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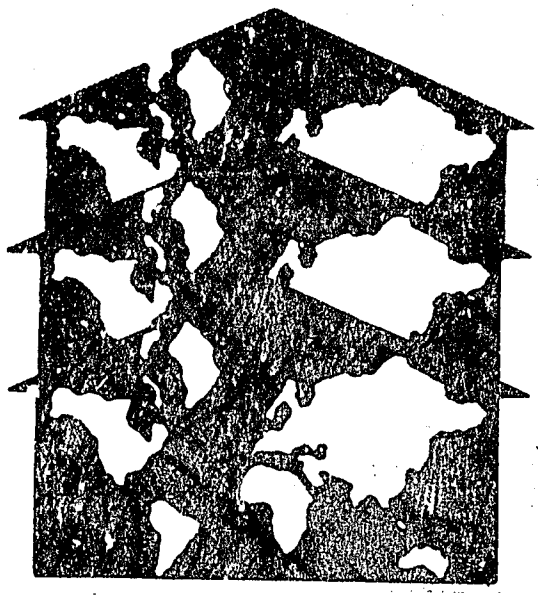

AGENCY
FOR
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OFFICE OF HOUSING
AND
URBAN PROGRAMS

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PREFACE

This document is the principal report of a project sponsored by AID's Office of Housing and Urban Programs under Work Order 27 of its Indefinite Quantity Contract with the Urban Institute. The goals of the project were to help define a strategy for the Office's involvement in urban infrastructure development and management and to identify several pilot projects whose implementation would both illustrate and further the suggested approach.

The report is presented in five parts. Part I is an executive summary and contains recommendations as to the proposed strategy and initial steps in implementation. Parts II through V describe the four pilot projects that were identified and examined as a part of the work.

A number of background papers were also prepared under this Work Order which are not included in this report. These dealt with overall problems and prospects in the water and sanitation sector (including issues of operations and maintenance as well as system expansion) and infrastructure standards issues. Copies may be requested from the Urban Institute.

The pilot projects described in this report were developed in collaboration with Regional Housing and Urban Development Offices (RHUDOs) and their field staffs. In most cases, the major outlines of the project had been developed in the field before Urban Institute researchers made their trips to the site. The authors wish especially to acknowledge the project collaboration of:

- **CABEI:** Lee Roussel, RHUDO; Alexi Panehal and Joe Lombardo, housing officers; Alfredo di Palma, engineer; Gary Becker, housing policy consultant.

- **African Development Bank:** Mike Lippe, RHUDO; George Deikun, housing officer.

- **Jamaica:** Sara Frankel, RHUDO; Jack Hjelt, housing officer.

- **Bangkok:** Phil Gary, RHUDO; Paul Turner, Consultant.

In addition, the authors benefited greatly from discussions with water, wastewater and urban policy experts at the World Bank, the Inter-american Development Bank, the African Development Bank and government institutions in each of the countries where pilot studies were conducted.

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PART I

EXECUTIVE SUMMARY AND RECOMMENDED URBAN INFRASTRUCTURE STRATEGY

INTRODUCTION

This project had two goals: to help define an "urban infrastructure" initiative for the Office of Housing and Urban Programs, and to identify specific pilot studies for which there was policy demand and financing in the field.

We view the pilot studies as the principal product of the project. In constructing them, we have been guided by the rule that the pilot designs should lead to actual projects in the short to intermediate term. Consequently, for each project we have sought to assemble a financing package, and to establish the institutional support that would make the project successful in practice. At the same time, we have selected projects that fit programmatic themes that the Office should, in our judgment, emphasize in its future development of the infrastructure area.

From the process of assembling the pilot studies, we conclude that "urban infrastructure" is a helpful focus around which the Office should cluster part of its program activity. We are convinced that several more projects of the kind described here can be generated and funded, and that they would have desirable policy impacts.

PILOT PROJECT STATUS

Four pilot studies were conducted. The principal outlines of the project design and their current status are summarized below:

CABEI

This project builds on the successful urban upgrading program developed by RHUDO/CA in Tegucigalpa. It would channel HG funds through CABEI to support water and wastewater connections to existing housing plus infrastructure support for sites and services programs in Guatemala, Costa Rica, Honduras, and El Salvador.

The project's infrastructure focus is on expanding water and wastewater connections in poor neighborhoods. However, the project recognizes the resistance of water authorities to expanding coverage, especially for the poor, unless overall water delivery can be improved to the point that expansion in system coverage does not lead to service deterioration for existing (middle and upper income) customers. Consequently, the program includes elements for financing off-site investments in water and wastewater systems. It also provides for assistance in management, revenue collection, and maintenance planning.

The major features of the pilot study were incorporated in the CABEI PID, recently approved by the Latin American Bureau. They are now being elaborated in the project paper. Approximately $40 million of infrastructure financing is contemplated, most of it from HG sources. ESF funds will be used to finance modest off-site system improvements

that directly support the goal of expanding water and sanitation coverage among the poor.

During project development, policy presentations were made to the president and executive staff of CABEI; to Central Bank presidents in Honduras, Guatemala, and El Salvador; to directors of water supply and municipal development institutions in each country, and to the AID missions and ROCAP. CABEI initially was skeptical about the "bankability" of urban upgrading projects, but has become a strong advocate for the program.

The project illustrates two thematic emphases recommended for future PRE/H activity: a concentration on urban upgrading programs as a cost-effective means of meeting the housing needs of poor households, and collaboration with regional development banks.

AFRICAN DEVELOPMENT BANK

For many years, the RHUDO/WA has sought to establish program cooperation with the African Development Bank. Water sector financing appears to offer such an opportunity for cooperation.

The pilot study designed a three-step process of collaboration with ADB. In the first step, PRE/H would commission experts to help ADB prepare its sectoral strategy statement to guide future lending in the water supply sector throughout Africa. In the second step, PRE/H would assist ADB in forming teams to conduct water sector assessments in key member countries (e.g., Senegal, Guinea, Zambia, Kenya), and would help strengthen ADB's internal capacity to evaluate proposed projects, within the framework of each country's broader water policy objectives. In the third step, the RHUDO and ADB would explore the possibility of using HG resources to finance "integrated site development" in support of privately-financed low income housing in one or more member countries.

The first step in this process has been agreed to. Shortly after the consultant's trip to the Ivory Coast, the director of the Infrastructure and Industry division of ADB visited PRE/H in Washington to express support for the proposed program and to request assistance. Two experts will help ADB prepare its water-sector policy and strategy statement in the fall of 1986. Preliminary plans call for PRE/H to participate in the initial policy missions to key individual countries to help establish overall water sector development strategies.

In terms of PRE/H's more general goals, this project holds promise of opening up program activity in West Africa, where the AID missions have been slow to support "urban" programs. ADB also is a potential HG borrower. It has the intermediate-term goal of coordinating water, road, and electricity installation in support of privately provided housing ("integrated site development"). Such programs would be administered directly through the Infrastructure and Industry division of ADB and fit AID policy priorities far better than the housing programs of Shelter

Afrique. ADB is a highly creditworthy borrower (it enjoys a triple A rating in the U.S. bond market). It also is a good vehicle for urban policy dialog.

As part of the pilot study effort, discussions were held with the U.S. Director of the ADB and with REDSO officials. Both were highly supportive of the program recommended here. REDSO indicated that it fit within USAID's grant for institutional support of ADB and thus would be eligible for REDSO financial support, if ADB were to assign it priority.

BANGKOK

The Bangkok pilot study considered two projects. These can be tied together in future work. One project concerns development of a maintenance, financial, and water-loss-reduction strategy for the Bangkok Metropolitan Water Authority. Reductions in water loss are critical in Bangkok not only as a means of avoiding large capital investments in new sources of water supply, but as a means of combating the subsidence that results from reliance on deep wells. The Bangkok water authority is better managed than many third-world water authorities and more open to measures (like full cost recovery, penalties for non-payment of water bills, and leak detection studies) that fit AID's policy dialogue priorities. It, therefore, is a good institution for a pilot project to establish PRE/H involvement in water system maintenance and management.

The second project concerns the Thai government's new policy of making Bangkok pay for itself through user fees and local taxes that fully finance local public services. The goal of this policy is to end public subsidization of the greater Bangkok area, freeing capital for investment in the rest of the country. The AID mission fully supports this objective, and intends to finance a project that helps improve the BMA's collection rate for property taxes.

The proposition that a country's primate metropolitan area should pay for itself is an attractive one for PRE/H to be associated with. Secondary city policies can be pursued far more economically (and efficiently) if, instead of lavish subsidies for smaller cities designed to offset the subsidies already in place for the primate metropolitan area, the price of residing and doing business in the primate metropolitan region can be raised to reflect its true public costs. Decentralization and secondary city development are becoming issues of major importance to AID missions. PRE/H therefore would do well to position itself as the leading source of analysis and project development for this work.

The two Bangkok projects are closely related to each other. A policy of full-cost pricing should be reflected in water fees and the financing of capital investments in the water system. An improved property tax system should be designed in part to help finance water and wastewater improvements through special assessments.

The Bangkok pilot study offers PRE/H the opportunity to connect urban infrastructure to broader tax and revenue policy issues that are of priority concern to the local Mission, and to issues that are likely to be at the heart of future urban development strategies throughout the third world.

JAMAICA

The Jamaican pilot study addresses a different type of policy issue —the cost implications of public standards for urban infrastructure and land development. One of the key obstacles to HG implementation in Jamaica, and many other countries, is the difficulty of producing housing that is affordable by lower income households. In part, this difficulty stems from excessively costly standards for house construction and land development. Even when such standards can be waived for internationally-financed projects, the projects lose their power of replicability, since the standards remain intact for domestically-financed development.

The Jamaica pilot seeks to attack this issue head-on. It proposes both a political process for re-considering standards and an analytical approach for identifying the cost implications of alternative standards.

In its original version, the pilot study emphasized infrastructure standards and suggested a process for convening builders, architects, and government institutions to consider the cost implications of alternative standards and to recommend new standards, where appropriate. As the project was elaborated and discussed with Jamaican authorities, it became apparent that these ideas should be integrated with RHUDO/CAR's broader initiative to improve the performance of Jamaica's Town Planning Department (TPD). In its revised form, the broader project will also deal with reform of the subdivision approval process and management structure and procedures within TPD. A high-visibility panel of top private-sector leaders and top government officials will be convened with a specific mandate to review project outputs, develop recommendations as to reforms, and assure their implementation.

The design for the broader project has been submitted to the Prime Minister for his review. The Prime Minister has supported it, both in principle and in its specific goal of leading to management reforms within the Town Planning Department. AID Mission funding has been reserved for the first phase of the project.

One important product of this project will be a computer framework for analyzing the costs of different building, infrastructure, and land development standards. With some advance planning, this framework could be developed for application in other countries, as well.

AN INFRASTRUCTURE STRATEGY FOR PRE/H

Beyond the pilot studies, we recommend that the Office of Housing and Urban Programs develop "urban infrastructure" as one of the focal points of its program operations.

This is not as new an orientation as it might appear. More and more Housing Guarantee loans are being used to finance sites and services development or urban upgrading. The majority of financing under these loans goes to pay for water installation, street improvements, wastewater facilities and other infrastructure. Since these have been regarded as elements in "housing" programs, however, RHUDOs have worked primarily through housing and housing finance institutions, instead of directly with the public and private institutions that can install, operate, finance, and set standards for basic capital facilities. To establish an urban infrastructure focus is, in large degree, to re-think the way current and future elements of PRE/H programs can best fit together.

RATIONALE FOR AN URBAN INFRASTRUCTURE STRATEGY

There are four tests that a PRE/H program strategy should meet, especially in the current environment:

- The cluster of projects should directly support development of new HG loans, the mainline Office responsibility. They should help position the Office for the next generation of HG lending.
- The programs should strengthen the RHUDO's ability to serve USAID country and regional missions' priorities in urban management, urban finance, and urban development. They should generate mission funding for RHUDO work.
- The programs should directly further the PRE Bureau mandate to identify ways that the private sector role in service delivery can be enlarged, consistent with the goal of economic efficiency. They should lead to institutionally practicable projects for greater private-sector involvement.
- The programs should amplify USAID's role in policy dialog, by facilitating project coordination with regional development banks and with other donor institutions.

The pilot studies developed under this contract meet these tests. We believe that a large cluster of such projects can be developed.

DEFINING AN INFRASTRUCTURE STRATEGY

An "infrastructure strategy" should have both a programmatic focus and what might be called a strategic style.

Programmatic Focus

Three types of programs (or "themes") deserve emphasis. These are illustrated in the pilot project descriptions, and developed at greater length in the background analyses of Part 3.

(i) Urban Upgrading

(ii) Water and Wastewater System Management, Maintenance and Financing

(iii) Infrastructure and Land Development Standards

These areas have in common a close connection to PRE/H's traditional housing responsibilities, but help anticipate a new direction for HGs. The World Bank, for example, (Mayo, Gross and Malpezzi, 1986) has concluded that a much larger share of its "housing" resources should be devoted to upgrading projects, as the type of investment that most effectively leverage private investment resources. Excessively costly infrastructure and land development standards have frustrated implementation of numerous HG projects and will have to be tackled directly rather than circumvented on a program-by-program basis.

The areas also have in common a potential appeal to AID missions. Large metropolitan areas typically have in place billions of dollars worth of public capital assets. How these are managed, maintained, and financed probably more directly affects the "efficiency" of cities than any other public policy. As urban growth impels the Missions to address the efficiency of urban public service provision, as well as the role of the primate city vis a vis secondary cities, RHUDO expertise in the construction, maintenance financing, and management of capital systems should be in demand.

Urban infrastructure need not be developed to the exclusion of other important urban themes. However, it makes sense for PRE/H to focus its development work tightly. If the Office perceives urban upgrading as a priority for future HG projects, for example, it should begin now to develop competency (or at least a network for competent experts) in each of the substantive areas important to the success of upgrading projects. These include land titling and land registration, effective property tax administration, as well as water system management.

Strategic Style

We recommend that PRE/H adopt a decentralized support strategy in building strength in the urban infrastructure area. As in this project, emphasis would be placed on development and implementation of projects in the field. PRE/H Washington can help identify, stimulate, and design these projects. It can selectively add modest amounts to project funding to ensure maximum transferability to other locations.

By focusing its research subjects, the Office also can aim to establish a pre-eminent reputation in a few selected fields. At present PRE/H research too often is seen, even by RHUDOs, as naively repetitive of World Bank or academic research, as highly fragmented and as largely unrelated to field project support. If the Office were to select one or two well-defined subjects it sees as fundamental to future HGs and work with the Missions, it could then market its expertise more effectively. One part of the marketing strategy would involve direct support for project development in the field. The other part of the strategy would involve indirect marketing by establishing PRE/H as the pre-eminent source of analysis and project design in the important areas it has chosen for concentration. The more highly regarded and focused is PRE/H's leadership among the development community at large, the more likely it is to be called on by the Missions for project design.

Next Steps

To give specificity to this strategy, we recommend that PRE/H budget funds for fiscal 1987 be allocated:

(1) to (a) explore with RHUDO/EA infrastructure project possibilities in Kenya, Zambia, and Botswana, particularly in association with the African Development Bank, and (b) implement REDSO financial support for the ADB infrastructure initiative.

(2) to develop a generalized analytic model and strategic process for transferring the Jamaican investigation of infrastructure and site development costs to other countries, and to identify two or three leading country candidates for next round application.

(3) to sponsor approximately six weeks of consultant time in Bangkok to (a) identify the content of next-round work on Metropolitan Bangkok fiscal reform and water and system management, (b) assemble a financing package to support such work, and (c) establish the support of local institutions for the program.

(4) to prepare a paper on specific opportunities for enlarging the private sector role in water supply and sanitation sector operations, with discussion of the institutional feasibility of such steps in specific countries.

(5) to sponsor a book, to be published outside of AID, on urban upgrading. The book would examine all of AID's upgrading experience, as well as that of other donors, and range from analytical theory to field results.

Projects (1), (3), and (4) fall under the category of field project development. Projects (2) and (5) represent centralized support for distilling and disseminating the most important aspects of PRE/H program experience. Activity (5), in particular, should be viewed as part of a systematic strategy to secure PRE/H pre-eminence in one or two important fields of project design.

PART II:

INFRASTRUCTURE PILOT STUDY:

AN URBAN INFRASTRUCTURE STRATEGY FOR CABEI AND RHUDO-CENTRAL AMERICA

Principal Author, George E. Peterson
Date: February 1986

This paper recommends a strategy for establishing a regional urban infrastructure program through CABEI. The analysis is presented within the framework of a five year program to be administered by CABEI and USAID, drawing upon financing provided by HG loans, ESF funds, DA grants, and counterpart financing from CABEI.

The first section below lays out the goals of such a program, examines the constraints on its operation, and recommends a programmatic strategy. The second section considers the role of CABEI, and how a regional program should be differentiated from USAID's bilateral housing and infrastructure programs. The third section addresses the question of moving resources. What constraints will impede timely program implementation and how can these constraints be overcome?

I. BASIC PROGRAM

PROGRAM GOALS

Although Housing Guarantee loans will provide only part of program resources, their restrictions will dictate much of the program orientation. This financing must be used in support of the housing sector and benefit households of below-median income. The program outlined here has four goals:

(1) To extend water and wastewater coverage to marginal neighborhoods in urban areas, and to create the institutional capacity to continue to provide new service extensions after termination of AID/CABEI financing.

