal authorities are often unwilling to accept these projects, conscious that within a year residents will be demanding that the municipality make improvements. For example, the paving of gravel roads. This was the case in Costa Rica where, in spite of these roads failing to meet statutory requirements, the municipalities were obliged to grant the projects the necessary permits and accept them to comply with government directives (Wray, 1988-1). Municipal governments face similar problems where spontaneous settlements become established. In Guatemala City, unpaved roads in the steeply sloping residential areas around the city erode rapidly and create problems of stability. The local authority neither has the resources to improve these roads and drains despite great public pressure, nor is it able to prevent such developments taking place (Wray, 1988-2).

All these housing areas, whether private or government or spontaneous, represent increasing maintenance obligations for local

governments and, as the communities develop, give rise to demands for service improvements.

Community Participation in Low Income Housing

Many housing projects for low income communities are adopting an increasingly participative approach. Housing and support infrastructure costs can be significantly reduced as a result. Also by involving residents in the planning and decision-making stages of a project, a greater sense of ownership of the communal services is introduced, which in turn means that the residents will be more willing to maintain the works that they have helped to construct (UNCHS, 1986). This has significant implications for local municipalities.

The participative approach to settlement upgrading has also encouraged the concept of making progressive improvements, not only for housing but also for the support infrastructure. This has meant that initial costs can be kept to affordable levels and the services subsequently upgraded as required. It is often not clear, however, how this upgrading of services can be carried out or what is the extent of the role of local governments. One approach is the establishment by the municipality of revolving funds for use by communities for the upgrading of infrastructure (Cotton and Franceys, 1988). Other examples of participation are possible.

The Challenge

While these low income housing projects greatly improve living conditions for specific communities, they generally represent a small proportion of the backlog in demand for improved services. The hopelessness of the situation is perhaps most evident in the areas where housing does have legal status and residents contribute to the city coffers through property taxes, but the municipal government does not have the resources to extend its services.

How can other resources be mobilised? What lessons can be learnt from the community participation efforts in low income housing schemes and how can these be applied in the wider urban context? What technologies or construction methods would assist the process of participative upgrading?

Mobilisation of Community Resources

Very considerable effort is required to develop the strong community organisation in low income project areas necessary for the participatory approach to be fully successful. If a similar approach is to be successful in the wider urban context, it is up to the municipality to provide a framework and programme that would use the resources of both community and municipality to best advantage. These may be summarised as follows:

The Community - labour for construction and maintenance work

- local knowledge, security for materials and equipment
- supplementary fund raising activities

The Municipality -professional and technical skills
 -bulk purchase of materials
 -access to equipment
 -collaboration with national agencies
 -allocation of financial resources

Municipal-Community Participation in Latin America

In many Latin American countries, municipalities are particularly weak. San Jose Municipality in Costa Rica is no exception. Here, as a result of community pressure to improve infrastructure and a lack of municipal resources, the municipality established in 1987 a joint programme with local residents (Programa Cooperativo-Comunidad y Municipalidad).

The programme activities may be summarised:

- Community requests an improvement to services
- Municipal social workers brief residents on the programme
- Community formally requests to participate in the scheme
- Municipality evaluates the project, prepares technical designs and estimates, programmes the work and orders materials
- Materials are received by community representatives and work is undertaken with technical supervision from municipal engineers and foremen.

The scheme has proved to be extremely successful, with 120 small projects undertaken in 1987 and 140 programmed for 1988. Typical works include paving of side roads and footpaths, laying of drainage channels, construction of community centres and playgrounds. Initially, loss of materials was a problem but this was usually resolved at the community level. The greatest cause of delay were the procedures that had to be followed for procuring materials. For specialist tasks or where the community did not wish to provide the labour, some or all of the works were contracted out, usually within the informal sector. Savings were still substantial (see Table 1), largely from elements such as profit administration and taxes.

In many projects, it was noted that residents continued to improve the schemes on their own (landscaping for example) and took particular interest in maintenance.

These projects are individually quite small (no more than 100m of footpath or drainage typically) and well within the capabilities of the community to construct or contract out. However, the main infrastructure must be in place to support these schemes (the collector drain or main road links for example), and the municipality must ensure that these interfaces are satisfactorily provided. A clear delineation between what constitutes the local infrastructure network and what is area-wide infrastructure is therefore most important, and housing layouts that assist in this definition clearly are helpful.

Once the concept of cooperation is established, arrangements can be varied to undertake more ambitious types of projects. For example, Los Olivos in San Jose suffered

from flooding from a nearby creek. The cost of these works merited a different approach. An agreement was reached where the community would raise the funds to buy the necessary pipes to culvert the creek and the municipality would use its equipment to locate them and provide fill to the site, with the community completing the finishing touches.

