

IN - 15111 - 117
ISBN 79028

Financing Infrastructure Upgrading Programs

Mona Serageldin
Associate Director
Unit for Housing and Urbanization
Harvard University Graduate School of Design

Paper presented at
the workshop on Infrastructure Finance
March 20, 1991

Held by
USAID Office of Housing and Urban Programs

Financing Infrastructure Upgrading Programs

Table of Contents

	Page
I. Economic Return	1
II. Cost Structure of Upgrading Programs	1
III. Cost Recovery	2
3.1 Plot Charges	3
3.2 Service Tariffs	5
3.3 Cross-Subsidy Schemes	5
IV. The Impacts of Decentralization	6
V. Conclusion	6

I. Economic Return

Upgrading programs implemented since the late 1970's did reach low income beneficiaries and produce Economic Rates of Return (ERR) ranging between 20% and 30%. These rates were consistently higher than rates for Sites and Services projects (S&S) in the same geographic locations.

Economic analysis is complicated by the number of subsectors and activities that upgrading programs usually encompass and the difficulty in accurately accounting for social benefits. Irrespective of whether the costs and benefits of community facilities are included in the computation of the ERR or not, health, education and other social services in most developing nations are provided free of charge to the users and financed from general tax revenue. Therefore the real challenge in upgrading programs centers on recovering the capital cost of infrastructure and financing municipal rather than social services.

Despite rigorous programming, tight budgeting and efficient implementation, full cost recovery has eluded even the most successful programs. Potential returns on public investments fail to reach anticipated levels. Project Completion Reports (PCR's) consistently state that real returns are below their stated values. Conceptual ambiguities in the formulation of project objectives and structural flaws in the instruments of cost recovery are major causes of the shortcomings observed.

II. Cost Structure of Upgrading Programs

Upgrading programs include four major components:

1. **Infrastructure networks** account for 30% to 50% of project cost of which 30% to 40% is foreign exchange (FE). Location, site characteristics and density have a major impact on cost. Bad soils and steep topography can double the cost of sewerage and drainage works. High densities can preclude lower cost options even where buildings are only one story high. Off-site connections depend on distance from existing trunk lines and carry the highest FE component ranging from 50% to 60%. Their cost is presumed to be recovered from general taxation and user fees and is not directly charged to residents in upgraded areas.
2. **Community facilities** account for up to 20% of project costs of which 40% is FE inclusive of equipment.
3. **Credit facilities** for home improvement and micro enterprises.
4. **Regularization** of land tenure in squatter and informal settlements.

Cost overruns are common in upgrading programs and range from 50% to 200%. Complexity of program structure is compounded by the difficulties involved in working within an existing social setting and in manipulating an organic urban fabric. Land tenure issues, rights of way (ROW) problems, inaccurate reference maps, inadequate soil investigations are common causes of

delay and cost overruns. Upgrading requires a flexibility in approach both to overcome technical problems and secure social acceptance that other infrastructure programs never need to consider.

Institutional segmentation and bureaucratic procedures have usually overwhelmed coordinating mechanisms. Program components tend to proceed independently and function separately sometimes negating the value of the integrated approach.

Average implementation time has stretched over eight years 50% to 100% longer than initially anticipated. Over this length of time cost variations are bound to occur:

- Inflation in the construction industry tends to diverge from projected rates;
- Successive adjustments of designs to unanticipated field situations become increasingly costly;
- Exchange and interest rates fluctuate;
- Densities in the project area mount; and
- Administrative costs and interest payments on loans accumulate and account in the end for 50% or more of the cost overruns.

Delays in project implementation erode anticipated returns through the combined effect of increasing costs and declining benefits. The latter usually turns out to be the more significant of the two factors as the present value of discounted future flows contracts sharply when accrual dates recede.

