

PD-ABE-716
ISA 79079

**DESIGN INPUTS FOR
INDONESIA HG-002:
MUNICIPAL FINANCE FOR
ENVIRONMENTAL INFRASTRUCTURE**

G. Thomas Kingsley,
George E. Peterson, and
Bruce Ferguson

September 1992

Prepared for the United States Agency for
International Development/Indonesia

U.I. Project 6280

THE URBAN INSTITUTE
Washington, D.C.

TABLE OF CONTENTS

OVERALL PROJECT DESCRIPTION 1

SECTION 1 PROJECT GOAL, PURPOSE, OPERATION, AND OUTPUTS 1

1.1 Project Goal and Purpose 1

1.2 Project Operating Procedures 1

SECTION 2 BACKGROUND: THE MUNICIPAL FINANCE PROJECT AND THE NEED FOR THE NEW HG PROJECT 3

2.1 Introduction 3

2.2 The Municipal Finance Project 3

2.3 The HG-001 Policy Action Plan 3

2.4 Findings and Conclusions of the Interim Evaluation 4

2.5 The Need and Justification for a Second HGL Project 6

SECTION 3 THE POLICY ACTION PLAN 9

3.1 Introduction 9

3.2 Structure of the New Policy Action Plan 9

3.3 Addressing Priority Concerns within the Plan Structure 9

3.4 Main Changes to the Policy Action Plan and their Rationale 11

3.5 The HG-002 Policy Action Plan 14

SECTION 4 THE HG-002 INVESTMENT PROGRAM 23

4.1 Introduction 23

4.2 Hg Investment Objectives 23

4.3 Eligible Programs 23

4.4 The Below-Median Income Criterion 24

4.5 Requirements Related to Local Control, Environmental Impact Assessments, and the RDA 25

4.6 Past Investment Program Experience and Future Targets 26

SECTION 5 LOGICAL FRAMEWORK	31
Project Title: Municipal Finance for Environmental Infrastructure	31
Project Goal: The Broader Objective to which the Project Contributes	31
Objectively Verifiable Indicators:	31
Measures of Goal Achievement	31
Means of Verification	31
Important Assumptions	32
Assumptions for achieving goal targets:	32
Project purpose	32
Narrative Summary	32
Objectively Verifiable Indicators	32
Means of Verification	33
Important Assumptions	33
Outputs	33
Narrative Summary	33
Objectively Verifiable Indicators:	34
Illustrative Output Targets	34
Means of Verification	34
Important Assumptions	35
Assumptions for achieving outputs:	35
Inputs	35
Narrative Summary	35
Objectively Verifiable Indicators:	35
Implementation Target (Type and Quantity)	35
Means of Verification	36
Important Assumptions	36
Assumptions for providing inputs:	36
SECTION 6 TECHNICAL ASSISTANCE AND TRAINING PROGRAM	37
6.1 Introduction	37
6.2 TA/Training for Urban Environmental Quality Management	37
6.3 TA/Training for Reforming the Local Government Finance System	40
6.4 TA/Training to Develop Urban Management Guidelines and Indigenous Technical Assistance and Training Capacity	43

ANNEXES

ANNEX 2 THE ROLE OF MUNICIPAL CREDIT: A STRATEGY FOR STRENGTHENING RDA	46
The Case for Greater use of Municipal Credit	46
Constraints on Municipal Lending	48
Evolution of the Regional Development Account	50
Functioning of the RDA	51
The Longer Term Role for Credit	55
The Choice of Sectoral Credit Policy	60
A Strategy for Institutional Development of the RDA	61
ANNEX 3 URBAN ENVIRONMENTAL QUALITY MANAGEMENT AND INTEGRATED INVESTMENT PROGRAMMING	63
SECTION 1 INTRODUCTION AND SUMMARY	63
1.1 INTRODUCTION	63
1.2 SUMMARY OF FINDINGS AND RECOMMENDATIONS	63
Urban Environmental Trends	63
Past Efforts to Address Urban Environmental Degradation and Their Inadequacies	64
Implications for AID's Municipal Finance Project	65
Suggested Approach: Local UEQM Strategies Linked to IUIDP Updates	65
Urban Disaster PMP	65
UEQM Program Themes	67
Building the UEQM Program into HG-002	68
SECTION 2 URBAN ENVIRONMENTAL CONDITIONS AND TRENDS	69
2.1 Introduction	69
2.2 Environmental Conditions in Indonesia's Cities	70
Waste Water and Sanitation	71
Solid Waste Disposal	72
Air Pollution	73
Industrial Pollution and Toxic Waste	74