The Use of Appropriate Technologies

It is clear that by tapping community resources, the cost of a project to the municipality can be significantly reduced (see Table 1). Clearly the more this can be done the more a budget can be stretched. The San Jose programme used conventional materials, invariably concrete. With only the cost of materials shouldered by the municipality, any technologies that would reduce such costs would have a significant impact on their contribution.

Access at the local level comprises of lightly trafficked roads, cul-de-sacs and footpaths. Firm, easily drained surfaces are therefore more important than a high load bearing structure. Waste materials can be used for this and show substantial savings. In an upgrading programme in Guatemala City, rubble concrete removed from highways during a large pipe laying project was successfully incorporated into local road improvements and provided a good surface when set in mortar. Other projects made use of locally available rock set in mortar to give 25% savings over the comparable concrete pavement. In brick producing areas, reject bricks could be used as an alternative.

Inter-locking concrete blocks represent a most interesting paving alternative. When laid by contractors, they are generally about 50% more expensive than the equivalent concrete slab, and are often associated with high cost developments. However, the block pavement is very flexible and durable and has the advantage that it can be salvaged if used in a staged upgrading process. It also lends itself to labour-intensive construction techniques, requires low maintenance, and repairs and extensions can easily be undertaken at the community level. If community based labour resources are used for construction, the cost of this type of surfacing may be about 70% of the equivalent concrete pavement laid by a contractor.

This type of surfacing is now being used extensively in the upgrading of low income areas in Guatemala City and a very high quality of construction is consistently being achieved with community labour or direct-hired skilled labour. The success of this paving technique has prompted the project team to investigate the feasibility of purchasing block-making machines and loaning them out to the community for the duration of the project. An estimated 40% reduction in material costs would result making it an even more competitive form of surfacing. Local block making facilities could also provide a valuable source of income for the community.

A comparison of this form of block surfacing with concrete and with surface dressing, which is perhaps the most common surfacing for an upgraded local road and requires the use of a skilled contractor, is given in Table 2.

The shallow, low capacity drainage systems

TABLE 1 COST BREAKDOWN FOR MINOR INFRASTRUCTURE WORKS

| Item | Contractor Based | Community Labour Based | Direct Labour Based |
|--------------------------|------------------|------------------------------|------------------------------|
| Materials | 43% | 43% (municipal element) | 43% (municipal element) |
| Equipment | 3 | 3 | 3 |
| Labour (basic) | 19 | - | 25 (community cost) |
| Social Charges on Labour | 10 | - | - |
| Contractor Tax | 8 | - | - |
| Contractor O'heads | 7 | (no charges by municipality) | (no charges by municipality) |
| Contractor Profit | 10 | | |
| | <u>100%</u> | <u>46%</u> | <u>71%</u> |

(Figures are based on minor drainage works undertaken in Costa Rica 1988; similar breakdown of costs was found to apply in the Philippines)

TABLE 2 COMPARISON OF PAVING MATERIALS FOR LOCAL ACCESS ROADS

| Item | Concrete Pavement-100mm | Interlocking Conc Blocks-100mm | Single Surface Dressing | Asphalt 50mm |
|--------------------------------|-------------------------|--------------------------------|---|--------------|
| Cost complete/m ² | ¢710 | ¢1050 | ¢420 | ¢650 |
| Using community labour | 305 | 490 | n/a | n/a |
| Sensitivity to quality control | moderate | low | high | high |
| Maintenance requirements | low | low | (high- regular resurfacing every 5yrs) | |
| Suitability for reuse | waste reuse only | good | (salvage materials only- suitable for overlays) | |

(Costs were taken from Costa Rican projects in 1988)

normally associated with small improvement schemes lend themselves to construction by community labour provided open channels are adopted. A variety of profiles and materials, using pre-cast or cast in-situ units, may be considered. Where readily available, stones set in mortar (rip-rap walling) can show useful cost savings. There is scope for further innovation in this area. Although community labour has been used successfully to install pipe drainage systems (Guatemala City), greater construction skills are required and as costs tend to be higher than for surface systems and subsequent maintenance more awkward, they should not be used at the local infrastructure level unless absolutely necessary.

Maintenance Considerations

The maintenance of local road and drainage networks also presents difficulties for municipalities with a lack of resources, particularly the conduct of routine maintenance activities using centrally based municipal facilities.

People will often be prepared to maintain the length of road or drain adjacent to their property, but for a network to work properly concerted action is necessary at the community level to ensure certain standards are achieved throughout. If the community has been involved in promoting improvements and subsequently constructing the infrastructure, there is a greater willingness to properly maintain the system, particularly if maintenance activities are well within local capability. However, it is still difficult to sustain the required level of involvement in the long term. In the Philippines, at the local (barangay) level specific days were often designated as 'clean-up' days, which worked well for such tasks as drain cleaning, removal of solid waste and landscaping. Ramos and Roman (1986) have looked at other areas where the barangay organisations can work with government.