Rapid urbanization has placed great strains on the capacity of urban infrastructure systems throughout Central America. These strains have been exacerbated by the financial pressure placed on governments over the last decade as a result of the deterioration of their economies and the worsening of their foreign debt positions. The extent of resource mismatch may be judged by the contrast between the 4.4% annual population growth of Central America's larger cities since 1980 and the estimated minus 4.5% annual real economic growth between 1980 and 1984.

Forced to reduce overall capital investment, many cities have been unable to maintain population coverage rates for their water and sewer systems. The World Bank estimates, for example, that sewerage coverage rates in the San Pedro Sula metropolitan area have fallen from 78% in 1980 to 68% in 1986. Virtually all of the growth in unserviced population has been among low-income households. In Guatemala, only 55% of all urban households have piped water connections in their homes. Since 1980, coverage ratios have fallen.

In the absence of new policies and new funding, Central American countries will continue to be under great pressure to cut back on capital investment by refusing to extend waste and sewer connections to much of the growth in low-income urban population.

Even under conditions of capital shortage, however, national policies to increase waste and sewerage rates deserve priority. These policies do not place great demand on scarce foreign exchange (The foreign exchange component of a project involving extension of secondary pipe systems and house connections is 20-30%.) Extension of water and sewer connections to already constructed marginal housing is one of the most cost-effective housing solutions. Evaluation studies in Honduras place the average cost of infrastructure upgrading at $834 per housing unit vs. an average cost of $6,295 per unit for construction of new basic housing for the same income group. Water and sewer connections not only make maximum use of the investment that private owners already have made in housing, but have been demonstrated to be effective means of triggering further investment by owners in their own homes.

The urgency of providing drinking water and basic wastewater removal to unserviced areas is reflected in citizens' own assessments of their highest priority needs. Careful surveying of Guatemala's secondary towns has found that the number one community need, as identified both by community leaders and individual residents, is household connection to potable water supply. Cost comparisons in Tegucigalpa reveal that trucked water costs 14 to 20 times as much as piped water, depending upon the neighborhood. Residents of Tegucigalpa's marginal neighborhoods also have identified piped water as their foremost community priority. This demand for water installation extends to willingness to pay for the costs of connection. In Tegucigalpa there is now an unfinanced excess demand of $13 million for water and sewer hook-ups in marginal barrios — this is a program that recovers the full costs of installation and charges 15% interest rates for deferred payments.

Expanding water and sewer connections also is consistent with formal U.S. policy. The Central American initiative has set the goal of increasing the number of water and sewer connections by 25% over five years.

(2) To improve the reliability of water and wastewater service, and the quality of drinking water.

In many cities of Central America it is commonplace for water service in marginal neighborhoods to be unavailable for much of the dry season or when pumping equipment fails. Even in the rest of the year, water may be provided only during certain hours of the day or during certain days of the week.

The inadequacies of overall urban water supply do more than lessen the value of piped water connections. They make water authorities reluctant to expand the service network. When there is not enough water to give adequate service to the existing customer base, or not enough pumping pressure to reach all current customers, there is resistance to adding new connections. All of the directors of water systems that we interviewed were of the opinion that they could not significantly add to system connections without simultaneously upgrading the supply of water to the entire urban network.

The rapidly growing demand for water, coupled with the rapid deterioration of the quality of groundwater and surface supplies, has forced water authorities to meet short-term water needs from contaminated sources. Water quality is poor in most Central American cities, and treatment of drinking water is inadequate.

(3) To locate new urban development where infrastructure services can be provided most effectively, in order to restrain total housing costs.

The pattern of urban development throughout Central America is being shaped by squatter or "spontaneous" settlements. Since squatters typically seize marginal land, far from the city center and of poor terrain and drainage, in order to minimize resistance to their takeovers, this settlement pattern perversely picks out the regions with highest social costs for metropolitan expansion. The settlements contribute to urban sprawl, both because of their sometimes relatively low densities and because of the leapfrog pattern in which new settlements are staked out. Locations typically are claimed without taking into account the eventual cost of formalizing water and electricity service or of installing future through road or sewer lines. As a result, the low private costs of informal housing solutions are achieved partly at the expense of creating higher public costs, either in the form of more expensive infrastructure installation or in the form of unsatisfactory community services.

Almost every major city in Central America has a master plan, indicating where new housing development should be channeled and where infrastructure support services will be provided. These master plans have been broadly ignored — not only by squatters but by large-scale developers. Once a significant number of houses has been built, it becomes politically and pragmatically difficult to refuse to extend community services to an area. A new mechanism besides the master plan is needed to limit public cost exposure to inefficient housing locations.

(4) To create short-term equipment through the construction of labor-intensive public works.

Infrastructure investment has the potential for injecting resources swiftly into the local economy, thereby accelerating economic recovery. About two-thirds of the direct costs of an urban upgrading project are labor costs; of these, about two-thirds are the costs of unskilled labor. At typical wage rates for the region, each $1,000,000 of program expenditure creates roughly 110,000 days of work (or 440 man-years). The Kissinger commission set a goal of using labor-intensive public works to create 200,000 short-term jobs.

CONSTRAINTS

Some key institutional constraints prevent Central American countries from fulfilling these program goals on their own and pose obstacles for a CABEI-USAID program, as well.

First, national and municipal water systems are not self-financing, and face declining capital support from central governments. This jeopardizes investment plans, especially for expansion of house connections in marginal neighborhoods.

Over the last decade, about 45% of total investment in water and wastewater systems in Central America has been financed through external assistance. Almost all of the rest has been financed through central government budgets, with occasional support from municipal governments. No water system in Central America contributes significantly to its own capital costs.

External financing over the next decade should continue to show moderate growth in real terms. However, central governments' financial constraints have reduced sharply their ability to provide capital financing. These constraints will become even more severely binding in the future. As a result, water and wastewater systems will find it impossible to finance their total investment needs from traditional sources. Moreover, without financing reforms, the composition of water and wastewater system investment will be strongly tilted toward programs for which international financing is available. Network expansions to marginal neighborhoods are especially vulnerable in this financing environment. At present, USAID is the only significant external funder providing capital assistance in Central America for urban upgrading, although Guatemala has such a program under discussion with the World Bank. (The World Bank loan to DIMA in San Pedro Sula also contains a small component for extending water and sewer connections.)

Over the intermediate and longer term, the solution to this financing dilemma lies in the capacity of water systems to self-finance their capital investment from water and sewer fees and special assessments. Unfortunately, the principle that water systems should recover their capital costs through system fees and charges does not command wide support. Many water systems do not even possess the mechanisms for recognizing and repaying capital costs. Past central government support typically has been extended at zero interest rate, and sometimes without even the requirement of paying back principal amounts. Foreign loans typically have passed through the Ministry of Finance, which then provides capital support to the water system on the same terms as it does through the domestic budget. As a result, water systems have not established mechanisms for calculating the true costs of capital, let alone mechanisms for recovering these costs from users.

A USAID or CABEI strategy that offers capital assistance without simultaneously augmenting the capacity of national institutions to finance future capital investment from the water systems' own resources will have only temporary value.

Second, water systems do not use price signals and market mechanisms to allocate resources, and have resisted doing so.

Many of the inefficiencies in water system operations could be remedied if better use were made of price signals and market mechanisms. A universal policy of charging customers the full incremental cost of new water connections — both the cost of house hook-ups and the costs of secondary lines and pumping stations necessary to serve a new neighborhood — would provide water systems the capital to expand water and sewer coverage. Applied appropriately, a pricing policy of this type also would set different prices for house connections in different parts of the metropolitan area to reflect differences in the costs of infrastructure provision. If different hook-up costs were established beforehand, well publicized, and enforced literally, they could help steer development away from areas of highest cost and towards areas where infrastructure facilities are less expensive to provide.

It is appropriate to recover the capital costs of the general water system through water consumption charges. Not only would this increase the financing capability of the systems, but it would encourage water conservation. In systems where overall water shortage makes it impossible to provide round-the-clock water service to all neighborhoods, the pricing mechanism should encourage water conservation.

USAID has made important progress by persuading authorities to establish water connection charges on cost recovery in its urban upgrading programs.1/ However, the water systems rarely have

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1/ In Tegucigalpa, the municipality recovers the full cost of on-site hook-ups and neighborhood distribution of collection lines installed under AID's urban upgrading program. It distributes the capital costs of these items over the universe of beneficiaries, allocating costs in proportion to the estimated increase in property value that will result from the installation. A special assessment of the anticipated change in market value of neighborhood properties is made by the cadastral department of the municipality. Homeowners elect a period of deferred payment and are charged full interest costs of the underlying loan plus 1% (a total of 15% interest).

In El Salvador, ANDA, the national water authority, administers AID's upgrading program. It is scheduled to re-pay the HG borrowing costs of 52% through hook-up charges levied against individual users and 48% through general system revenues linked to an increase in water consumption charges. The HG funds for this project have yet to be released, although AID Mission ESF funds have been used as an advance on HG financing.

In Guatemala, there is no AID urban upgrading program. Guatemala's municipal water systems routinely charge individual households the cost of house hook-ups. However, they have no program allowing for deferred payment (which would require up-front capitalization.) The inability of most poor households to pay the one-time capital cost of water installation has resulted in very little expansion of service networks to marginal neighborhoods.

(Footnote 1 Continued on Next Page

generalized this policy beyond AID-supported projects. As a result, extreme price differentials have been created. Neighborhoods in Tegucigalpa that participated in AID-funded urban upgrading must pay the full cost of water and sewer installation, based on 15% interest rates. At the same time other poor neighborhoods participating in the water system's own program of neighborhood upgrading pay no costs for installing water service. Such differentials build resistance to hook-up fees, provide strong incentives for inefficient location decisions, and defeat the financing.

Our interviews made clear that water authorities still resist the principle of economic pricing. They continue to view water service as a "right" that households should enjoy without capital cost. Only in large new developments — where the developer is made to bear the cost of water supply and incorporates the cost into the price of housing — has the principle of pricing based on incremental cost recovery been accepted.

Third, in juggling different sources of foreign financing assistance, water authorities often find themselves with crucial bottlenecks that cannot be financed under any foreign program and with conflicting demands for purchasing equipment from specific foreign markets. This becomes an important external constraint upon the system's ability to plan improvements.

As reliance on foreign funding for capital investment increases and the number of foreign countries offering financial assistance grows, national water authorities find themselves increasingly restricted by the terms of project assistance. EMPAGUA — the water system of the Guatemala metropolitan area — illustrates this dilemma. It has in negotiation a large ($200 million) Inter-American Development Bank loan for expansion of water supplies and improvement of trunk distribution. It has a Japanese loan for pump and mechanical replacement; a French loan to study maintenance and management needs; and is negotiating jointly with the municipal government for a World Bank loan for upgrading of marginal neighborhoods. In this array of foreign financing, however, there are no funds for maintenance, repairs, and small parts replacement. This financial constraint threatens to force EMPAGUA into an uneconomic blanket replacement of existing system equipment with new equipment, when small-scale maintenance would be far more cost effective. Guatemala's pumping equipment is now of U.S. construction, but the replacement items available from Japan are incompatible with it. This situation threatens to force Guatemala to scrap prematurely still useful U.S. equipment in order to take advantage of the favorable terms of its Japanese loan.

(Footnote 1 Continued from Previous Page)

In Costa Rica, AID has financed an urban upgrading program through grant funds. Water and sewer hook-ups installed under the program carry no installation fee. Rather, the program requires as a quid pro quo community acquiescence in construction of new basic housing for low-income households.

Fourth, water systems do not have maintenance and water management plans.

One of the most crippling constraints on the operations of water and wastewater systems is the lack of routine maintenance and the lack of water management policies. EMPAGUA is unable to account for 70% of the water that enters its distribution system. It presumes that as much as 50% of all water intake is lost through leaks, although unknown quantities also disappear through illegal connections (including, in Guatemala's case, some instances where private water distribution companies have tapped into public water trunk lines without paying for the water that is diverted). SANAA, the Honduran water authority, has stated that 40-50% of the water entering the Tegucigalpa water distribution system is lost through leakage, but the actual rates are unknown. Accurate metering does not exist either at the point of water intake or at the points of consumption. The World Bank loan to DIMA, the water authority for San Pedro Sula, assumes that some 52% of water is lost through the distribution system.

All of these water systems are committed to extremely expensive plans for increasing water supply. As traditional water sources have been exhausted, the water systems have had to go farther and farther from the city to tap surface water supplies and pipe them to the urban area, or to drill for underground supplies. Both of these activities require large capital expenditures. In contrast, only moderate improvements in the distribution system could add significantly to the amount of water reaching users, at much less capital expense. For example, in a system that loses 50% of its intake through distribution, a reduction in water loss rates to 30% — levels that have been achieved in many developing countries — has the same impact on useable water supply as a 40% increase in total water intake. Better water management could easily save enough water to accommodate a decade's growth in urban water consumption without any new supplies.

Given the long-range population projections for Central American cities and the extensive lead-time that is needed to execute projects that increase basic water supply, better management of water systems should not be viewed as an alternative to supply expansion. Rather, it is a complementary tool, providing some relief for national capital budgets and having the potential for much faster payoff than new supply development. Moreover, it offers AID a desirable opportunity for specialization. El Salvador, Honduras, and Guatemala all have been in negotiation with the Inter-American Development Bank for large water supply projects. AID can best complement these projects through assistance in water management.

STRATEGY

A basic strategy for introducing an AID urban infrastructure program into Central America follows from these objectives and constraints. The elements in such a strategy are:

1. Sectoral Concentration. Each type of urban infrastructure has its specialized engineering and maintenance requirements. Each has its own modes of pricing and cost recovery. Each has its own implementing agencies. It is unrealistic to expect AID or CABEI to be able to establish effective technical assistance and management relations with the entire gamut of organizations having infrastructure responsibilities if four different countries. These considerations argue for sectoral concentration. The most logical candidates for RHUDO and CABEI specialization are water and wastewater systems. These services have a close linkage to housing, and their critical role in the housing bundle for low-income families is well established.

2. At the core of the Program should be urban upgrading projects. RHUDO-Central America has acquired an impressive record of experience in administering such a project in Honduras, and has become knowledgeable in the pricing, engineering, and community issues involved in urban upgrading. No other international lender is supporting urban upgrading in Central America on a significant scale.

The infrastructure issues raised in urban upgrading are very similar to those raised in sites and services and core housing projects. The preliminary thinking for a CABEI program has tended to separate sites and services and core housing, designated as "housing" projects, from urban upgrading, designated as an "infrastructure" project. This distinction probably will prove less and less useful. As multiple projects go forward, it should prove most effective to have a single urban infrastructure unit that offers engineering, economic, and managerial assistance on the infrastructure side of all projects.

3. A Program of expanding water and sewer connections in marginal neighborhoods cannot move forward alone. Such a program places demand upon the rest of the system for pumping facilities, for secondary distribution and collection pipes, for additional water supply etc. Until these demands are met, an upgrading program cannot be successful. Moreover, linking urban upgrading programs to system improvement is a political and administrative necessity. Water system authorities made clear in our interviews that they did not intend to move forward vigorously with new connections, regardless of funding, unless they could simultaneously tackle overall system improvement. **For these reasons, complementary off-site improvements must be a part of AID's program strategy.**

4. AID's support for general system improvements need not involve large capital outlays and should not do so. Instead, AID should adopt a strategy that gives maximum flexibility to its dollars. The current patchwork of external funding has left every large urban system with crucial bottlenecks that it cannot finance. The nature of these bottlenecks varies from country to country, and city to city. In Tegucigalpa the crucial short-run need is for wells and connecting trunk lines that can augment water supply for the next three to five years before the large-scale water supply project financed by IDB comes on line. In the City of Guatemala, the priority need is for repairs and replacement parts, so that EMPAGUA can implement a cost-effective

maintenance strategy. For the secondary cities of Guatemala the urgent need is for flexible funding that will allow INFOM to target infrastructure improvements on those towns which are selected for accelerated development of agricultural markets.

5. **AID's initial support for general infrastructure systems should be delivered swiftly.** One vehicle worthy of consideration is an initial $1 million grant to each infrastructure institution that becomes a CABEI partner in a program of urban upgrading sites and services, or core housing. If these funds are made available quickly to meet priority needs, as defined locally, they should accelerate program sign-ups and set the stage for longer-run policy dialogue.

6. **There will be a continuing need for complementary off-site improvements, and AID and CABEI should establish goals for cost recovery on this type of loan.** To allow for off-site investment requirements, the Program should be structured to anticipated some "standard" ratio of off-site investment to on-site investment in house connections and secondary distribution -- e.g., a matching rate of $1 of off-site assistance for each $2 of urban upgrading or other program loans. Off-site infrastructure improvements will have to be financed at concessionary rates. To this point, Central American countries only have experience with zero-cost or highly subsidized financing for off-site improvements. They are not now prepared to accept loans for this purpose at or near market rates. However, AID should have a policy goal of moving this type of lending toward market rates. It should enter this market with lending pegged at a rate higher than any other current international lender, though still highly subsidized, and plan to raise lending rates over the lifetime of the project. For example, initial lending for off-site improvements could start at 5% and be raised to 8% over the period of the project. At these rates, AID or CABEI financing would still be attractive, while a large step toward recognition of true capital costs would have been taken.