2.3	PERFORMANCE IN INFRASTRUCTURE PROVISION AND LAND MANAGEMENT	76
	Water Supply	76
	Sanitation	78
	Solid Waste Management	80
	Land Development and Use	81
	SECTION 3 INSTITUTIONAL ANALYSIS	83
3.1	Introduction	83
3.2	The Ministry of Population and the Environment	83
3.3	The pollution Control Agency (BAPEDAL)	84
3.4	The Clean Cities Program (ADIPURA)	84
3.5	The Clean River Program (PROKASIH)	85
3.6	The Environmental Assessment Process (AMDAL)	86
	Operating Problems	87
	Approaches to Strengthening AMDAL	88
3.7	AMDAL IN THE MINISTRY OF PUBLIC WORKS	88
	Process Steps, Rules, and Responsibilities	89
	Problems and Proposed Solutions	90
3.8	THE LACK OF ENFORCEMENT	92
	Lack of a Legal Basis for Enforcement	92
	The Lack of Regional Presence	92
3.9	ENVIRONMENTAL NGOs AND ENVIRONMENTAL STUDY CENTERS (PSLs)	93
	Environmental NGOs	94
	Environmental Study Centers (PSLs)	94
3.10	ENVIRONMENTAL ACTIVITIES OF OTHER DONORS	94
	The World Bank	94
	Canadian Assistance (Environmental Management and Development in Indonesia--EMDI)	96

SECTION 4 - URBAN ENVIRONMENTAL QUALITY MANAGEMENT:	
A SUGGESTED APPROACH	97
4.1 INTRODUCTION	97
4.2 NEED TO IMPROVE CURRENT UEQM INSTITUTIONS AND APPROACHES	97
Problems with After-the-Fact Environmental Assessments	97
Giving Primacy to Local Leadership in UEQM	97
4.3 BUILDING UEQM INTO LOCAL INVESTMENT PROGRAMMING	100
Advantages of UEQM/IUIDP Linkage	100
The Next Step: Investment/UEQM Strategies	100
Urban Disaster Prevention, Mitigation, and Preparedness	102
4.4 ELEMENTS OF A LOCAL UEQM STRATEGY	102
Water Supply	102
Household Wastes	103
Industrial Wastes	104
Intracity Transportation	104
Urban Land Development and Use	105
Cross-Cutting Themes: Economic Incentives, Effective Regulation, and Stimulating Environmental Awareness	105
SECTION 5 BUILDING URBAN ENVIRONMENTAL QUALITY MANAGEMENT INTO THE HG-002 PROGRAM	107
5.1 Introduction	107
5.2 Giving Priority to UEQM in the Policy Action Plan	107
Implementing a coordinated and decentralized process for programming urban infrastructure investment and urban environmental quality management (Policy 2)	108
Strengthening and clarifying local government responsibility for urban infrastructure (Policy 1)	109
Enhancing local government resource mobilization, financial management, and involvement of the private sector in infrastructure and service delivery (Policy 3)	109
Strengthening the institutional capacity of local governments (Policy 5)	109
Improving intergovernmental coordination and consultation in urban development (Policy 6)	110