III. Cost Recovery

Recoverable costs range between 50% and 65% of total investment. Recovery rates have varied widely from under 10% to over 80% depending of the program's structure, the capabilities of the implementing agencies, and the legal and administrative procedures involved. Cost recovery schemes rely on two basic instruments to recover the capital costs of infrastructure improvements:

1. Direct charges to property owners benefitting from the improvement; and
2. Indirect charges to users through utility rates.

Jordan's UDD managed to recover 100% of on-site infrastructure. Few agencies can match this record. Unrecovered costs include off-site infrastructure, land acquisition for Public ROW's and the primary road system. Together with community facilities the non recoverable portion accounts for 37% of total investment. Turnover is low, 20%, and less than 5% have moved out because they deemed the charges too high. Yet UDD has come under increasing political criticism. Beneficiaries see no reason why they should be charged for services provided for free elsewhere in the city and are pressing parliament to correct this injustice. Since the economic crisis precludes widening the scope of subsidization, should this viewpoint prevail, UDD would have to shift its emphasis from upgrading to S&S.

2

Cost recovery has devoted great attention to the ability of beneficiaries to pay for the improvements provided. Too little attention has been given to willingness to pay and capacity to collect.

3.1. Plot Charges

Legally regarded as an extension of the concept of betterment, improvement charges are assessed on affected properties based on formulas combining location, access, size and frontage. Registration of land title is contingent on the payment of this assessment which is an outstanding lien on the property. Since betterment taxes were conceived to recapture the increase in property value attributable to public action, they relate to the use and condition of the affected property and not to cost of the infrastructure provided. In contrast improvement charges are calculated to recover the capital cost of the improvements. This generates pressures to lower standards in order to meet affordability criteria. It is a questionable practice since infrastructure systems are bound to continue in use well beyond the limit of their economic life. Densities have usually doubled between project appraisal and completion dates. They may double again as the holding capacity of sites on the urban fringe reach saturation levels within 10 to 15 years of completion. The viability of the upgrading program is seriously compromised when the improvements provided collapse under the additional load.

Deferred infrastructure programs and progressive upgrading schemes do allow the release of partially serviced land at a lower cost. But in the absence of enforced controls, rapid appreciation of land values and densification can compromise the program's upgrading timetable. Morocco's experimental ZED was suspended when premature re-upgrading needs disrupted municipal expansion plans and capital budgets and politicized the decision making process.

The performance of plot charges in upgrading projects has been constrained by all the factors which impede the performance of real estate taxation:

- Obsolete cadastres and inadequate valuations erode the revenue generation potential of urban real estate;
- Excessive politicization of land regulation and taxation processes encourage evasion; and
- Cumbersome procedures and long delays which seem to characterize land regularization processes worldwide discourage compliance.

Residents feel they are being unfairly charged for parcels previously purchased from presumed owners, acquired under customary law or by prescription. Precariousness of tenure is an incentive to comply but the provision of infrastructure is in and of itself viewed as an adequate assurance of security. Landholders feel little urgency to regularize their titles. This is particularly striking in Abidjan where the dynamics of the housing market have led to the development of compounds with renters making up 80% of the residents. Informal development on the fringe and absentee

landlordism in the older central zones contribute to widespread evasion. Between 1976 and 1982 rents in the upgraded central zones rose by a factor of 6 and on the fringe by a factor of 2. Yet in the areas covered by the cadastre, valuations remained unchanged between 1975 and 1985. Today regularized holdings have finally been entered on the tax rolls in the computerized land register. A flat rate charge will soon be levied. However the performance ratio of real estate taxes ranges between 20% and 30% and there is no reason to believe that collection of plot charges will fare much better.

Delays are a major cause of non recovery. It is difficult to relate between charges levied today and infrastructure improvements provided 8 years earlier. When benefits have been enjoyed for several years without payment, property owners view charges as an unwarranted exaction. The Philippines Infrastructure upgrading program (ZIP) recovered 40% of the investment, less than half the estimated recoverable costs. Delays in the regularization procedures accounted for 23% of the losses and poor collection performance for 46%. (This compares to 19% and 17% respectively in S&S projects.)