7. **The concessionary rates for off-site system improvements will require that ESF or other low-cost funds be included in the financing mix, and that these funds not be absorbed in their entirety by recapitalizing the Housing and Social Infrastructure Fund of CABEI.**

8. **The Program will succeed or fail largely on the basis of the technical assistance and policy guidance it provides in support of its lending.** The Program should be prepared to provide assistance in three key areas: pricing and cost recovery; engineering; and water and wastewater system management. It should have its own cadre of experts who are available to national water systems to support such technical tasks as identifying the extent of cost recovery realized under different tariff structures; estimating the impact of differently structured tariff rates on water consumption; setting up an information system on pipe failure and leakage that can be used to establish maintenance and replacement priorities; making operational a metering system; or setting up a new system for collecting past due payments on fees and charges.

The recent history of water lending in Central America and elsewhere in the developing world demonstrates that simply writing conditions precedent into lending agreements does not suffice to modify institutional behavior. Recent loans by the World Bank and Inter-American Development Bank have required system-wide metering or substantial reductions in water loss as a condition for disbursals. Loans currently in negotiation will require full cost recovery for capital expenditures by some future date. Yet institutional practice remains much the same as before. In no instance, for example, has the targeted reduction in water loss been achieved.

The next generation of urban infrastructure lending must work collaboratively with national water and wastewater institutions to build the technical and policy base for changing current practices.

9. Program Size. For the four countries of Guatemala, Honduras, Costa Rica, and El Salvador, we estimate that approximately $75 million of urban upgrading and complementary off-site investment is currently identifiable. Even allowing for implementation difficulties (see below), this suggests that a five-year $50 million infrastructure program is manageable. Of this total, at least one third of the funding would have to be made available at concessionary rates.

The maximum size of a CABEI infrastructure program will be influenced as well by RHUDO decisions about bilateral programs in the area. If closely comparable programs are offered bilaterally, they will substitute for CABEI-operated programs, limiting the effective demand for the latter. As noted above, an infrastructure unit within CABEI might well have responsibility for a wider range of programs, including the infrastructure components of core housing and sites and services projects.

II. THE ROLE FOR CABEI

It is by no means self-evident that CABEI should be the instrument for carrying out a regional urban infrastructure program of the above description. In each of our meetings with national Central Bank officials and with national water authorities, the question was raised as to why USAID preferred to operate through CABEI rather than through bilateral assistance. In its bluntest form, this question was posed by the Bank of Guatemala as follows:

> CABEI is a bank without capital — certainly without capital in its Housing and Social Infrastructure Fund. The only visible source of new capital is AID or the member countries' own capital contributions. If an infrastructure program runs through CABEI, this money will cost at least 2% more than it would bilaterally, because of the need to cover CABEI's operating costs. Why can't we simply expand the bilateral assistance program we have under negotiation?

This question, which was raised repeatedly in our country discussions, deserves a direct answer.

WHY CABEI?

The potential advantages from having CABEI administer a regional infrastructure program are fourfold. Few, if any, of these advantages flow automatically from CABEI's participation, however; all require that a program be structured specifically to take advantage of CABEI's strengths.

First, program loans may move faster if they are administered by CABEI rather than bilaterally. CABEI's well-established connections with each of the national central banks should speed loan negotiations in their initial stages. CABEI has managed loans in the past with some of the agencies that would implement an infrastructure program. These contacts, plus CABEI's extensive professional staff, should make it easier to "sign up" implementing agencies as borrowers. Over the past, CABEI has been able to move roughly twice as much HG funding as all of AID's bilateral programs in Central America. In recent years, however, CABEI's loans have been at well below market rates, leading to CABEI's decapitalization. It is the interest-rate advantage, not CABEI's superior institutional connections, that principally accounts for the faster disbursals.

Second, a properly structured loan can help recapitalize CABEI and, in effect, help protect the outstanding HG loans that AID has at CABEI. Stabilizing the Housing and Social Infrastructure Fund's financial condition may be critical to AID, but it holds less importance for the agencies that would implement new infrastructure loans. Indeed, from the local perspective, the need to recapitalize CABEI means that there will be an even wider wedge between the original cost of capital and the interest rate at which money is lent to infrastructure agencies. It is difficult for the implementing agencies not to believe that they would gain from cutting out the middleman's commission to cover operating costs and the middleman's mark-up to recover the costs of subsidizing past loans to other borrowers.

Third, there is the possibility of attracting additional capital from outside the region. CABEI has recently received a low-cost loan from Mexico and is carrying on negotiations for capital contributions with various European and South American countries. If these negotiations should bear fruit, CABEI could play its originally envisioned role of gathering outside capital that otherwise would not be available for investment in Central America, thereby augmenting net investment in the region. Additional sources of capital besides AID and regional members' contributions are especially important over the longer run.

Fourth, CABEI can become a source of policy reform in infrastructure management throughout Central America. Although CABEI cannot be too aggressive in policy dialogue, since it is owned by its member countries, its entry into urban infrastructure lending should be accompanied by an enunciation of principles that make for prudent pricing and efficient management of infrastructure facilities. Its technical staff should be a

consistent voice for these principles when reviewing loan applications and in loan monitoring. Moreover, CABEI should become equipped to offer counsel on all of the policy goals of the program — especially tariff structures, self-financing of capital programs, system maintenance, and system management. CABEI is viewed by Central American countries as their bank, not an outside institution. It therefore has some important advantages in pressing for long-run policy reform, if it adopts a consistent point of view, supported by technical skills that the individual countries can call upon.

DEVISING A PROGRAM STRATEGY FOR CABEI

More than anything, a clear long-term role for CABEI needs to be defined from the outset of program development. A long-term proposal in which CABEI merely borrows funds at the HG market rate and re-lends them for infrastructure investment at the HG rate plus 2% (as the most recent calculation of operating costs would require) is not sustainable, at least if USAID intends to make bilateral HG programs available for the same purposes. Infrastructure agencies do not believe that CABEI's program assistance is worth the 2% commission it would charge for loan handling.

There needs to be a formal delineation between the programs that USAID will seek to develop through CABEI and those it will seek to develop through bilateral assistance. At present, the program lending discussed for CABEI virtually duplicates the program lending being discussed for pending bilateral loans in Honduras and Guatemala, as well as the current unexpended HG loan in El Salvador. This arrangement is a prescription for failure. CABEI cannot expect to sign up infrastructure borrowers as long as these borrowers have the opportunity of borrowing directly from a bilateral HG, for the same purposes and with the same restrictions, but at a lower interest rate. Moreover, program duplication between CABEI and the bilateral programs will lead to unproductive duplication of administrative staffs, administrative functions, technical assistance, and policy dialogue. In the end, it will promote institutional confusion.

CABEI deserves a clear field to develop infrastructure programs of a certain type. These may be all regional programs involving urban upgrading along with their support requirements in system-wide improvements, or they may be as narrowly defined as urban upgrading and sites and services programs in designated cities. But it should be clear which programs belong exclusively to CABEI, so that local agencies do not believe they can go directly to the RHUDO for better bilateral terms.

CABEI also should become the principal vehicle for technical assistance in support of its programs. It should receive Development Assistance support from AID to put together a trained urban infrastructure unit that combines the skills of economists, planners, maintenance engineers, and construction supervisors. This will require additional training for CABEI staff plus some staff re-organization. Hopefully, it will not require any new hires. (This point deserves

careful examination at the Project Paper stage; if the technical requirements of an infrastructure unit cannot be met from CABEI's current staff, the argument for vesting such a program in CABEI is weakened substantially.) The Urban Development Advisor to be hired by RHUDO-Central America should be permanently posted to CABEI for a portion of his or her time.

Three other development assistance goals should have priority. CABEI staff should have the opportunity to see the successful practical application of similar infrastructure lending and technical assistance programs elsewhere. For example, both the Asian Development Bank and the African Development Bank operate infrastructure programs similar to the one that CABEI is seeking to establish. Colombia has long administered a valorization program of the type that can be used to recover the costs of urban upgrading programs. Brazil operates a successful program of infrastructure lending and technical assistance for secondary cities through a national municipal bank. Once the infrastructure unit of CABEI has been designated, AID should support its exposure to successful models of program operation in other regions.

Next, CABEI should establish its own infrastructure evaluation program. This activity would examine why individual programs supported by CABEI have succeeded or failed in their program goals, and make similar inquiries into loan programs in the region supported by other international lenders. For example, the World Bank water metering program in San Pedro Sula should be evaluated for the lessons it will provide for CABEI programs of the same type. CABEI should conduct its own evaluations of AID's bilateral urban upgrading programs and the upgrading programs sponsored by the World Bank in the region. AID should earmark some Development Assistance funds to help set up this evaluation activity and to sponsor outside advisors in the first two or three infrastructure program evaluations carried out by the unit. One of the most valuable permanent legacies of the Program should be the ongoing capacity to evaluate infrastructure lending programs and design new programs that learn from regional experience.

Finally, CABEI and USAID should have a plan for promoting policy dialogue. At the Project Paper stage, three or four key policy goals should be identified, with a plan for involving national institutions in their realization over the five-year program lifetime. Our own candidates for infrastructure policy goals would be: (1) structuring of tariffs and special assessments to permit urban water and wastewater systems to self-finance their capital budgets: (2) establishment of performance and condition monitoring systems that make possible routine preventative maintenance and capital replacement; (3) better financial and system management to improve collection of revenues due and to make better use of private sector firms for construction, maintenance, contract administration, and meter operation; (4) examination of national and local infrastructure standards, with an eye to establishing a consensus that would permit selective revision of standards to lower final housing costs.

The term "policy dialogue" should be taken literally in pursuing these goals. CABEI should organize and host a continuing series of regional seminars on these issues. It could help establish working groups in each country that bring together the key national agencies and private sector groups on issues identified as local priorities. (See the attached memo which describes the proposed operation of a working group on infrastructure standards in Jamaica, as an example of the type of institutional collaboration that could be sponsored.) Out of these working groups should come the identification of specific policy goals to be reached during the period of CABEI's program operation, and a consensus as to the strategy that can best accomplish the goals. USAID should provide through CABEI the external technical assistance that is appropriate.

In summary, we recommend using Development Assistance for four purposes:

a. Training of CABEI staff to provide technical assistance for the design and execution of urban infrastructure projects under the Program.

b. Exposure of principal CABEI staff to successful models of program operation elsewhere — both full development banking programs in the infrastructure area and applications of particular policy instruments.

c. Helping CABEI establish the capacity for continuing program evaluation.

d. Helping CABEI set up regional seminars and national working groups that will promote policy dialogue around key program issues.

III. MOVING THE RESOURCES

It is a pre-requisite for program success that program resources be moved expeditiously for their targeted purposes. In recent years HG loans in Central America have encountered substantial delays in signing and further substantial delays in disbursal. How swiftly can a CABEI program be expected to move resources?

In thinking of the constraints on timely disbursal, it is useful to work through the chain of lending in a CABEI-operated program.

DOLLAR LOANS TO CENTRAL BANK

The first step in the lending process is CABEI's dollar loan to a national central bank. Because the foreign exchange requirements of both housing and infrastructure investment are relatively low, the Central Bank will use the dollars primarily for other than program purposes — i.e., to repay foreign debt or to invest in productive projects that yield foreign exchange earnings.

The decision whether or not to accept a dollar loan for housing or infrastructure at U.S. market rates is both a political and economic decision. Because of the large external debt repayments facing most of the Central American countries, there is a presumption that central banks will welcome the dollars. However, President Azcona of Honduras in his inaugural address announced that his country would accept dollar loans for other than immediately productive purposes only on highly concessionary terms.

Loans from CABEI at market rates of interest may be more palatable on political grounds than loans directly from AID on these terms. In any event, for most countries the dollar loan to the Central Bank should not be a major source of program delay.

LOANS TO IMPLEMENTING AGENCIES: INTEREST-RATE COMPETITION

Most of the infrastructure agencies now receive funding from a variety of international sources. In drawing up their financing plans, they quite naturally look at an aggregate cost-of-capital curve. Highly subsidized loans will be spent first; moderately subsidized loans next. Market-rate loans constitute the marginal cost of capital, and these loans will be taken up or not depending upon the alternative terms of financing that are available.

If USAID is able to tie its market-rate HG loans for urban upgrading or other site-specific programs to below-market ESF loans or grants for off-site investment, and if these latter funds are flexible in their spending purposes, the total financing package will be much more competitive. Under these conditions, USAID funds should move in timely fashion.

Perhaps the greatest potential interest-rate competition for CABEI loans will come from AID's bilateral HG programs, which do not have to carry the CABEI commission to recover that institution's operating costs. In the short run, demand for participation in CABEI programs can be strengthened by subsidizing CABEI's lending rates, either directly by using soft funds to lower the HG rate (or to pay for the commission that otherwise would raise CABEI's rates above competing bilateral HG rates), or indirectly by offering CABEI's HG loans as part of a financial package that includes concessionary lending for off-site infrastructure improvements. In the intermediate and longer run, a preferable strategy is to clearly distinguish bilateral programs from CABEI programs, so that the two sources of financing do not compete with each other.

IMPLEMENTING CAPACITY

Financing aside, some of the implementing infrastructure agencies do not have the administrative capacity to execute larger programs. A careful assessment of agency-by-agency implementing capacity should be a first priority of the Project Paper. Our initial assessment on this point, however, was encouraging. There are several organizations in the

region — INFOM, the Municipality of Guatemala, the Municipality of Tegucigalpa, ANDAA — which have practical experience with urban upgrading programs, and which appear to have both the technical and administrative capacity to absorb significant increments in funding. All of these institutions also have done preparatory work for identifying a next generation of urban upgrading programs.

USAID can take specific steps to improve implementing capacity. One common bottleneck in past programs has been compliance with the competitive bidding requirements of AID loans. For example, ANDAA in El Salvador repeatedly was forced to cancel competitive solicitations, because the bureaucracy was unable to complete the paperwork to make awards during the 90-day period for which prices were maintained. A procurement specialist operating out of CABEI who could advise on the structuring of competitive solicitations could speed the process greatly. Compliance with AID requirements for purchasing equipment from the United States also has been a source of delay. If the procurement specialist were familiar with AID requirements and U.S. markets, he would be doubly valuable.

USAID and CABEI also can advise on the most productive use of the private sector for program work. One clear policy goal should be greater reliance on private firms, rather than own-force labor, to carry out construction projects. There are also more imaginative ways to utilize the private sector. For example, ANDAA eventually broke the bottleneck in its competitive solicitations by hiring a private architectural and engineering firm to evaluate competitive contract bids.

HOUSEHOLD DEMAND

Program implementation also can break down at the user stage, if there is not effective household demand at the level of program costs that will be charged. However, there appears to be effective demand for urban upgrading programs of the type described here. In Tegucigalpa, there is a backlog of $13 million in petitions for program participation that cannot be financed under current projects. The Municipality of Guatemala has identified a comparable magnitude of upgrading opportunities, complete with surveys of household income and household willingness to pay for water connections. ANDAA reports excess demand for its current upgrading program. In view of the extremely large backlog of housing demand throughout Guatemala, cost-effective provision of basic infrastructure services is certain to be a major policy issue and a major demand on financing. In each country where we interviewed, those closest to the neighborhood level were most convinced that urban upgrading programs based on full cost recovery would be accepted by residents.

CENTRAL GOVERNMENT RISK

One source of delay in moving funds is likely to be the Ministries of Finance. The formal borrowers of domestic currency funds will be the

central governments — i.e., the Ministries of Finance. These ministries, in turn, will onlend funds to the executing agencies, the national water systems, municipal governments, or municipal development banks.

The purpose of this lending chain from CABEI's perspective is to insulate it from the risk of loan repayment. The loan from CABEI becomes an obligation of the central government, whether or not it is able to collect from the implementing agencies. Such an arrangement, of course, shifts program risk to the Ministry of Finance, which can be expected to scrutinize loan terms carefully before taking on the debt obligation. From our interviews, it appeared that the principal source of project resistance, and hence delay in moving funds, will be the central government agencies.

There are specific steps that USAID and CABEI can take to soften this resistance, too. One step is to look for institutional arrangements that offer the central government greater security of loan repayment. INFOM in Guatemala possesses such a security arrangement. By constitutional provision, INFOM is the pass-through agent for central government grants and earmarked taxes for all municipalities except Guatemala city. It is empowered to withhold these payments for any municipality that is not current in its debt payments to INFOM. In other words, if a municipality is delinquent in its loan payment, INFOM can make a prior claim on the municipality's grant funds or its share of dedicated tax receipts. (Similar devices have been introduced recently into state-local relations in the United States, wherein a state government 'guarantees' local repayment of borrowing for infrastructure investment by making delinquent debt repayment a prior claim on state assistance to the locality. This mechanism has worked to lower substantially the interest-rate costs for municipal borrowing in such cities as Newark and Trenton, N.J., where the perceived risk of lending is great.) CABEI and USAID could offer technical advice on structuring such arrangements in other countries. Quite apart from the impact on infrastructure investment, these programs introduce a desirable financial realism into dealings between the central government and quasi-independent infrastructure authorities or local governments.