5.3	TECHNICAL ASSISTANCE AND TRAINING: SUPPORT FOR THE DEVELOPMENT OF LOCAL UEQM STRATEGIES	110
	Environmental Monitoring	110
	Designing an Approach to UEQM Analysis and Strategy Formulation	111
	Demonstration Projects: Working with Selected Cities to Develop UEQM strategies	112
	Indigenous Technical Assistance and Training Capacity	112
5.4	ENVIRONMENTAL CONCERNS AND THE HG-002 INVESTMENT PROGRAM	113
	ATTACHMENT 3.1 LIST OF REFERENCES	115
	ATTACHMENT 3.2 COMMUNITY INVOLVEMENT IN ENVIRONMENTAL INFRASTRUCTURE AND SERVICES	118
	The Influence of Local People on the Budget Process and Environmental Infrastructure Decision-Making	118
	Community Demand and Willingness to Pay	119
	An Example of Community Service Provision: Community Composting in Bandung	121
	ATTACHMENT 3.3 APPROACH TO URBAN ENVIRONMENTAL MONITORING	124
	Monitoring Surface and Groundwater Quality	125
	Monitoring Ambient Air Quality	126
	Monitoring Indoor Pollution	126
	Staffing and Total Cost	127
	ATTACHMENT 3.4 AN ENVIRONMENTAL CITY-SHARING PROGRAM	128
	ATTACHMENT 3.5 SERVICE PROVISION AND COST RECOVERY EXPERIENCE IN SELECTED INDONESIAN CITIES	130

PROJECT DESIGN FOR INDONESIA HG-002:
MUNICIPAL FINANCE FOR ENVIRONMENTAL INFRASTRUCTURE

PREFACE

This document contains inputs to the design for a new Housing Guaranty Loan (HGL) program for Indonesia: the *Municipal Finance for Environmental Infrastructure Project*. This Project follows an approach similar to that of the prior HGL for Indonesia, but contributes new substantive goals and outputs as required and appropriate for this next stage in Indonesia's decentralized urban development program.

Included are: an overall description of the project; an annex on the role of municipal credit (strengthening the Regional Development Account; and an annex on the urban environmental problems of Indonesia and means of addressing them in the new project.

Within the Overall Project Description, Section 1 presents the suggested goal and purpose of the proposed Project and explains how the Project will operate. Section 2 summarizes experience with predecessor of the proposed initiative (the *Municipal Finance Project*), and explains why the new Project is required. Section 3 offers proposed goals and first year targets for the new Policy Action Plan, and explains the reasoning behind them. Section 4 presents suggested terms and conditions related to the Project's local currency investment program. Section 5 describes proposed indicators for program accomplishments and impacts in the form of a Logical-Framework Matrix. Section 6 contains the suggested design for the associated Technical Assistance and Training Program.

OVERALL PROJECT DESCRIPTION

Section 1

PROJECT GOAL, PURPOSE, OPERATION, AND OUTPUTS

1.1 PROJECT GOAL AND PURPOSE

The goal of HG-002 is to improve the physical environment for, and the economic status of the urban poor by facilitating the delivery of shelter-related environmental infrastructure which is sustainable, financially viable, and environmentally sound.

The purpose of the Project is to assist the Government of Indonesia to promote an enabling framework of law, policies, and procedures for bringing urban environmental investment and management within a system of improved, decentralized municipal finance and planning.

1.2 PROJECT OPERATING PROCEDURES

The Project will use the same procedures as the previous Housing Guaranty Loan (HGL) for Indonesia (HG-001). Under HG-002, the U.S. Agency for International Development (USAID), will provide US\$125 million in HGL funds to the Government of Indonesia (GOI). The GOI will pursue achievements under its own Policy Action Plan which sets forth new objectives for the next stage of its decentralized urban development program. HGL funds will be authorized in several tranches, each based on an assessment of GOI progress under the Policy Action Plan.

Under the Project's Implementation Agreement, the GOI will also prepare, and regularly update, an Investment Plan for the use of HGL funds. In accord with this Plan, the GOI will be obligated to spend funds at least equivalent to the amount of the HGL resources received (exclusive of support from other donors) on eligible shelter-related environmental infrastructure investments benefiting below-median income households.