Where a shared involvement in maintenance fails, the community may be able to designate a particular individual to look after certain lengths of infrastructure. The concept of the 'length-man', as used in rural road maintenance, is perhaps worth investigating further. This implies though that some form of payment for the service has to be provided. Municipalities may find this approach more effective than trying to use their own central based organisation for routine maintenance work and be able to allocate funds for this work. However, a good organisation for supervision is essential just as it is in rural road maintenance. It may be possible to employ the same people for these local maintenance tasks as for the local collection of solid waste, and fees levied on beneficiaries could cover both services. Local revenue generating activities could also provide funds towards this maintenance work. A project at Guapiles in Costa Rica demonstrates that this can be done, using in this case a community owned concrete hollow block making machine.

The Role of the Municipality

Although schemes may be small, the technical assistance necessary should not be underestimated. Proposals have to be assessed, design details prepared and estimates of materials, equipment and labour needs drawn up. The materials then need to be ordered and distributed and the construction work supervised.

The critical areas appear to be:

- develop project guidelines and publicise the aims of the programme
- ensure the existing government procedures are modified to assist the programme
- ensure that the interface with the major infrastructure network is satisfactory
- allocate adequate technical staff to evaluate prepare and supervise the projects.

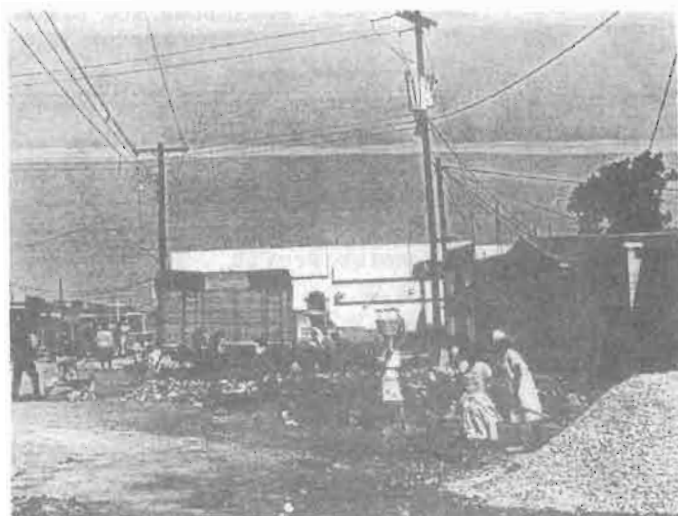
Apart from the setting of guidelines, the effort required to ensure that everyone in the community makes a fair contribution in one form or another is best left to the community to organise and resolve.

The allocation of adequate resources by the municipality is essential. The success of the concept depends upon stretching the municipal resources as far as possible in order to undertake the greatest amount of small infrastructure works. It also depends upon the existence and general expansion of an adequate, primary infrastructure system to support these schemes.

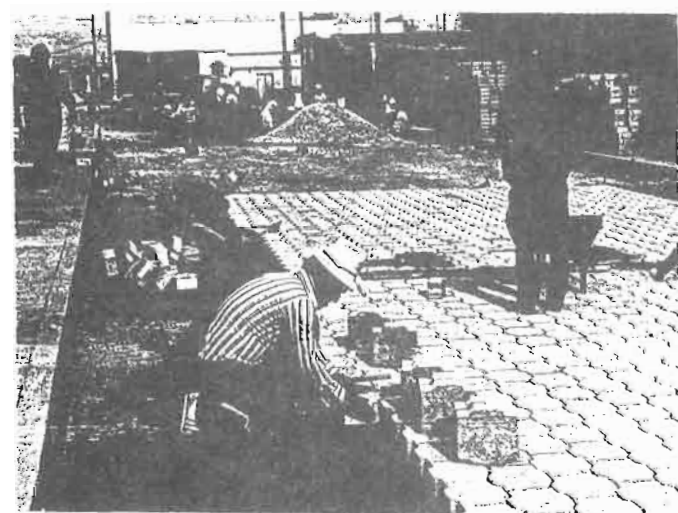
Clearly, a concerted and sustained effort is required at the municipal level if this type of approach is to be a success. There is a general inability of municipalities to meet the demand upon them for services. Any approach that mobilises additional resources and improves service provision should be encouraged. Community participation has been shown to work. Municipalities in other parts of the world might well find this participative approach to be of value and, by working as partners with the community, achieve much more than would be possible where residents are considered purely as beneficiaries or clients.

References

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Community participation in upgrading access, Guatemala City



Use of skilled labour contracted by the community to help in concrete block paving



Improvements to footpaths and drainage through the municipal-community cooperation scheme in San Jose, Costa Rica