PART III

INFRASTRUCTURE PILOT STUDY:

JAMAICA: A PROCESS FOR RE-CONSIDERING INFRASTRUCTURE DEVELOPMENT STANDARDS

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Date: January 30, 1986

I. INTRODUCTION

This paper was developed in Jamaica during early January, 1986. It defines a project that would re-examine site development and infrastructure standards relying on a quantitative model for testing the cost implications of alternatives and a new approach for involving local institutions in the process.

Section II is a description of the project as it was presented for review in Jamaica. Section III provides a background discussion on the need for standards reform in the developing world, and the potential applicability of the approach suggested for Jamaica in other countries.

II. PROJECT DESCRIPTION

PROJECT SUMMARY

The Infrastructure Opportunities Project proposed for Jamaica has three main purposes:

1. To design innovative infrastructure and site development standards and techniques (both for new development and for in fill and improvement in built-up areas) that offer important reductions to urban development costs in Jamaica (thereby making decent basic standards affordable to a wider range of income groups).

2. To accomplish this through a review process that deeply involves professionals from Jamaica's private and public development institutions in all stages of design, analysis, review and dissemination of findings.

3. To provide full analysis of costs, financing and affordability of the above innovations and other comparative prototypes as a basis for the review process. The analytic framework will be implemented on a micro-computer model that can be used recurrently by Jamaican institutions for revised analysis as cost and other development parameters change over time.

The project has been motivated by the contrast between remarkable increases in development costs experienced in Jamaica in recent years and relatively slow growth in household incomes. These changes have created an environment in which it is extremely difficult to provide urban improvements affordable to low income groups.

The project will not supplant or overlap efforts already underway in Jamaica to address this issue. Rather, it has been designed to respond

to a few notable gaps in these efforts to date and with the intent of helping to integrate them.

In the first phase of the project (six months) the lead role will be played by a working group: six to ten professional representatives from key private and public sector development institutions. They will guide the work of local and international consultants in designing innovative approaches and structuring the analytic framework to prepare full cost/financing/affordability evaluations.

In the second phase (six months additional) a broader review committee will review the results of phase one, suggest further alternatives for analysis, help disseminate the findings of the project and assist in securing the application of key recommendations throughout Jamaica's development community.

The most important direct benefit sought by the project is, of course, the development of new infrastructure and site development techniques that will have notable effects in reducing costs in the short term. The project intends not only to support the design of new techniques but also to provide a mechanism to further their application (through laying the foundation for the modification of codes and encouraging their use by Jamaica's development institutions).

The project is also designed, however, to offer longer term benefits. It will leave behind a working analytic model, local professionals trained in its use, and the example of an inter-group process for analysis and dialogue on cost issues. It is hoped that this will promote:

- Better general understanding of goals and concerns between the private sector and the public sector and between institutions within sectors.

- Generally increased awareness of trends in development costs and their causes along with recognition of the need for understanding tradeoffs (such as between standards and affordability, initial capital costs and long-term maintenance costs).

- More rapid and efficient adaptations in approaches as costs and needs change in the future.

BACKGROUND AND RATIONALE

The Problem

Over the past two years, the costs of new development and upgrading in Jamaica's urban areas have escalated at a truly remarkable pace—much faster than the growth in household incomes. It is estimated, for example, that in 1984 alone, the housing component of the Consumer Price

Index increased by 48%—household incomes by only about 14%. The result is an environment that threatens serious curtailment of construction and infrastructure improvement throughout the island.

In this environment, new housing at traditional standards can only be afforded by a rapidly narrowing band at the top of the income spectrum, if at all. Housing and environmental improvements for low- and middle-income groups are now extremely difficult to achieve on any financially realistic basis.

In recent years, the USAID assisted programs of the Housing Division of the Ministry of Construction (MOC(H)), have made considerable progress in bringing affordable, basic housing within reach for lower-income families. This has required innovation in physical concepts as well as financing techniques. An example is the "Start-A-Home" program which provides a modest 250 sq. ft. structure that can be afforded by lower-income families now, and improved and extended by them later as their circumstances improve. In the present cost environment, it is becoming progressively harder to make even such a modest start affordable to the program's target groups.

Addressing the cost issue is vital given the ambitious program for MOC(H) and private sector AID-assisted activities over the next few years. The current program (HG-012 as amended in September 1985) envisions the production of Start-A-Homes, Settlement Upgrading, and Sites and Services to serve over 6,700 households. In addition, a new Comprehensive Urban Improvement Program has been planned which will benefit 1,800 households. This program recognizes that with comparatively low densities and underutilized infrastructure capacities in selected Kingston neighborhoods, it is likely to be more efficient to provide decent living accommodations to lower-income families through a multi-faceted improvement effort in such neighborhoods than to attempt rehousing in new development sites.

Indeed, it is widely recognized that current cost problems are, in large part, caused by historically high nominal interest rates arising due to the Government's presently restrictive monetary policy—a policy necessary to overall economic recovery. Nonetheless, there are other opportunities for cost reduction. One of the most important is the development and application of more efficient infrastructure and site development standards and technologies. An aggressive search is needed for approaches that will have a significant effect on costs (and thus affordability) without serious reductions in the quality of the living environment.

Efforts Underway to Address the Problem

A number of institutions in Jamaica—both public and private—have recognized the problem and have begun to take steps to deal with it. Examples include:

1. The design and use of innovative, more cost-effective, infrastructure site planning techniques by a number of development institutions (prominently the Urban Development Corporation (UDC)).

2. A recent review of standards and technologies for selected infrastructure components sponsored by the Jamaica Institution of Engineers.

3. Efforts by the Jamaican Institute of Architects and others, working cooperatively with the Town Planning Department, have led to plans for a comprehensive review and updating of the "Development Order" for Greater Kingston (zoning/site development standards and processing requirements) during 1985.

4. A Construction Resource and Development Centre (CRDC) has recently been created by the building industry. Among its many activities, it plans more authoritative monitoring of infrastructure and construction component cost changes than has been possible in the past.

These efforts evidence an atmosphere most conducive to a serious search for cost effective approaches in the infrastructure field. Still, in and of themselves, they may not yield results as rapidly as they are needed. There are at least two important gaps in these activities to date. First, efforts remain somewhat fragmented—a process does not exist by which all interested parties can participate in the search for better solutions, share and disseminate knowledge, and expedite the application of improved approaches throughout Jamaica. Second, there has been no systematic analysis of cost-quality tradeoffs and other impacts of new techniques (individually or jointly applied).

PROJECT DESCRIPTION

Concept and Strategy

In addressing pressing infrastructure/site development cost problems, the proposed project will not supplant any of the present efforts noted above. Rather, it is designed to supplement and help integrate those efforts by focusing on important gaps.

The project centers around the development and use of an **analytic framework** that will show in clear and simple terms the full impacts of alternative standards and approaches on costs and affordability over the economic life of the investments being analyzed.

The analytic framework is not simply a method for making cost estimates. As evidenced in the use of similar approaches elsewhere, it can become an important aid in understanding and coming to grips with the complexity of the issues at hand and, thereby, a practical guide for policy and implementation decisions. Its basic purpose is to simplify and clarify issues that often remain obscure and to express findings in terms that are directly relevant to decisionmakers.

The second (and in the long term more important) component of the project is a new **inter-group review process.** Representatives of relevant private and public sector development institutions will meet periodically in a carefully phased sequence of activities designed to make efficient use of their time. This sequence will entail their participation in: (1) reviewing the structure of the analytic framework; (2) selecting infrastructure/site development alternatives to be analyzed and tested; (3) reviewing the outcomes of the analysis; (4) developing recommendations to various groups regarding improved approaches based on these reviews; and (5) helping to disseminate all results of the process to a broader range of participants in the community.

The Infrastructure Opportunities Analytic Framework

Models to analyze cost and affordability of infrastructure and site development alternatives have been used with increasing frequency around the world in recent years. Jamaica's analytic framework will be based on a similar approach, but will be extended and adapted to meet local conditions and the requirements of the process at hand. It will be implemented on a type of micro-computer frequently used in Jamaica and designed over a popular "spread sheet" program so that it will be easy to learn and operate (so that someone totally unfamiliar with it can learn to operate at least its basic routines with less than one hour of training).

In essence, an approach of this type works as follows: (1) a site development (or upgrading) plan is specified and its key parameters are entered into the computer (e.g., total number of housing units, acres of land use by type of activity, plot sizes and configurations, basic infrastructure specifications); (2) local cost factors are also entered (e.g., cost of water distribution lines per lineal foot); (3) the model then makes its combined estimates and prints out tables on incremental and total costs by type; (4) with the entry of assumptions about marketing and financing, the model can also estimate and print (a) time-phased expenditures/income and financing schedules for the development as a whole, and (b) schedules on down-payment loan amortization, and other cost requirements (and thus income group affordability) for each type of housing to be provided. With the adjustment of a single input (say the use of septic tanks instead of a piped sewerage system) the same outputs highlight the impact of that change on the financial position of both the developing institution and prospective residents.

In other countries, models like this have proven extremely valuable in providing a full understanding of the implications of alternative development approaches to relevant audiences and in reconciling supposed differences among participants in the development process. For example, participants may learn that an innovation that seems attractive from an engineering point of view may have only a negligible effect on overall costs and affordability and not be worth the institutional problems involved in implementing it. Alternatively, by a series of runs of the model testing various approaches, they may find important opportunities for cost reduction in areas where they least expected them.

Three extensions of the basic approach will be essential in Jamaica. The first will be a more detailed treatment of infrastructure and site development standards and costs (past approaches have often focused more on structure costs).

The second includes adaptations needed to estimate the effects of area upgrading activities (like the MOC(H)'s proposed Comprehensive Urban Improvement approach) as well as new development projects on unused land. Area upgrading can be expected to be more complex than new development but, as noted earlier, it may offer important efficiencies where current densities and infrastructure conditions are favorable.

The third is an extension to permit estimates of long-term maintenance and operating costs (over the economic life of the project). Modifications in infrastructure standards are sometimes proposed that offer dramatic savings in initial capital requirements, but prove inefficient over the long term because of particularly heavy maintenance costs. The framework for Jamaica must be able to assess tradeoffs in this regard.

It is important to note that development cost estimation is far from an exact science. While many cost-factors used in the model can be estimated with some precision, there are others which always remain uncertain in development projects: e.g., the effects of delays. The proposed analytic framework cannot eliminate uncertainties like these, but it can help to put them in a reasonable perspective. First, it can explicitly identify the comparative "hardness" of the various estimating factors. Second, it can shed some light on the potential impacts of the more uncertain elements through sensitivity testing: approximating ranges of possible outcomes for these elements and estimating how overall costs would be affected if different positions on those ranges were to come true.

While the model will be designed and used in an intensive inter-group process during this project (see next section) its more important benefits may be felt over a longer term. The parameters of the current cost environment will surely change over the coming years. Some cost components will decline while others will increase in ways totally unpredictable at present. Recurrent use of the model in a similar process will be needed to keep the community up to date on the efficiency and effectiveness of its development standards and technologies and permit sensible adaptations as new problems and opportunities arise.

For this reason, the model will be installed in computers at several local development institutions before the end of the present project and staff in those institutions will be given training as needed to assure its continued use.

The Infrastructure Opportunities Review Process

The design of the proposed project is based on the view that studies of infrastructure/site development alternatives prepared by international consultants offer small value to a host country unless local professionals have been deeply involved in their preparation. It also recognizes, however, that top local professionals have tremendous demands on their time. They can afford to spend a very limited number of hours participating in study groups, regardless of their potential value.

Accordingly, the process has been staged in a manner which draws in local professionals at the times they can be most useful, but avoids unrealistic expectations about their commitments. It involves four groups of participants:

1. **The Working Group** - a group of six to ten top professionals in infrastructure and site development (engineers, planners, etc.) representing key private and public institutions in the development process. The Working Group will provide primary guidance in the design of the analytic framework, the selection of development/upgrading prototypes to be tested, and the evaluation of the results of the analysis.

2. **The Review Committee** - a broad group composed of representatives of all notable Jamaican private and public institutions involved in development. This committee will review briefings and reports prepared under the guidance of the Working Group; comment on findings and suggest policy implications and further alternatives for analysis; communicate recommendations to constituent agencies; and generally disseminate findings and recommendations emerging from the process to the broader development community throughout Jamaica.

3. **Jamaican Consultants** - responsible for the design of new development and upgrading prototypes to be tested by the model and for estimating cost/financing parameters.

4. **International Consultants** - responsible for designing the analytic model and for guiding the overall process.

The initial project will have a duration of approximately one year. It will be divided into two phases.

Phase I - Baseline Analysis and Model Development (Six Months)

At the beginning of this phase international and local consultants will be selected and the working group appointed. Five activities will be undertaken:

1. **First meeting of the Working Group.** This meeting will familiarize all participants with the purposes of the project

and its approach. The international consultant will preview the model structure and outputs of the analytic framework. The working group members will be asked to give their views on important current issues in infrastructure and site design and to offer suggestions to changes in current practice (innovations derived from Jamaican and international experience) that may offer important cost reductions.

2. **Model and Prototype Design.** Based on comments from the Working Group, the Jamaican consultants and international consultants will: (a) design a limited series of alternative development/urban improvement prototypes for testing by the model that focus on key issues and innovations suggested by the Working Group (plans and specifications in a form for input to the model); (b) develop local cost parameters as required for the estimation process; and (c) design and implement the model on an appropriate computer.

3. **Second Meeting of the Working Group.** Working Group members will review and comment on the outputs of Activity 2 and offer ideas for prototype revision and improvements to cost parameter estimates.

4. **Analysis.** The Jamaican and international consultants will revise prototypes, conduct full model tests and prepare presentation materials.

5. **Working Group Review and Report Preparation.** The Working Group will review and comment on model outputs, refinements and revisions will be made as needed, and the consultants will prepare a draft report on the results. Plans and preparations for Phase II will also be made.

Phase II Community Dialogue (six months)

This phase will begin with a series of presentations to the full Review Committee by consultants and Working Group members. Committee responses may generate additional rounds of prototype design and model analysis. The Review Committee with the Working Group will then plan and implement a process for wide dissemination of the results of the project across Jamaica's development community and for applying its findings (for example in modifying agency and community codes and standards).

Local Institutional Participation

The selection of members for the project's Working Group and Review Committee warrants further discussion within the community before final decisions are made.

To begin the discussions, it is tentatively suggested that the Working Group consist of one representative each from the following public-sector institutions:

- Town Planning Department
- Urban Development Corporation
- Ministry of Construction - Housing
- Ministry of Construction - Works
- National Water Commission

In addition it is suggested that four to five Working Group members be drawn from the following private-sector institutions:

- Incorporated Master Builders Association
- Institute of Architects
- Institution of Engineers
- Society of Quantity Surveyors
- Association of Developers
- Construction Resource and Development Centre (as the research arm for the Joint Consultative Committee for the Building and Construction Industry)

It is assumed that the Review Committee would include all Working Group members plus additional representatives of the same institutions. In addition, the committee would include representatives from:

- Other public sector agencies involved with infrastructure (e.g., Jamaica Public Services)

- Other government agencies with broad roles in policy (e.g., Ministry of Finance)

- Development finance institutions (e.g., NHT, insurance companies private banks)

- Neighborhood and community organizations

- Education and institutions in the development field (e.g., CAST)

- Representatives from the real estate industry and other private business and development organizations.

III. RATIONALE AND APPLICABILITY

THE "STANDARDS" ISSUE IN THE DEVELOPING WORLD

There has been little formal research on the effects of development control standards. In the 1970's, the United Nations assembled a compendium of controls actually in use in various parts of the world, 1/

1/United Nations Department of Economic and Social Affairs. Six regional volumes were published in 1973 and a summary volume in 1975.

but as Dunkerly notes, this "has not been matched by evaluations of their effectiveness or reasons for success or failure."2/ Still, the literature that does exist makes it clear that infrastructure and site development standards represent a serious issue in much of the developing world.

Costly standards modelled on past European or American experience have often been "locked into" local development controls and practices in many countries. The result is that housing meeting code requirements is extraordinarily expensive in relation to local incomes - only a small percentage of all new urban families can afford to house themselves "legally". Where such standards are enforced, the majority must either further overcrowd existing housing or build some form of shelter in illegal settlements, usually without satisfactory access to water supply, sanitation, or other basic public services.

This is hardly a new story. The problem has been highlighted recurrently in the literature of international urban development since the early 1960s. 3/ There have been marginal improvements in a number of countries since then, but fundamental reforms have seldom taken place. 4/

INSTITUTIONAL BARRIERS

The lack of better technical alternatives is no longer the key problem. The past two decades have been a period of tremendous innovation in infrastructure provision and site design. New cost-saving approaches (sites and services, slum upgrading) have been developed and satisfactorily tested in many locations around the world. 5/ Today, the most serious barriers are institutional: processes that should take an innovation rapidly from the design stage to widespread application in the field either do not exist or are sorely deficient.

The rigidity of development codes and ordinances is a case in point. 6/ It is often extremely difficult to change the standards embodied in such regulations, even when they are demonstrably uneconomical and out of date. Vested interests have frequently built coalitions opposing change. Regular, systematic processes for the review and updating of site development regulations are virtually unheard of in most countries. When formal reviews are initiated, the processes usually occur in fairly narrow professional forums - many of the groups that will be directly affected by the outcome have little chance for meaningful participation.