Some infrastructure upgrading programs purposefully sought to avoid the legal entanglements of regularization of land tenure. Indonesia's Kampung Improvement Program (KIP) and Manila's Metro Manila Infrastructure Utilities Engineering program (MMINUTE) adopted as their objective to intervene on a large scale in line with the magnitude of the problem. The programs adopted a subsectoral approach focusing on a limited number of infrastructure services. Improvements follow existing ROW's and the programs do not address issues of land tenure.

KIP was conceived as a social program designed to provide minimal standards of improvements to alleviate the most pressing health hazards in the settlements. The program was not concerned with issues of affordability of Kampung dwellers since there was no cost recovery involved. The required funding had to be affordable to the government. This dictated the infrastructure standards provided and the number of Kampung's serviced during each five year phase.

MMINUTE seeks to service large numbers of persons at low unit cost and ensure replicability through cost recovery. Recovery is indirect through service tariffs and increased property tax assessment resulting from the appreciation in value along the serviced corridors (153km). The usefulness of this approach is limited to sites where services are inadequate but properties are already on the tax rolls such as older zones and areas where tenure has been legalized without upgrading. In the MMINUTE program the assessments envisaged could not be collected because holdings were not listed on the obsolete tax rolls, and property owners had no incentive to initiate costly registration procedures.

4

3.2 Service Tariffs

All cost recovery appraisals assume 100% recovery of the portion to be recouped through service tariffs. Segmentation of service functions, partly a result of colonial policies, and defective rate structures mostly a result of social policies, are major causes of non-recovery. Authorities in charge of public utilities depend on central government transfers to bridge gaps in operating budgets. Agencies which are not financially viable cannot be considered adequate sources of cost recovery. Existing pricing structures often include subsidies to lower income groups (e.g. cross-subsidization of tariffs in the Philippines and subsidized house connections in the Ivory Coast).

In Abidjan resident owners confined improvements and connections to their own premises and profit from the resale of water to the tenants in the project area. Absentee landlords refrained from making any improvements to their tenements. Lack of connections compromise cost recovery much as speculative holding of plots in S&S would do. Furthermore, underused systems are inefficient and difficult to maintain.

3.3 Cross-Subsidy Schemes

The inability to structure infrastructure upgrading programs to fully recover costs prompted a growing reliance on cross subsidy schemes to offset deficits. These schemes require the coupling of improvements to an existing built up area with the release of land for new development in an adjacent zone. Success depends on creativity and resourcefulness in structuring the linkages between the two components. Diversification of revenue sources is the most effective method to improve cost recovery because there is a limit to the amount of revenue that can be generated by any one mechanism.

Cross-subsidy schemes allow the public sector to capitalize on the inherent powers of government to leverage its investments. Eminent domain and primary infrastructure are effective instruments to channel investments to benefit limited groups. In the Philippines private developers could build limited income housing if off site infrastructure were provided by the public sector.

In the Hafsia district of Tunis, the imbalances between the value of the centrally located land and the income produced by the existing old buildings created pressures for densification, turnover and conversion to more lucrative commercial uses. The presence of vacant parcels in government ownership and scattered empty lots opened up opportunities for new private development. The market value of this prime land exceeded servicing costs by a factor of 3 to 4 generating the resources needed to subsidize the upgrading of adjacent poor neighborhoods. A creative credit mechanism was designed to circumvent the paralyzing effects of rent controls and allow rehabilitation without displacing tenants. While private owners selected to self-finance alterations and additions to their properties, the mayor found excuses to suspend the rehabilitation of municipal properties preferring instead to replenish municipal coffers by selling off parcels cleared of their dilapidated buildings.