2/Dunkerly, 1977.

3/See, for example, Abrams, 1963, and Turner, 1966.

4/See, for example, Rivkin, 1977, and Courtney, 1977.

5/Many of these achievements are documented in Keare and Parris, 1982, Cohen, 1983, and World Bank, 1983.

6/For a more complete discussion, see Courtney, 1977

Regulatory controls, however, are not always the binding constraint. In some countries, innovative techniques would be permissible under current codes but private developers have been slow to apply them. Developers who have built housing solely for high-income groups in the past are reluctant to change from a formula they know will work. Processes that effectively demonstrate to them how to obtain a reasonable profit from alternative approaches seldom exist.

PAST STRATEGIES AND THE NEED FOR CHANGE

Most major donors in urban development have been strong proponents of cost saving approaches such as sites and services, but so far, little emphasis has been given directly to the reform of outdated codes and ordinances. Three factors have probably influenced this outcome.

First, there has been plenty of work to do in designing these new approaches, testing them in pilot projects and working with governments in beginning to replicate successful models. The output of these projects has so far represented a very small fraction of total residential development in any country. 7/ It has been much simpler to stress their experimental nature and secure exemptions from local codes to get them built rather than to attempt wholesale code reforms ahead of time.

Second, it has been correctly judged that efforts to reform development standards would be difficult and risky undertakings. The arena is extraordinarily complex - the result of the interaction of social, cultural and political factors. Some of the innovators may have felt that their own professional or institutional roles made it inappropriate for them to become directly involved at this level. Recognizing the complexity and the strength of current political forces, some have no doubt been pessimistic about the likelihood of change in the short term, perhaps feeling that they have presented sound technical alternatives and there is nothing more they can do until the "political will" emerges to take advantage of them on a broader scale.

Third, the fact that existing codes are so badly enforced in most developing countries may have lessened the urgency for formal revisions of standards. For much construction activity, the standards have not been a binding constraint.

The donor community has recently recognized, however, that the challenge is no longer one of better technical design, but rather, one of replicability. 8/ It is likely that the persistence of outmoded development codes will be one of the barriers that must be overcome in meeting this challenge. Local standards are already constraining cost

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7/Cohen, 1983.

8/This point is emphasized and elaborated in Cohen, 1983.

reduction in donor supported projects in some countries (e.g., HG programs in Jamaica and Barbados). There is a strong probability that the problem will be encountered more frequently as program scale increases.

Even in countries that have strongly supported deregulation, basic building and development controls are likely to persist in some form. 9/ Avoiding them for a few pilot projects is a very different matter than avoiding them in efforts to encourage mass-scale implementation of more efficient development approaches.

While there have been calls for additional research and technical assistance in this field 10/ , roles to be played by various actors still need to be clarified. Dunkerly, of the World Bank (1977), suggests:

> It is apparent that changes in local land use regulations to increase their relevance to local conditions would be of benefit to project preparation and implementation. It is less clear whether this should be a matter in which financing agencies such as the Bank should be directly involved or whether the stimulation of technical assistance in this field by other agencies is feasible and to be preferred . . . Operations research on resolving conflicts between provision of low-cost services and land use regulations should also be continued and extended to more general considerations of density controls and the design of infrastructure.

APPLICABILITY OF THE JAMAICA PROJECT APPROACH

The basic approach as proposed for Jamaica should be an attractive starting point for addressing the standards issue in many other developing countries as well. Several of its features support this view:

First, it is a process in which representatives of national institutions play the leading roles and make all key decisions throughout i.e., it is not imposed or controlled by outsiders. International consultants are used only to facilitate their deliberations through the development and application of a new analytic framework and other means.

Second, it involves representatives from all segments of the local urban development community - private as well as public. The project is specifically designed to increase private-sector influence on the development approval process. In many countries, such individuals seldom have the chance to meet together to share their various perspectives on development problems and opportunities and to learn from each other in

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9/See Rivkin, 1977.

10/See, for example, Courtney, 1977

an environment conducive to innovation. They have even less opportunity to influence governmental practice in building codes, development orders, zoning, or development approval.

Third, the process should be seen as comparatively non-threatening by existing institutions. Its initial purpose is to offer a forum where local professionals can explore the impacts of alternative standards and techniques using a sound technical framework. If new ideas emerge that generate wide support, the process may well lead to changes in legislated standards and traditional techniques in the local development community. However, that is not a commitment that has to be made ahead of time. (We expect that in some environments it would be much more difficult to initiate a process, for example, whose explicit mission is the revision of current codes and ordinances under some fixed timetable - participants would be less open to free discussion of new alternatives and new points of view.)

Fourth, a fail-safe mechanism is built into the process. The first phase involves a purposefully limited number of participants in the Working Group. If this group comes out of the process with new ideas and a reasonable consensus about what to do about them, then phase two (with the broader Review Committee) can begin with much fanfare. If the Working Group is less successful, however, phase two could be curtailed without having built up unreasonable expectations in the community.

Finally, the full-cost analytic framework should offer a new way of looking at things for most participants. Most are used to reviewing individual standards and techniques one at a time. A framework that shows how individual elements interact to lead to a combined effect should give clues as to new solutions that might remain hidden in traditional engineering evaluations.

PREPARING FOR BROADER APPLICATION

Given the need for this sort of approach in other countries, it would appear reasonable for the Office of Housing and Urban Programs to use the Jamaica project outlined in this paper as a pilot for a broader program of similar activities elsewhere. If it is designed with this purpose in mind, lessons from the Jamaica experience (and the tools that will be developed) should much reduce the difficulty (and cost) of replication in other environments.

This is particularly true with the design of the analytic framework (and the model that supports it). Plans have been made for a Lotus based version of the Bertaud model to be implemented in all RHUDOs. That model can serve as the base for this project's analytic framework. However, it will have to be extended in two ways. First, in its current version, the model does not deal directly with all important factors (e.g., urban upgrading prototypes, life-cycle costs for all prototypes). New modules will have to be added to handle analysis in these areas. Second, the model is presently designed for use by

specialists. Simplifications in presentation formats (and some new intermediate exhibits) are needed to make it easily understandable and useable to the audience intended for it here.

In the Jamaica project, efforts would be made to amply document the extended model and the way it is used in a form that would facilitate its application in other national settings. This would include case materials on each of the development prototypes tested (including all back-up cost data and the reasoning behind their design). It would also include exhibits for use in analysis by the Working Group and in briefings to broader audiences, and step by step guidelines on the process for assessing alternatives. If the Office desired, the case materials could be extended to include illustrations from other countries.

A second set of guidelines would be prepared based on lessons from Jamaica's inter-group review process. Here, materials would discuss alternative ways of conducting the sequence of meetings required by the process and review advantages and disadvantages of the options based on what was learned in the Jamaica experience. Guidelines would also cover approaches for generating initial interest in the process among local institutions, securing serious involvement of the participants, and disseminating the findings and conclusions effectively.

An understanding of the nature of the Jamaican development process, in comparison to those of other countries, should make it possible in the final report to offer broad suggestions as to how the structure and design of the Jamaica pilot should be adapted to fit different environments.

LONGER TERM BENEFITS

Sponsorship of a number of projects fashioned after the Jamaica pilot could offer additional benefits to the Office of Housing and Urban Programs over the longer term:

First, it would permit the building of an international data base on detailed infrastructure and site development costs. Because of the nature of the process itself, the data would automatically focus on key problems and opportunities in cost reduction. This should support the development of check-lists and other techniques to assist staff in identifying key design issues for HG programs and other AID supported projects.

Second, it would provide substantial information on the capabilities, concerns and working styles of a wide array of development institutions (both public and private) in many countries. Closer relationships established by the RHUDOS with such institutions in the proposed process, along with increased knowledge about them, should help in the attainment of other country-specific AID objectives.

Third, the process should have a substantial influence in encouraging continued use of the full-cost analytic framework in many of effective adaptation of design standards as technical and cost factors change in the future.

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PART IV

INFRASTRUCTURE PILOT STUDY:

PUBLIC SERVICE PRICING AND WATER SYSTEM MANAGEMENT: METROPOLITAN BANGKOK, THAILAND

Principal Author: G. Thomas Kingsley
Date: March 4, 1986

I. INTRODUCTION AND OVERVIEW

INTRODUCTION

This paper is the result of a mission to Bangkok, February 15-22, 1986. The original purpose of the mission was to examine and detail a possible project opportunity in water systems management suggested by the RHUDO. Discussions with RHUDO staff after arrival, however, led to a broadening of the assignment to include the exploration of an additional opportunity for Office of Housing and Urban Programs involvement in Thailand's urban management agenda.

The opportunities discussed in this paper were based on initial suggestions by the National Economic and Social Development Board (NESDB) and represent priority efforts consistent with recommendations in their recent Bangkok Metropolitan Region (BMR) study. It is clear that this interest in USAID participation has emerged because of the critical role played by RHUDO staff in the preparation of the BMR study. NESDB now sees the RHUDO as a trusted advisor whose assistance with top policy issues is much desired. This level of confidence, expressed by such a high level government agency, is indeed impressive. If taken advantage of, it offers the Office of Housing and Urban Programs a chance to play an influential role in shaping Thailand's urban future.

PROJECT OPPORTUNITIES

Attractive project opportunities now exist in assisting two agencies charged with major responsibilities for metropolitan development and management:

Bangkok Metropolitan Administration (BMA). A short-term (two month) project is suggested which would deal with: (1) local tax structure and revenue sources; (2) tax collection procedures and systems; (3) the BMA financial management system. In each area, consultants would review existing conditions and suggest longer-term programs for analysis and improvements in policies, procedures and systems. (RHUDO staff is exploring the possibility of EPD2 funding for this project with the AID Mission in Bangkok.)

Metropolitan Waterworks Authority (MWA). Assistance to MWA could be approached in one of three ways:

1. Management Planning Assessment - a short term effort to assist MWA managers in developing a specific plan for future improvement efforts in operations and system maintenance.

2. Financial and Operations Management Review. This would include the management planning assessment above, but would then pursue more detailed analysis and recommendations in priority areas. Areas suggested for analysis include: financial management system and tariff structure;

billing and collections; meters and meter reading; illegal water use; and service to slum areas.

3. Leak Monitoring and Maintenance-Repair Strategies and Systems. This would be a sizeable project covering: measurement of systems flows (recalibration of existing master meters, provision of additional master meters, measurement of flow pressures in trunk and distribution mains); setting up computer based systems to analyze the data; cost-benefit analysis of maintenance-repair options for critical leakage problems; developing a strategy for ongoing system-wide maintenance and repair. (This work could lead naturally to HG funding for repairs on major trunk and distribution lines - a part of the overall MWA improvement program not adequately covered at present by other donors.)

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The BMR study has taken a bold position on Bangkok's development, advocating an approach very much in line with USAID's policy orientation. The emphasis is on privatization, cost-recovery and enhanced local revenue generation; i.e., making Bangkok pay for itself (see discussion in Section II). The projects outlined above focus on prime areas for improvement identified by NESDB in that study. Indeed, progress related to the BMA project noted above may determine the success or failure of the whole approach. Because it is presently "out in front" on these issues, what happens in Bangkok is likely to influence the course of similar efforts in other countries. These opportunities, therefore, deserve serious study by the Office of Housing.

II. REVENUE GENERATION AND FINANCIAL MANAGEMENT: THE BANGKOK METROPOLITAN ADMINISTRATION

FOUNDATIONS FOR A NEW APPROACH: MAKING BANGKOK PAY FOR ITSELF

Thailand has been an oft cited "extreme" that has motivated considerable thought about assistance for urban growth in the developing world. With a population of 6.7 million, its primate metropolis, Bangkok, accounts for about 40% of the nation's urban population and about half of its total value added. This formidable concentration has has led the government (along with USAID and other donors) to stress decentralization. The traditional approach has been to expedite the provision of infrastructure outside of the Bangkok area, in the hope of creating attractions that would draw a larger share of new growth away from the center, and minimize such support in the metropolis itself.[1]

1/ Generally in this paper, the area referred to as the Bangkok metropolitan area (or the metropolis) is defined to include the BMA administrative area plus changwats Nonthaburi and Samut Prakan (see Figure 1). This is also the service area for MWA.

The recently completed Bangkok Metropolitan Region (BMR) study, however, suggests another approach: to encourage improvement of services in the metropolis, but make the residents of the area pay the full costs and give the private sector a much larger of the responsibility. The Bangkok Metropolitan Authority (BMA) and the state enterprises that provide urban services in the metropolitan area spent approximately Baht 17 billion ($670 million) in 1984 but only brought in 80% of that amount in revenues, the remaining 20% being provided as a subsidy from the central government. Under the BMR approach, the subsidy would be drastically reduced.

This basic idea is hardly new in the urban development field, but it has seldom been pursued aggressively by urban governments as yet, largely because of the political resistance expected. In Bangkok, however, it is being put forward boldly. An article based on a recent interview with Dr. Phisit Pakkasem (Deputy Secretary General of NESDB) states: (See Attachment for full text.)

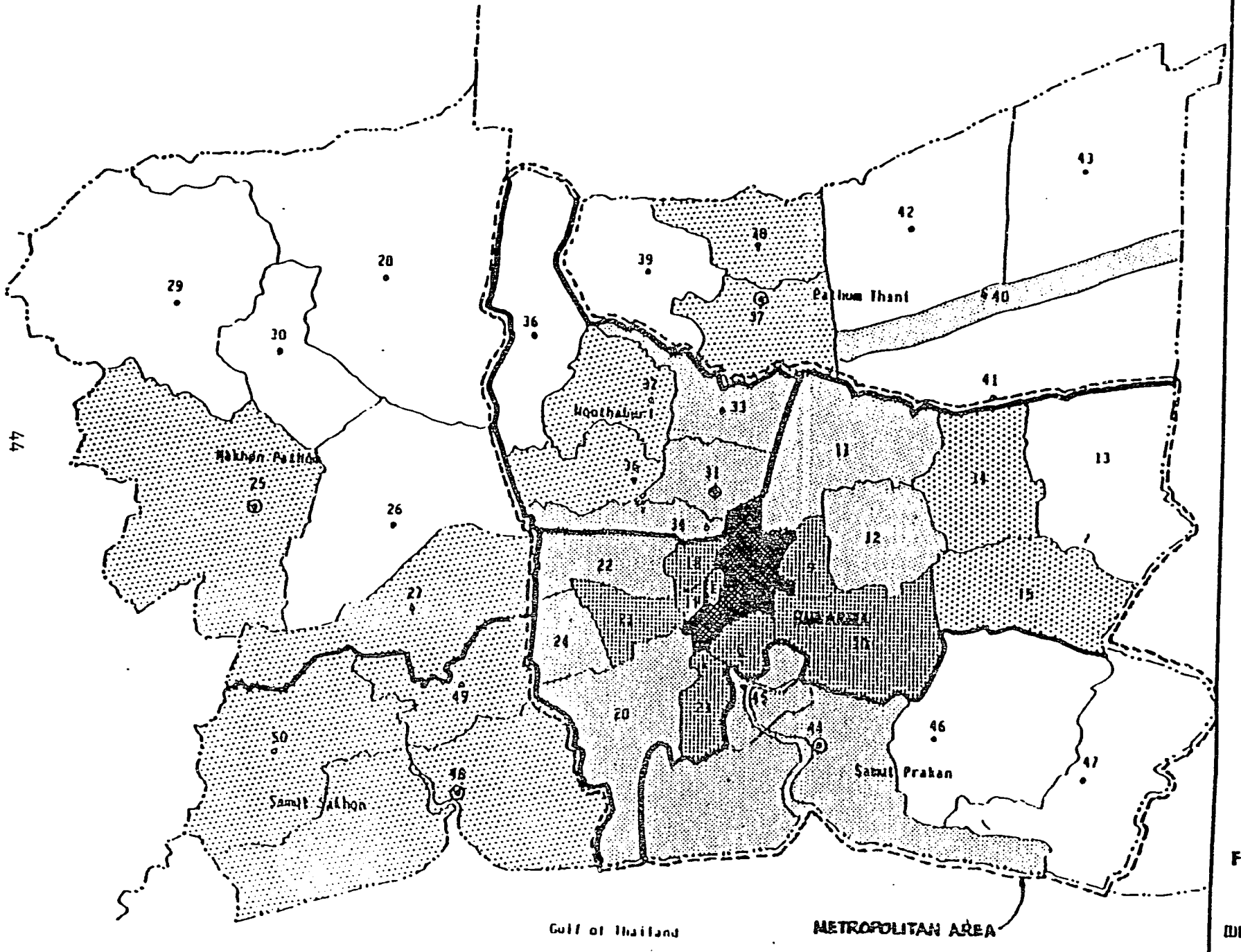
> Subsidies for the Bangkok area will be slashed so that the people will have to pay for efficient service . . . Bangkok will have to cope with the demand for service by privatizing services and proper pricing . . . We are going to make Bangkok a nice city to live in, but expensive, particularly in the inner core .

Donors assisting Thailand's development have gotten in the habit of thinking that "helping Bangkok" is inappropriate. Helping Bangkok implement the BMR recommendations, however, would not only be fully consistent with existing policy objectives, but might make a stronger contribution to their achievement than a number of other methods attempted in the past. (This point was explicitly endorsed by the USAID Deputy Mission Director in a meeting with the Mission Director and RHUDO staff on February 19).

ROLE OF THE BANGKOK METROPOLITAN AUTHORITY

The BMA is the main "general purpose" government in the metropolitan area. It is responsible for health services, primary education, social welfare, law enforcement, street cleaning and solid waste disposal, and public works (flood control, sewerage and drainage, and the street network below the level of major highways). It has 39,500 employees (13,100 are primary school teachers). It is also responsible for setting and collecting most of the local public revenues generated in the area.

The BMA is the institution that will have primary responsibility for implementing the new BMR strategy. The BMR study suggests that the BMA role should expand in relation to the activities of the state enterprises



Population Density, 1985

< 300

300 - 600

600 - 3,000

3,000 - 20,000

> 20,000

LEGEND

BOUNDARY OF THE BMR REGION

BOUNDARY OF CHANGWAT

BOUNDARY OF AMPHOE

LOCATION OF AMPHOE PHANG

LOCATION OF OTHER AMPHOE

FIGURE 1

[illegible]

National Economic and Social Development Board

now operating in the area, and that its administrative resources should be augmented so it can handle the work involved.

To date, the BMA has had a considerable amount of technical assistance in transportation (mostly from the Japanese government - JICA) and flood control (from a variety of donors), but not in general management and administration. In the past, it has had a reputation for being resistant to reform in these areas. The atmosphere seems to have changed, however, with a fundamental revision of the agency's status. New regulations implemented in August 1985 call for popular election of the BMA Governor (previously an appointee of the Minister of the Interior). The first Governor elected under these regulations has openly favored administrative improvement. Certainly in discussions on this mission, BMA officials appeared eager for external assistance in this field.

ASSISTANCE IN REVENUE GENERATION AND FINANCIAL MANAGEMENT

Meetings with BMA's new Deputy Governor for Finance and Administration suggested that the agency's greatest need for technical assistance is in improving its revenue generation and financial management practices (this was also given top priority in BMR recommendations concerning BMA).

BMA's budget for 1986 anticipates revenues of Baht 6.6 billion ($260 million), Baht 4.8 billion to be derived from taxes and the remainder from fees, fines, licenses, commercial activities and other sources. Major sources of tax revenue are the land development tax and the house and rent tax. The BMR study indicates that the efficiency of these taxes is limited by significant underassessment (reassessments have been infrequent) and inadequate collections (30% to 35% of those obligated to pay do not do so). Furthermore, the fact that owner-occupied housing units are exempt from the house and rent tax represents both a serious inequity and a serious curtailment of potential revenue. The BMR study also indicates that under its favored investment option, local government capital expenditures in the area during Thailand's sixth five year development plan (starting in late 1986) would have to be twice those during the fifth plan, while central government expenditures in the area would drop to 38% of their level during the fifth plan.

So far there has been little study of opportunities for improvement in these areas in BMA. The most appropriate initial assistance project should probably be of fairly short duration (about two months). Its purpose would be both to develop recommendations for immediate improvements and to suggest an efficient longer term program for analysis and revision to current practices. Three topics should be covered:

1. **Review of the Tax Structure and Alternative Revenue Sources.** Current studies by BMR and the Ministry of Finance would be the starting point for this work. It would review current revenue sources and suggest feasible options for change and a time-phased program for follow-up.

2. **Revenue Collection Procedures.** This task would have a similar structure: (a) review current procedures; (b) identify procedural improvements both to improve collection rates and administrative efficiency; (c) outline a longer term program for further analysis and the design and implementation of systems changes. Discussions with BMA indicated that revenue collection is not fully automated although some hardware is available - attention to computer systems support merits high priority in this work.

3. **Financial Management Systems Development.** Integrated computer-based financial management systems are proving essential to the effective management of urban governments throughout the world - systems that consistently link budgeting, accounting, revenue generation and other functions such as performance monitoring. BMA's automation of its financial records is at a very early stage and a plan does not yet exist for long term improvements. This element of the project would review current procedures and outline a longer term improvement effort.

(RHUDO staff have begun discussions about a project of this type with the Mission in Bangkok, presumably to be supported through EPD2 funding)

OTHER OPPORTUNITIES IN THE BMA

Initial discussions with BMA suggested that there are probably a number of other areas in program administration where external technical assistance would be warranted and welcomed. Because of the comparatively higher priority of the project outlined above, however, and the fact that the completion of that project will in itself yield a better sense of strategy for further management improvements, no other project activities in the BMA are recommended at this time.

A second area that should at least be mentioned, however, is assistance to BMA's Department of Public Works in planning for road system improvement projects. The BMR study concluded that Bangkok's notorious traffic problems are more due to the inadequacies of distributor and access roads than to problems with major highways. The fact that so many local access roads are stopped at the canals, coupled with one-way-street system regulations, significantly inhibits flexible adaptation to congestion. BMA staff noted interest in some short-term assistance in strategic planning in this area; assistance that might possibly reorient other larger scale technical assistance efforts already underway to deal with these issues more effectively.

III. WATER SYSTEMS MANAGEMENT: THE METROPOLITAN WATERWORKS AUTHORITY

BANGKOK'S WATER PROBLEMS

THE BMA and Bangkok's Metropolitan Waterworks Authority (MWA) are responsible for alleviating what must rank as among the most serious sets of environmental problems facing any of the world's major cities. This entails dealing with severe flooding and land subsidence conditions in addition to providing an adequate supply of water for a rapidly growing urban population.

Flooding. Bangkok is located near the mouth of the Chao Phraya river which drains most of the north and central regions of Thailand. Deforestation in its watershed has significantly expanded its flows in recent years. Water levels peak during September and October with the convergence of high seasonal rainfall and high tides. Major floods occurred in only three of the 15 years from 1964 through 1979, but in three of the five years from 1980 through 1984. In the latter three, approximately 350 sq. km. in the Bangkok area were seriously flooded, in some areas for three months or more. Drainage is difficult. The average ground level in Bangkok is less than 1.5 meters above mean sea level and much of the area is below mean sea level. The drainage problem is becoming more severe due to rapid urban expansion (which reduces the ground area exposed for water absorption) and by land subsidence.

Land Subsidence. The fact that "Bangkok is sinking" has been well publicized. The cause is the over-pumping of groundwater from deep aquifers below the city at rates substantially in excess of the natural recharge rate. The consequent loss in water pressure within the alluvial deposits accelerates consolidation of the soil. An area of over 1,000 sq. km. is affected, with subsidence of as much as 15 cm. per year in some areas (compared to a natural subsidence rate of one cm. per year).

Water Supply. In 1985, MWA's piped water supply system served 4.3 million residents in the metropolis - about two thirds of the area's 6.7 million total population. Most of those presently not served draw on ground water resources. In addition, 12% of the 782 million cubic meters of water produced by the MWA system in 1985 were derived from deep wells. Both of these factors exacerbate the already serious land subsidence problem. MWA thus faces an enormous challenge in expanding its water delivery: (1) to provide surface water supply for existing residents not presently served; (2) to provide replacement water to accompany the phasing out of deep well sources; and (3) to provide new service for population growth (the metropolitan population is expected to grow by 2.8 million over the next 15 years, reaching a total of 9.5 million by the end of the century).

of standards. For much construction activity, the standards have not been a binding constraint.

The donor community has recently recognized, however, that the challenge is no longer one of better technical design, but rather, one of replicability. 8/ It is likely that the persistence of outmoded development codes will be one of the barriers that must be overcome in meeting this challenge. Local standards are already constraining cost

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7/Cohen, 1983.

8/This point is emphasized and elaborated in Cohen, 1983.

WATER LOSSES AND RECENT MWA ACCOMPLISHMENTS

The BMR plan suggests a comprehensive program for flood control in the Bangkok area to be administered primarily by the BMA. This would include: the building of a 48 km. flood relief bypass in the west bank area; riverside flood barriers consisting of embankments, flood walls, and water control structures at waterway crossings; inland polders to protect against river overspills and overland flows; and subsidiary system improvements in the built-up area. The program assumes substantial reductions in land subsidence rates - a job to be tackled by MWA through the reduction of ground water usage.

The CDM Study and the Water Loss Problem. Camp Dresser and McKee, Inc. (CDM) and Metropolitan Engineering Consultants Co., Ltd., completed a planning study for MWA in 1984. While the study made recommendations on the expansion of water production and distribution, it emphasized a program to reduce "unaccounted for water". In 1982, 45% of all water produced by MWA was unaccounted for; i.e., not sold to customers. Reduction of this substantial loss rate could obviously result in major savings in MWA's capital requirements for additional production capacity. The CDM median estimates of the components of loss were as follows:

Customer Metering losses	
Meter performance/underregistration	3%
Reader performance/billing	1%
Distribution system losses (leakage)	
Mains and trunks	16%
Service mains and connections	20%
Other losses	
Illegal water use	3.5%
Public water use (not billed)	1.5%
Total	45%

It is important to point out that CDM was not able to measure distribution system losses directly because of low operating pressure in the system (tap flows generally ranged from three to ten liters per minute). Information could be obtained on public water use and the estimates of other losses (metering problems and illegal use) were obtained through a "random user study". Given data on total unaccounted for water and estimates for these other components, the estimates for total distribution system losses were calculated as a residual. Limited MWA data on leakage occurrence by pipe size permitted them to make the above rough estimate of the allocation of this residual between "mains and trunks" and "service mains and connections".

By how much is it reasonable to expect these loss rates to be reduced? Unaccounted for water amounting to 10% to 15% of production is considered a reasonable standard in the United States, but it is recognized that this may be too demanding a target in many developing countries. The CDM study considered that a reasonable long term goal for the MWA system was 25%, implying a reduction in distribution system losses from 36% to 20% and a reduction in all other categories from 9% to

5%. Their proposed 5 year target was an overall reduction to 30% (24% in distribution system losses plus 6% for the other categories).

MWA Accomplishments. In the past few years, partially in response to the CDM study, the MWA has taken a number of steps to improve its operating position. Most important:

1. Total water production has increased from an annual rate of 621 million cubic meters at the end of 1982 to 782 million in 1985. The percentage of the total drawn from deep wells has been reduced from 25% to the present 12% over the same period.

2. By 1985, unaccounted for water had declined to 40% of production while overall systems pressure had been increased by about 15%. Major contributions were made by a program to expand customer metering (and replace previously malfunctioning meters) and the establishment of an illegal water use prevention function. Efforts to reduce below-ground system leakage have only recently been initiated.

A sizeable project supported by the Asian Development Bank is scheduled to focus on leak detection and repair in the lower end of the distribution system (service lines and connections). The work will occur in selected zones expected to have serious leakage problems (a program to actually measure loss rates in different sub-areas of the metropolis is not yet underway).

3. A significant increase in water tariffs has been implemented which largely accounted for a growth in MWA operating revenue from Baht 1.7 billion in 1984 to 2.7 billion in 1985 ($68 million to $108 million). The average tariff increased from Baht 3.2 to 4.9 per cubic meter. While MWA suffered a net loss of Baht 250 million in 1984 it recorded a net profit of Baht 136 million in 1985. (A break-even position had been targeted for 1985, but unexpected shortfalls in expenditures and increases in new customers led to positive net income - a break-even position is again planned for 1986 and beyond.)

PROJECT OPPORTUNITIES - OVERVIEW

While MWA has made considerable progress, there remains a clear need for additional assistance if it is to improve its operations effectively. First, the implementation of the CDM study recommendations has been uneven - impressive in some areas but lagging in others. It is important to recognize that a measurement system capable of providing a more precise understanding of the nature, location and scope of critical leakage problems is still not in place. Also, guidance is needed in areas not considered in the CDM study; in particular, financial and operations management. The last review of the management side of MWA was conducted by Booze, Allen and Hamilton, Inc., in 1975. Given substantial changes in MWA's operating environment since then, the time is right for another review.

MWA is an agency that is working to come to grips with its problems in a realistic way. In other circumstances, such an institution might not merit the highest priority for additional assistance. Bangkok's water problems are so severe, however, that MWA warrants special priority to expedite their solution. For example, the plans of other agencies involved with Bangkok's development (e.g., flood control) are based on the assumption that MWA will meet its target in reducing unaccounted for water to 30% of production by 1990. At this point, it is not at all certain that that target can be met on time.

MWA has indicated that it would welcome further assistance in several areas (work which no other external donors presently plan to support). USAID might respond in one of three ways, each requiring a different level of effort:

1. **Management Planning Assessment.** This would require the least amount of assistance. It would entail a two to three month commitment in which AID supported advisors would conduct a brief review of current MWA problems and potentials in all areas and assist top management in developing a specific time-phased plan for further study and corrective actions. The advisors might also assist in lining up additional support to implement elements of the plan for which funding is not yet available. The lack of a clear plan of this kind does appear to be hampering rapid achievement of MWA objectives at this point.

2. **Financial and Operations Management Review.** This would be a more substantial effort. It would start with the overall management planning assessment noted above, but would then provide more detailed analysis and recommendations for the improvement of various aspects of MWA management (a preliminary review of topics for consideration in this review is provided in the next section of this paper).

3. **Formal Leak Monitoring and Maintenance-Repair Systems Improvement.** This effort would provide funding for: (a) technical equipment and personnel as needed to measure basic systems flows (recalibration of existing master meters, provision of additional master meters, measurement of trunk and distribution main flow pressures, further leak detection in critical areas); (b) the development of computer based systems to report and analyze the resulting data, set up for recurrent use by MWA; (c) cost-benefit analysis of maintenance-repair options for critical leakage problems; (d) the development of a strategy for ongoing system-wide maintenance and repair based on these studies. This work could lead naturally to HG funding for the repair of major trunk and distribution lines (efforts not covered fully in the current ADB project) if AID was interested in following up in this manner. (This project is also discussed in more detail in a section to follow.)

Work with MWA under any of these options could offer longer term benefits for AID. Although MWA still has difficult problems to overcome, it is a comparatively advanced institution by third world standards. Many water supply institutions in developing countries have remained unwilling to take the basic first steps toward modern, fiscally responsible,

operations: e.g., the installation of system-wide metering and a cost-recovery oriented tariff structure. It would be difficult to work with such agencies on more sophisticated management improvements until these and other basic steps have been taken. AID work with MWA now, however, would permit serious attention to such issues and, hopefully, advances in the state of the art in managing water system operations and maintenance. Lessons drawn from this experience could later be applied to less advanced systems in other countries after more basic reforms have been implemented.

SELECTED MANAGEMENT IMPROVEMENT OPPORTUNITIES IN MWA

In this section we briefly review the status of development in a number of elements of MWA operations. The topics, by and large, were suggested in our initial discussions about MWA with NESDB. They focus on "above ground" components of water loss and on general management issues.

Financial Management System and Tariff Structure. Even though MWA's fiscal position has improved substantially of late, further review in this area is probably warranted. First, the MWA budgeting and accounting functions are not yet automated. An external review of basic accounting controls and definitions (including the approach to handling depreciation), coupled with a plan for automation, should prove useful to MWA. A good computer-based system would provide the opportunity for a broader variety of reporting formats and more frequent and up-to-date management reviews of financial status.

The new MWA tariff structure is "progressive". Rates increase with the volume of water used. The schedule for residential customers has 13 categories with rates ranging from Baht 3.00 per cubic meter for consumption of less than 20 cubic meters per month to Baht 9.00 per cubic meter for monthly usage of 200 cubic meters or more. There is a separate, somewhat higher, rate schedule for non-residential customers.

The design of the new structure was based solely on financial considerations; i.e., targeted to achieve a break-even operating position for MWA. There was no economic analysis of alternatives (considering marginal cost) and no analysis of impacts on households in different income groups. A broader analysis undertaken now might not lead to any major adjustments to the schedule in the short term, but it would point out any serious problems that may exist and lay the foundation for more soundly based analyses and adjustments in the future. Also, the data should now exist to support analysis of the way consumers have modified their usage in response to the recent tariff increases. A study of this sort could yield valuable insights for the task of constructing an improved rate adjustment methodology.

Billing and Collections. MWA water bills are computer-generated at the central office (bill production, in fact, now uses about 95% of MWA's present computer capacity). Bills are then sent to the branch offices and distributed to the bill collectors who, for the most part, collect from customers in person. Some customers participate in a plan

in which amounts due are withdrawn directly from their bank accounts. Participation in this plan is not widespread as yet, but MWA is encouraging it. The mails are not used for billing and used only negligibly by customers in making payments. Payment arrears do not seem to be a problem (MWA's practice is to cut-off service if payment is more than one month late).

Further analysis devoted to this area should probably focus on reducing, and tightening the efficiency of, the in-person collection process. This could include improvements in monitoring employee efficiency and consideration of stronger incentives to expand daily output. It might well also include a test in which the collection task would be contracted out to private firms in some areas and comparative outcomes would be evaluated.