IV. The Impacts of Decentralization

Mayors, city councils and beneficiaries resent the involvement of national agencies in upgrading activities. They consider these agencies to be unresponsive to local needs and concerns. Jordan's UDD and Morocco's ANHI are now forced to work closely with municipal authorities. In support of decentralization, funding for upgrading is increasingly being directly channelled to local governments through municipal development banks.

Municipal authorities value infrastructure projects which help generate local revenue. Uncertainties surrounding transfers from central governments is forcing greater reliance on local resources and local authorities do pursue collection of the revenue they retain. Cost recovery of infrastructure investments is only marginally affected by these developments because in most developing countries, real estate taxation and service tariffs remain a central responsibility which is rarely delegated. Local shares are returned to municipalities in accordance with revenue sharing formulas.

Nevertheless local management of infrastructure investments should be supported. Decentralization has created new relationships of empowerment and accountability, fostering responsiveness to community needs and priorities. The participation of non-governmental organizations (NGO's) in community improvement is a good indicator of the awareness among the local leadership as to the value of infrastructure investments. Community associations operate and maintain public latrines and water fountains in Abidjan, barangay sanitation units, standpipes and water wells in Manila.

V. Conclusion

Sectoral approaches require that programmatic decisions be made within an integrated framework setting policies and developmental priorities as in Indonesia's Integrated Urban Infrastructure Development Program (I.U.I.D.P.). Otherwise funds channelled to local government units (LGU's) will become nothing more than supplementary allocations in the form of assistance to implement a series of unrelated and uncoordinated activities. Infrastructure upgrading programs would then lose their leverage to initiate policy changes in the shelter sector. The opportunity to strengthen municipal technical and managerial capabilities would also be greatly diminished.

At a time of economic crisis, urban programs can no longer be formulated on the basis of redistribution objectives alone. Infrastructure improvements must be justified on economic grounds despite the high cost of retrofitting, the significant foreign exchange component and the need to subsidize off-site connections.

The shortfall in cost recovery has to be offset by increasing the productivity of public investment in infrastructure. Improving the quality of the environment in which private investment

takes place is the most effective mechanism to mobilize private resources. The integration of a community into a wider economic structure unleashes productive capacities which transcend self-improvement on a serviced site. This potential has traditionally been underestimated. Formulated in support of an urban land management strategy, infrastructure improvement programs will stimulate private investment, create employment opportunities and generate public revenue. Well structured programs can achieve leverage ratios of 4 to 6 and fully justify their cost.

In a situation of scarce resources infrastructure investments have to be located where they are most productive not just where they are most needed. In doing so, efficiency will be increased and new mechanisms for cost recovery will emerge through opportunities to:

1. Capitalize on off site infrastructure in priority development zones;
2. Link between non contiguous zones for cross-subsidy purposes;
3. Make the expenditure of funds conditional upon community willingness to invest and undertake specific commitments; and
4. Increase the leverage of invested funds.

1

ABSTRACT

Financing Infrastructure Upgrading Programs

This paper was presented at a roundtable on Urban Infrastructure Financing held on March 20, 1991 in Washington, D.C., organized by the Office of Housing and Urban Programs. The objective of the roundtable was to review options for mobilizing and allocating capital for urban infrastructure, examine and highlight successful experiences and assess cost recovery strategies and applications to various urban services.

This study reviews experience in financing informal sector upgrading. The author cites examples from Morocco, Tunisia, the Philippines, Indonesia and the Cote D'Ivoire and suggests that cost recovery rates have varied from 10 to 80 percent depending on the program structure. Shortfalls in cost recovery, particularly for off site infrastructure, primarily roads and land acquired for public roads, has led to a reliance on indirect service tariffs and cross-subsidy schemes to offset deficits. Therefore, effective urban programs can no longer be based on redistribution objectives alone, but must be justified on economic grounds where shortfalls in cost recovery are offset by increased productivity of public investments. When developed to support an urban land management strategy, such programs can stimulate private investment, create employment opportunities and generate public revenues, fully justifying their cost.