Meters and Meter Reading. In 1981, customer meters were a serious problem for MWA. As many as 20% of all meters were then either stopped, illegible or inaccessible. One of the key CDM recommendations was to replace older displacement type meters (often stopped in areas with sand or rust in the water) with velocity meters. In subsequent years, MWA implemented a sizeable meter replacement and repair program to address this concern. The major "physical" meter problem remaining is inaccessibility: many customer meters are located within the premises so that meter readers cannot access them directly. MWA is embarking on a program to move these meters to accessible locations at the edge of the property, although concerns have been expressed that this will make the system more prone to vandalism. As noted earlier, the CDM found that errors in billing due to faulty reader performance were infrequent (traditionally, MWA has had inspectors do random checks of the work of the regular staff). They did recommend, however, that readers be rotated frequently so they would not establish ties in any one neighborhood.

It would appear that the most important topics for review at this stage are related to staff efficiency, both in meter reading and in meter replacement and repair. This would involve improving reporting systems for performance monitoring and experimenting with alternative output incentives and quality control techniques. It also seems that the idea of contracting meter reading out to private firms in selected areas (with tough performance standards) is worth testing. The cost-effectiveness of moving existing meters to locations directly accessible to readers is likely to vary substantially depending on neighborhood and site conditions. Systematic analysis (and testing) in this area should lead to useful decision rules clarifying the circumstances as to when the move should or should not be attempted.

Illegal Water Use. The new illegal water use prevention unit at MWA has found a significant number of problem cases, possibly indicating a higher loss rate due to this cause than was previously estimated. The unit's approach is to study water billings for individual properties and, when use rates are consistently lower than would be expected considering characteristics of the user, to make a detailed inspection. The unit has also found large numbers of illegal taps in distribution lines near slum areas not presently served by the system. The findings of the unit have

not yet been documented, and doing so would be a first step in a further review in this area. Analysis of experience to date should lead yield guidelines as to more efficient approaches to spotting and dealing with problem cases. The establishment of a regular system for management reporting and review should also be an output.

Service to Slum Areas. It has been the practice of MWA to truck in bulk water to slum areas where households do not have individual connections. The water is provided free of charge. Because of costly maintenance and other problems traditionally associated with them, public standpipes are not provided. Given a rapid expansion of the slum population in Bangkok, a study of alternative approaches to water delivery in these areas seems needed. Slum areas also vary as to physical configurations, structural quality, and resident socio-economic characteristics. It is likely that different approaches may be effective in different areas. It is also likely that some cost-recovery potential exists in many of these areas. Efficient administrative methods would have to be designed to take advantage of it.

LEAK MONITORING AND MAINTENANCE-REPAIR STRATEGIES AND SYSTEMS

Water system leak detection, accomplished through soundings above underground pipes, is an expensive activity. Recommended practice is to use less costly measurement and estimation techniques first to identify sub-areas within the system where leakage is most severe. Then field measurement can be focused on those areas where it is likely to have the highest payoff. With increasing water pressures in the MWA system, the time should be right to follow this approach.

Master Metering and Loss Estimates by Branch. MWA already has master meters to measure water flows at source locations and major pumping stations. These are the source of data on total production in the system. Concern has been expressed about the accuracy of these meters. A first step would be to test their accuracy and repair or replace as appropriate.

The next step would be to install master meters to measure flows into each of MWA's ten branch office areas. Such meters exist now for three of the branches; funds for the remaining seven have not yet been budgeted. New data on the total flows into each branch combined with information on the volume of water sold by branch (already available), will permit branch-specific calculations of unaccounted for water similar to those done by CDM for the system as a whole. Obviously, such calculations would provide a more effective basis for prioritizing subsequent leak detection activities.

Leak Detection in Trunks and Distribution Mains. In the CDM estimates for 1982, leaks in service mains and connections (where work will be concentrated in the ADB project) accounted for the largest share of lost water (20% of production), but trunk and distribution main leakage was a close second (16%). Since they represent a smaller share of the total lineal distances in the system, leak detection focusing on

the larger sized mains should offer efficiencies (particularly when prioritized with branch-specific loss rate information as discussed above). The approach would probably entail installing pressure recorders along the trunk mains to check head losses. Results would be compared with estimates of expected velocities and heads at each location generated by a computer model (already available). Information from this analysis would be used as the basis for work scoping and priority setting in the design of a loan project to fund repair and replacement.

Maintenance-Repair Strategies and Systems. There will be a need for an orderly transition from MWAs immediate leak reduction efforts into an effective long-term maintenance and repair program. Defining a routine program in the past has been hampered by lack of data on flows at various points through the system (such as would be provided by the work noted above) and accurate information describing the system itself in physical terms. (The CDM report notes, for example, that while maps and plans are generally available they sometimes do not show as-built variations from contract drawings and are often inaccurate as to the locations of valves and pipe interconnections.)

In the mid-1980's it is clear that a fully automated information system to support maintenance and repair programs would be both feasible and highly cost-effective. It would contain: (a) descriptive data on locationally coded system components (lengths and sizes of pipe segments, valve locations, etc.); and (b) continued recording of problems (breaks and other damage) and repair/replacement actions (physical and cost information) linked to each detailed systems component. Even before such a computer-system is developed in full, however, it should be possible to use simpler computer techniques to devise a more efficient strategy for routine maintenance-repair activity using available data and to develop systematic methods for scheduling and reporting that activity.

Cost-Benefit Analysis of Alternatives. Overall, there is no doubt that reducing underground leakage is cost-effective. Some uncertainty has been expressed, however, as to whether it is so in all areas of Bangkok. In some older intensively built-up areas, the capital costs of repair and replacement may be so high that it makes sense to tolerate a continuation of fairly high rates of leakage (or to make a few comparatively inexpensive repairs which only cut down those rates). With more complete information on the system and leakage by location, it should be possible to examine this issue, and to develop sound criteria for evaluating the costs and benefits in different neighborhoods (assuming more detailed field inspections).

PERSONS INTERVIEWED

Bangkok Metropolitan Administration

Ms. Hansa Kaewbandit, Deputy Governor, Finance and Administration
Ms. Pratueng, Director, Budget Divison, Finance and Administration
Mr. Narong, Director, Revenue Division, Finance and Administration
Mr. Bampen Jatoorapreuk, Deputy Director, Dept. of Public Works

Metropolitan Waterworks Authority

Mr. Suvit, Acting Governor
Ms. Poungpaka Techasen, Assistant Governor, Finance
Ms. Chaunpis Dhamasiri, Assistant Governor, Planning and Development
Mr. Sutham Chatchavatwong, Assistant Governor, Water Loss Reduction
Mr. Chaidhavaj Deeowaomongkol, Staff, Water Loss Reduction Dept.

Coopers and Lybrand Associates

Dr. Alan Barlow, Director, Bangkok Office
Mr. Christopher Timbrell, Director, PWA Tariff Study

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Best Available Document

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Sixth Plan targets Bangkok for major shake

by Thek Chongkhadikul

THE Bangkok Metropolitan Administration (BMA) is being developed into the Bangkok Regional Administration (BRA) to cope with the multiple problems of a rapidly burgeoning city and provide for orderly growth into the 2000's.

Revealing the above, Dr Phisit Pakkasem, deputy secretary-general of the National Economic and Social Development Board (NESDB), reported that the plan is being incorporated into the Sixth Five-Year Plan after exhaustive studies.

The project calls for much greater participation of the private sector in infrastructure construction, provision of services and absorbing of an expanding labour force in the Bangkok Region which will include the five adjacent provinces into a Greater Bangkok.

Subsidies for Bangkok will be slashed so that the people will have to pay for efficient service and the Government could divert more funds to the rural areas and to urbanisation in other parts of the country.

"Bangkok will have to cope with the demand for service by privatising services and proper pricing," said Dr Phisit.

"In order to prevent further congestion of the inner core of the city, Silom, Sathorn we may have to impose a system under which private cars entering the area within certain periods of the day, would have to pay. But before this can happen we need to have a good public bus service in the inner core."

To provide for financing of essential facilities a user-charge system will have to be imposed. For example, the land benefitting from flood prevention will have to be taxed for the facility so that there can be recovery for the cost of the infrastructure.

This "sharing the burden" will be the philosophy in the development of Bangkok, said Dr Phisit who has been placed in charge of the Bangkok development plan.

Various agencies have submitted 99 projects for the development of the Bangkok Region. "This is far beyond what the Government can afford," commented Dr Phisit. "We have to set our priorities, look into what is affordable, see how we can obtain the finance, and how the burden can be shared with state enterprises and the private sector."

Besides being one of the 20 biggest cities in the world, Bangkok is the "most primate city in Asia" — the biggest concentration — almost 60 per cent of the national total of urban population in one city.

Bangkok cannot be stopped from growing but the growth can be made in "an orderly fashion," said Dr Phisit.

"We are going to make Bangkok a nice city to live in but expensive, particularly in the inner core, like Bangrak-Silom-Sathorn and Bangkapi areas. We will provide you with efficient service but you will have to pay for it. You cannot expect any subsidy from the Government. We will incorporate cost recovery into the services."

"There will have to be a sharing of the burden among the central government, state enterprises, the BMA itself and the private sector to develop infrastructure and services in Bangkok Region. The Government cannot be expected to subsidise these services."

"The five state enterprises in the BMA — the Metropolitan Waterworks Authority, the Bangkok Mass Transit Authority (BMTA), the State Railways of Thailand (SRT), the Expressways Authority of Thailand (ETA) and the National Housing Authority, have to come under metropolitan management with private sector participation."

These enterprises earned 9,729 million baht in 1984 but spent 10,977 million. They made an aggregate loss of 1,248 million baht in their operations which had to be subsidised.

Dr Phisit reported that half of

FROM PAGE

Bangkok's rebirth...

the national subsidies go to Bangkok. "This is unfair for the other parts of the country."

The private sector will be given a bigger role such as in garbage collection and in the building of roads from which a toll can be collected for repayment of the construction cost.

The bus service will have to be privatised," said Dr Phisit, who noted that the minibuses are privately-owned.

World Bank experts are working with him on the development of Bangkok Region.

Bangkok is being expanded from the Bangkok Metropolitan Area into a Bangkok Region which includes Pathum Thani, Nonthaburi, Samut Prakan, Samut Sakhon and Nakhon Pathom which will be suburbs of Bangkok.

Bangkok with 6.2 million inhabitants has grown from a "metropolis" into a "megopolis." It has been ranked among the top 20 cities of the world, "in fact as the 17th largest," according to Dr Phisit. Thailand, with about 51 million people, also ranks as the 17th most populated country.

Dr Phisit forecast that by the year 2000 Bangkok's population will have grown to 11.5 million. In 1990 it will be 9.3 million.

More migrants from the provinces are anticipated at the rate of five per cent per year.

The population of the Bangkok Region which at present represents 15.5 per cent of Thailand's total population will be 17.7 per cent by 2000. The high growth rate will be in Nonthaburi, Pathum Thani and Samut Prakan due to industrial relocation to these suburbs.

MIGRANTS

The Bangkok Region population at present is 45 per cent of the national urban population and will be lowered to 43 per cent in 2001.

The 1970 census showed that 52 per cent of migrants came from the central plain provinces and 15 per cent from the Northeast. In 1980, 46 per cent of migrants came from the Northeast. Between 1975 and 1980 Bangkok gained 286,000 migrants.

Dr Phisit noted that the migrants from the Northeast "don't contribute to poverty" but are "active young people who provide a more highly motivated work force than natives."

Employment in the Bangkok Metropolitan Area has grown at the rate of 5.7 per cent per year compared to 5.2 per cent in adjoining provinces. Dramatic growth in manufacturing has been noted in Samut Prakan and Pathum Thani, particularly in medium and large-scale industries such as textiles.

Dr Phisit expects that between 1986 and 1990 most of the new labourers will be "educated" with university level or vocational school graduates growing in the work force at the rate of 10 per cent per year.

Open unemployment in the Bangkok Region will be around 200,000 in 1991 compared with 105,000 in 1984, particularly among those with low education.

Dr Phisit anticipates that those who are self-employed and employees in establishments of less than ten people will absorb about 49 per cent of the work force. These include professionals and hawkers who have become a significant factor in the metropolitan economy.

Dr Phisit reported that Bangkok has "better housing stocks than other ASEAN or Latin American countries" for low and middle income groups. From 1987 to 1991 housing by developers will increase by 168,190 units while public housing will add another 22,000 units with shophouses numbering 5,910 and slum housing units 14,830.

There will be more organised housing sectors while the role of public housing will be marginal, according to Dr Phisit.

Property tax will help to rationalise land use in the future.

"We have to stop unproductive land speculation right in the middle of the city.

"To cope with growth in population, we have to find more employment opportunities and provide housing, schooling and other facilities."

"The magnitude of this city's status must be recognised in view of the fact that while other major cities of the world have declining populations, Bangkok is still growing at about 2.4 per cent per year. This is higher than the national growth rate of 1.4 per cent."

Dr Phisit said: "Half of the growth is due to migration, a case of the rural-push and urban-pull situation. How do we cope with the growing problems, especially when we take into account that we are a poor country?"

"We are a medium income country with an average per capita income less than the equivalent of US$1,000." Within these constraints — big, growing but poor — what can we do? This is the key issue faced by the NESDB as Thailand moves towards the year 2000: what kind of metropolitan development strategy should Thailand pursue?"

"Political forces in Bangkok are very influential, including vested interests with a political base who want the best — free or cheap, but good. That is the mentality of our urban people. They want good service but cheap, they have high taste but low income. Bangkok's political influence is so strong that if the Government is not too careful, resource allocation will be too much concentrated in the metropolitan area.

The development plan for Bangkok has been drawn up under conditions of declining commodity markets, increasing land pressures and resultant migration into the cities for employment which forces the Government to adjust from a rural-based to an urban-based economy.

Land use control for metropolitan areas including town planning zoning areas as "residential" or "commercial" or so-called "green belts" which would be "idealistic" is considered "outdated."

GUIDELINES

Governmental infrastructure programmes should provide the guidelines for more orderly growth of the capital city.

"The economic power in Bangkok is so strong that developers do not wait for town planning but take into consideration opportunities provided by economic aspects. We have to respect their impact on the market if we are to take the metropolitan management approach to deal with Bangkok's problems," said Dr Phisit.

"The Government's infrastructure of roads, flood control, housing projects and industrial estates should influence the way the metropolis is developed."

The pattern of growth in Bangkok has been in the "polycentric concept," said Dr Phisit. "There is no 'downtown' in Bangkok. Bangkok has developed many centres, which is a good thing. But this development is difficult for a transportation system and water supply.

"Growth is also determined by the interplay of the outward push of transportation improvements, like the Expressway push towards Don Muang, the Sukhumvit Highway push towards the Eastern Seaboard, and the Phetkasem Highway towards Pak Thor.

"There has also been the pull towards the inner core around Silom, which has become stagnant. Linear development is towards the West, towards Nakhon Pathom.

"The middle income and the low income groups have to move to the peripheral areas, the suburbs. They have to travel a long distance between home and workplace, and there is no good transport service."

Dr Phisit cited these as the reasons behind the proposed strategy for Bangkok Region in the Sixth Year Plan for development towards 2000.

PART V

INFRASTRUCTURE PILOT STUDY: A PROGRAM OF COOPERATION WITH THE AFRICAN DEVELOPMENT BANK

Principal Author: George E. Peterson
Date: April 21, 1986

I. INTRODUCTION

This report recommends a RHUDO and PRE/H strategy for establishing a five-year program of cooperation with the African Development Bank in the area of water and sanitation infrastructure. As requested in the terms of reference, it identifies two projects consistent with this strategy that can start in FY 1986.

The report draws heavily on the consultant's discussions with officials of the ADB and the RHUDO/WA office, as well as other USAID officials.

BACKGROUND

The African Development Bank was established in 1964, and has compiled an impressive record of lending for economic and social development throughout Africa.[1]

Although the Bank now has membership and capital contributions from outside the region, it is managed by Africans and viewed by Regional member countries as an African institution. The Bank has a sound financial position. In the United States market, its long-term bonds are rated AAA by Moodys.

From the outset of Bank lending operations, water supply and sanitation has been one of the major areas of loan activity. During the period 1974-82, lending of the Bank Group in this sector averaged UA 59 million[2] or 12.5% of total lending. Somewhat more than half of the sector lending took place through the African Development Fund (ADF) at zero interest; the remainder (45%) took place through ABD at the Bank's commercial rate. The current five-year Operational Program allocates an average of UA 107 million per year or 8% of total lending to water supply and sanitation. In the early years, water supply and sanitation projects were located mostly in large, urban areas; more recently, they have included secondary towns and rural areas.

On the occasion of the Africa Regional External Support Consultation meetings for Water Supply and Sanitation, held in Abidjan 25-29 November 1985, the ADB reviewed its lending experience in the sector. It candidly concluded that "The results of past lending operations to the water and sanitation sector have not been at all satisfactory." Of a total of 79 projects financed prior to 1982 only 15 had been completed by late 1985. Project delays of six or eight years were not uncommon. The Bank found it difficult, too, to determine the impact of the specific projects it had financed on overall sector

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1/Robert K.A. Gardiner and James Pickett (eds.), The African Development Bank 1964-84: An Experiment in Economic Cooperation and Development (Abidgan: African Development Bank, 1984).

2/A Bank UA (unit of account) has a value of almost exactly US $1.00

conditions, such as the ability of country institutions to meet future water and sanitation needs from their own resources, the operation and maintenance of projects once construction was completed, or the coordination of water investments with other national development planning.

As a consequence of this internal assessment, the Bank has decided to change its lending strategy in the water supply and sanitation sector in some degree. In the past it received applications for and financed individual projects. In the future it proposes to:

- Conduct water and sanitation sector studies which establish priorities for and identify constraints in each nation's water and sanitation sector. Individual projects will then fit country sector guidelines.

- Coordinate ADB lending more closely with other international donor activity to reinforce a common set of policy goals and institutional reforms.

- Develop an overall water and sanitation sector strategy for the Bank to guide its future lending. The strategy would give greater importance to institutional management capability.

These new activities create an excellent opportunity for RHUDO-ADB technical cooperation. The Bank has requested such assistance in order to help establish its new orientation for sectoral lending. From USAID's perspective, technical assistance can help achieve the twin goals of policy dialogue and strengthening of institutional management capability, both for individual borrowing countries and for the Bank itself. From the RHUDO perspective, involvement in the water and sanitation sector is a practical entry point for involvement in urban development policy. There is a good prospect, too, that over a three-year period a Housing Guarantee loan for integrated sites and services development can be developed through ADB. The Public Utilities group of the Infrastructure and Industry Division of ADB has responsibility for integrated site development unlike lending for housing construction, which is financed separately by Shelter Afrique.

The Bank's program for technical assistance also fits the priority recommendations made by the Africa Regional External Support Consultation for the water supply and sanitation sector. The conference's final recommendations specifically urge that:[3]

- "External support agencies, who have not already done so, should prepare their own Water Supply and Sanitation strategy papers. These strategies could be developed into guidelines for use of personnel, consultants, and recipient countries."

3/Secretariat for the Regional External Support Consultation, World Health Organization, Report on Africa Regional External Support Consultation in Connection with th International Drinking Water Supply and Sanitation Decade (Abidjan/Geneva, January 1986).

- "External support agencies should aim at standardizing their project evaluation criteria and undertake joint appraisals which would ultimately lead to more project cofinancing and, thus, a streamlining of sector activities and optimization of resources."

- "The Consultation noted a general weakness of most (water and sanitation) sector institutions in Africa. In urban areas, investment projects should be preceded, or accompanied, by technical cooperation programs to strengthen the institutions' financial, technical and management capacity."

II. A STRATEGY FOR RHUDO/ADB COOPERATION

A strategy for RHUDO/ADB cooperation can be divided into short-, intermediate-, and long-term goals. The short-term goals can be defined programmatically at this point. The other goals represent directions of movement, whose details undoubtedly will be re-defined as experience is accumulated.

SHORT-TERM GOALS

ADB has programmed for calendar 1986 completion of a Bank strategy paper for the water supply and sanitation sector. This is a top priority of the Infrastructure and Industry division, and was identified as an especially urgent priority by the U.S. Executive Director of the Bank and by REDSO officials. The Bank has requested RHUDO technical assistance in this effort. Approximately eight to ten weeks of consultant time and a budget of approximately $30,000 are appropriate for this task. Program detail on the task is included in Section IV of this report.

ADB plans to conduct preliminary sector studies (or sector identification missions) in all countries where it expects lending activity. These missions will involve approximately two weeks in the field, plus four weeks in Abidjan. Their purpose is to determine broad priorities for each country's water supply and sanitation sector, identify major obstacles to sector development, and establish guidelines for ADB country lending activity. Where appropriate, the sector identification mission will also prepare terms of reference for a full-scale country sector study or for an assessment of institution-building needs. A typical mission team might include one engineer and one economist from ADB, plus two professional counterparts from the host country. It will be expected to relate ADB policy in a country to that of other international donors in the water and sanitation sector.

ADB has requested that RHUDO consider funding consultants to participate in the first preliminary sector identification studies. These will serve as a model for the Bank's future sectoral analysis. ADB's greatest needs are for economists and experts in institutional

organization familiar with African water supply and sanitation institutions.

In West Africa, sector identification missions in Guinea, Senegal, and Ghana meet both Bank and RHUDO/WA country priorities, and are recommended for RHUDO technical assistance over the next 12 months. At least one of these missions can take place in FY 1986.

Each mission would require approximately six weeks of consultant time.

INTERMEDIATE-TERM GOALS

In the intermediate term, (two year planning horizon), ADB plans to conduct full sector studies in key member countries. Section IV provides an outline of the Bank's present thinking about the content of such studies. Selection of countries and the details of the content of the sector studies must await completion of the sector identification missions, as well as an assessment of country borrowing proposals. About six months' commitment will be required from each member of the sector study team.

ADB also intends to conduct institutional assessments and lay the groundwork for future institution building in countries where strengthening water supply and sanitation institutions is critical to future sector performance. This commitment reflects the judgment that institutional weaknesses have severely hampered the execution of investment projects and the efficient operation of capital assets once in place. An institutional assessment in the water supply and sanitation sector would identify current management responsibilities, both within institutions and between institutions, for specific tasks, such as maintenance, metering, billing, tariff-setting, distribution network expansion, new source development, etc.; assess the performance of these tasks; and identify institutional obstacles to better performance. The report would include terms of reference for future institution building projects and recommend institutional reforms that could be supported through ADB.

RHUDO involvement in these activities could be on different scales. At the lesser end of commitment, a single consultant for a six-month period could participate in an institutional assessment or contribute to a country sector study. At the greater end of commitment, RHUDO/USAID could undertake to finance one or more countries' entire sector assessment through ADB. The Swiss and French have provided assistance of this type in West and Central Africa.

LONG-TERM GOALS

The Infrastructure and Industry division of ADB is responsible for integrated site development, i.e., the coordinated installation of public utilities—water, electricity, and sewer—to development sites,

and for the coordination of this infrastructure investment with housing development and urban expansion planning.

The division has not yet financed much integrated site development. However, one of its longer-run goals is to do so, applying the Ivory Coast experience with coordinated site development to other countries, like Senegal, which appear to have the institutional capacity to implement it.

Such projects would benefit greatly from RHUDO's world-wide experience in sites and services development, and might prove a sensible candidate for HG financing. Bank officials assigned this goal a high priority, but acknowledged that they would require a significant period of preparation for such a project. In content and policy emphasis, a loan to ADB for integrated site development meets all HG criteria, including the target group of beneficiaries. The one serious question is whether a HG can deliver funds to ADB at a lower rate of interest than its direct borrowing in the U.S. market.

COORDINATING RHUDO/ABIDJAN AND RHUDO/NAIROBI

Consistent with the terms of reference, this report concentrates on technical cooperation initiatives concerning countries in West and Central Africa. However, ADB officials emphasized that they would prefer to deal in coordinated fashion with USAID/RHUDO for all of Africa. Their principal priority for a water supply and sanitation sector study is now Kenya. Zambia is another high priority. The Bank urged PRE/H Washington to consider how cooperation with ADB in the infrastructure area can be extended to East Africa, and how the office can integrate the two regions for purposes of dealing with the Bank. It suggested that the Abidjan office serve as administrative liaison for all PRE/H-ADB activity, a model that the World Bank now follows.

ASSEMBLING A FINANCING PACKAGE

Technical assistance financing for cooperation with ADB potentially can come from five sources:

- RHUDO/WA has reserved a modest FY 1986 budget for this purpose, and may be able to provide further budget support in future years.

- There is a possibility of follow-on support from PRE/H Washington for the Infrastructure Pilot Projects study, from which this initial assessment was financed.

- There is a possibility that the Water and Sanitation for Health Project of USAID (WASH) can jointly finance sectoral technical assistance. Collaboration between PRE/H and WASH on one of the infrastructure pilot studies would be highly desirable as an institutional precedent. One of the sector

identification or institutional assessment missions would seem to fit well with WASH's plans to field test its Guidelines for Institutional Assessment of Water and Wastewater Institutions.[4]

- There is a possibility of earmarking part of the $15 million REDSO institutional support grant to ADB for water and sanitation sectoral purposes. The REDSO budget covers short-term technical assistance and feasibility studies, as well as long-term personnel at the Bank. In our discussions with REDSO, it was indicated that this use of funds was perfectly consistent with grant purposes if ADB identified it as a priority objective.

- There is a possibility that the PRE Bureau may wish to support TA for private sector initiatives in the water supply and sanitation sector, or that these would appropriately be included under future PRE/H private-sector shelter sector programs. Private sector responsibility for water supply has a stronger record of performance in West Africa than anywhere else in the developing world. In the Ivory Coast, a private company, SODECI, operates the national water system, and has compiled an excellent record of decentralized management. There are now proposals to turn over to SODECI ownership of the water system's capital assets and responsibilities for future capital investment, as well. The World Bank has recommended that Guinea's water supply system be privatized, following the Ivory Coast model. This recommendation would be a major focus of a sector identification assessment in Guinea.

One practical short-term measure would be to integrate a professional manager from SODECI into the mission teams for carrying out sector identification studies in other countries.

III. BACKGROUND FINDINGS

PROJECT APPROVAL PATH

The terms of reference call for this report "to outline the different steps involved from the time of request for a specific activity" to final project approval by the Bank.

The project approval path described below is the standard path used at present. As noted previously, the Bank intends to establish the practice of conducting a sectoral assessment prior to project consideration. This would both provide a framework for evaluating specific project requests and suggest project priorities for overcoming major constraints in each country's water and sanitation sector.

4/Guidelines for Institutional Assessment, Pre Field Test Draft (March 1986).

The first formal step in the project approval process is an application from a prospective borrower - usually a national Ministry of Finance or Ministry of Development. However, this formal step almost always is preceded by one of three forms of informal project origination. National officials from the implementing agency may initiate a project and discuss it informally with Bank representatives before approaching the national Ministry of Finance or Development. Alternatively a project recommendation may be made by an ADB reconnaissance mission. Such missions typically are undertaken at ADB initiative, although with prior consultation with the national government. Finally, a project may have its origin in the work of other international lending institutions. The World Bank, for example, as a result of its activities in a country, may suggest to national officials or ADB complementary ADB financing.

When a formal project application is submitted to ADB, it contains a project profile that identifies the legal status of the borrower, the nature of the project and its development goals, and the relationship of the project to the country's development plans and priorities.

Before receiving review, the project application should be accompanied by studies of the technical, economic, and financial feasibility of the project. Those may be performed by the country itself or national consultants. Projects proposed for ADF funding (see below), and which have received favorable informal review, generally receive Bank technical assistance to conduct the feasibility studies.

The project profile and supporting studies are reviewed first within the Bank division that will have technical supervision of the loan, then within the Central Projects Unit. If the project review is favorable, an appraisal mission is sent to the applicant. Its primary purpose is to establish the "bankability" of the project—i.e., to establish that the project is feasible, that it has an economic rate of return (or sufficient social benefit to justify a subsidized loan), and that there is loan security for the Bank. More study may be requested to resolve issues identified at this point.

Once a positive recommendation has been made for project approval by the appraisal mission, formal negotiations as to loan terms and conditions are begun. The negotiated loan is authorized by the Bank executives and the ADB Board.

Although the above steps summarize the formal loan approval process, as described in Bank documents, there is, of course, no single path for loan approval. Loans that raise political issues or involve large sums of money receive earlier executive review. Technical approval of a loan application often is an iterative process, involving more than one round of pre-feasibility studies, as new issues are identified.

At the point where a loan application has received its first round of Bank approval, and before the appraisal mission, a brief description

of the proposed loan is published in the Quarterly Operations Summary. Projects continue to be listed until they are either approved (in which case there are two final listings) or dropped, if a decision is made not to proceed further with loan processing.

Note that Bank technical assistance support extends only to the feasibility stage of project design. It does not include implementation planning. This has meant that in many cases projects have encountered long delays between the time projects are approved for Bank financing and actual work commences. The project, as built, may also differ significantly from the project as evaluated at the feasibility stage.

AFRICAN DEVELOPMENT FUND AND BANK TECHNICAL ASSISTANCE LENDING

Bank Group operations are divided between the African Development Bank, ADB, which makes loans at its favorable commercial rate plus administrative fees, and the African Development Fund, ADF, which makes long-term loans at zero interest. ADF lending is restricted to the poorer nations of Africa and principally for projects having a large social component.[5] More than half of lending in the water and sanitation sector is through the ADF.

Five percent of ADF resources are set aside for technical assistance lending, on the same long-term, interest-free basis as ADF project financing. The Technical Assistance Account now finances about $70 million annually of Bank-sponsored technical assistance. In addition, technical assistance is financed through special accounts funded by individual donor countries for specified purposes. Models for USAID-RHUDO Technical Assistance, Contracting and Project Funding

USAID-RHUDO technical assistance and project funding could be provided to the Bank Group in one of three forms.

First, funding could be provided directly to the Bank as restricted project support. The current $15 million of budgeted REDSO support for long- and short-term technical assistance is delivered in this manner. Under this option, RHUDO would contribute funds to ADB that are earmarked for a specific technical assistance project.

ADB officials expressed a strong preference for this type of arrangement, which also conforms to the way other countries' technical assistance is administered. Under this option, technical assistance consultants are hired by ADB and are contractually responsible to ADB. ADB and RHUDO would agree on terms of reference and a short list of

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5/ADB Regional member countries are divided into four groups, based on per capita income: A1, A2, B, and C. ADF loans can be made only to the first three groups. ADF policy is to target loans increasingly on categories A1 and A2. Countries in category A1 had 1982 per capita income of $350 or less; countries in category A2 had per capita incomes between $350 and $550. The Bank also administers a small Nigerian Trust Fund.

consultant firms and individuals, from which ADB would make its selection. ADB would accept the USAID condition that all consultants be drawn from the U.S. or local countries. Essentially this arrangement has been followed in RHUDO administration of the Sierra Leone housing technical assistance.

Second, RHUDO and ADB could enter into a joint financing agreement. Such an arrangement is more appropriate for project financing than for technical assistance. For example, a HG loan could be used to finance the local costs of a site development and infrastructure project, while other ADB funds are used to finance foreign exchange requirements. Co-financing of this type has been done in Tunisia to finance urban upgrading jointly with the World Bank. The Housing Guarantee is being used to finance local currency costs.

It is important to emphasize that ADB procedures require that jointly financed projects be administered by ADB and that all phases of such projects be subject to ADB competitive bidding regulations. In particular, these requirements prohibit national set asides, even for the country where the project is located. ADB does have provisions stipulating that if host country providers are within 10% of the low bid on construction contracts and within 15% on supplies of manufactured products, they will be awarded the contracts. However, there are no absolute set asides. Apparently, this would be inconsistent with AID procurement requirements, which require that contracts be awarded either to US or host-country firms.

Third, a technical assistance agreement could in principle be reached through parallel financing. Under this option, RHUDO would finance directly an activity that parallels an ADB interest and share results with the Bank. As applied to technical assistance, RHUDO might pay for an economist or institutional management specialist to accompany an ADB water sector identification team in a country mission. For some missions, a three-way ADB-AID-World Bank team might be desirable. This type of cooperation has been carried out with other international organizations. ADB indicated that it might constitute an acceptable arrangement if ADB was able to select the consultant from a RHUDO short list and be responsible for acceptance of the consultant's work product. However, ADB preferred that any consultants be hired directly by the Bank.

IV. PROJECT DETAIL

BANK STRATEGY PAPER FOR WATER SUPPLY AND SANITATION SECTOR

The Bank strategy paper is intended to establish guidelines for the Bank's future policies in the water and sanitation sector. It is meant to help the Bank move beyond project-by-project appraisal to a coordinated strategy for assisting the sector throughout Africa.

The work will involve a systematic review of Bank lending experience in the water supply and sanitation sector; one or more missions to other international lending institutions to compare priority issues for sectoral appraisal; and internal discussions over the Bank's policy posture. A preliminary working outline for the sectoral strategy paper is attached.

A working draft of the strategy paper is scheduled to be prepared over the summer or early fall of 1986, followed by inter-departmental discussion, review and revision. A RHUDO-provided consultant should be available for approximately eight weeks of initial discussion and briefing, plus one week of subsequent inter-departmental review.

The consultant should (1) be an economist and/or expert in the management and organization of water and wastewater institutions, (2) have contacts with other international donors in the sector, especially the World Bank, (3) have practical work experience in Africa, (4) preferably have French language fluency. Country Sectoral Studies.

Country sectoral studies are intended to place Bank projects in the context of a country's sectoral policy goals and institutional management capacity. They provide a critical opportunity for initiating policy dialogue and achieving sector-wide impacts from Bank lending projects.

It is proposed that an initial sector identification mission be sent to each borrowing country. This mission would identify key policy issues, key constraints on sector performance, and assess institutional strengths and weaknesses in the water supply and sanitation sector. Out of this sector mission would come (a) an overall policy context for Bank activity in the sector, (b) terms of reference for full-scale sectoral studies in those countries judged to be most important for Bank sector lending, (c) terms of reference for a full-scale institutional capability assessment in countries where the payoff to such assessments is judged to be greatest.

The Bank's working outline for the full sectoral studies is attached. It gives the best idea of current thinking about the content and orientation of the studies.

Although the immediate objective of the sectoral studies is to appraise sector policies and institutional capacity in each borrower country, an indirect objective—and one that makes the activity suitable for REDSO support—is to build up the capacity of the Bank to conduct sectoral assessments. Ths U.S. Executive Director emphasized that he would like to see the process recommended here for water supply and sanitation serve as a model for project consideration in all major sectors within the Bank.