USAID technical assistance and training to support the HG-002 Policy Action Plan will be provided under two separate projects. First is the technical assistance and training component of the existing Municipal Finance Project (MFP), which is scheduled for completion in August 1994. Work already funded under that Project will be reoriented to support the HG-002 agenda and an amendment is proposed to provide an additional US\$10 million to that Project in support of HG-002 objectives. Second, a significant portion of the technical assistance and training element of the existing Private Participation in Urban Services (PURSE) project will also directly support objectives under the HG-002 Policy Action Plan.

Section 2

BACKGROUND: THE MUNICIPAL FINANCE PROJECT
AND THE NEED FOR THE NEW HG PROJECT

2.1 INTRODUCTION

While the proposed Project offers new goals and targets for accomplishment, its logic and approach are derived from experience with its predecessor: the Municipal Finance Project (497-0365, 497-HG-001). This section offers a review of the structure and accomplishments of that program, drawn from the *Interim Evaluation* (Kingsley and Peterson, 1992), and then explains further why the new Project is required in that context.

2.2 THE MUNICIPAL FINANCE PROJECT

Under their joint agreement for the Municipal Finance Project: (a) USAID has provided a \$120 million Housing Guaranty Loan (HGL) for capital investment and \$5 million in Development Assistance (DA) grants for technical assistance and training; and (b) the GOI has implemented a Policy Action Plan whose goal has been to "improve the shelter conditions of the urban poor by developing the means by which municipal governments can finance shelter-related urban services and infrastructure at a pace sufficient to overcome present deficits and match the pace of urban population growth" (USAID/Indonesia, 1988).

The first \$25 million tranche of HGL funds was authorized soon after the Project was initiated in 1988. Three more tranches in the same amount, plus one additional tranche of \$20 million, have been authorized since then, based on annual assessments of Project performance. The Project's technical assistance and training component began operation in mid-1990 and is to be completed in August 1994.

2.3 THE HG-001 POLICY ACTION PLAN

At 5.4 percent per annum, Indonesia's urban growth rate is among highest in the world. In the 1980s, its cities and towns had to accommodate an average of 2.3 million new inhabitants per year (more than twice the 1.1 million average of the 1970s) and the absolute urban growth increment is sure to be much higher in the 1990s. Thus a vast expansion of investment in urban infrastructure and services is required to avoid serious deterioration in urban living conditions.

Through the mid-1980s, virtually all of the nation's new infrastructure to serve urban growth had been planned and implemented by central government agencies--without coordination across sectors--and funded directly from the central budget. Sensing the acceleration of urbanization that was upon them, and in the face of declining oil revenues, Indonesia's leaders recognized that this approach was no longer sustainable.

They made the commitment to transfer both the responsibility and authority for the leading public sector role in urban development to local governments, implying the need for dramatic improvements in local management capacity and resource mobilization. Their Policy Action Plan for decentralized urban development is a framework for coordinating achievement toward these ends. It was initially established in 1987 (TKPP, 1987a), and has been updated several times since then, (most recently in May 1990--TKPP, 1990) to serve as the base for the Government's management of its own activities, as well as the support of all external donors, in this sector. The program is administered by an interministerial coordinating group (Tim Koordinasi Pembangunan Perkotaan--TKPP) chaired by Deputy V of the National Planning Agency (BAPPENAS). Objectives and targets were specified under six policy themes:

1. Strengthening and clarifying local government responsibility for urban infrastructure.
2. Implementing a coordinated and decentralized process for programming urban infrastructure investment.
3. Enhancing local government resource mobilization, financial management, and involvement of the private sector in infrastructure and service delivery.
4. Establishing effective mechanisms to support municipal borrowing and improving the system for allocating intergovernmental grants.
5. Strengthening the institutional capacity of local governments.
6. Improving intergovernmental coordination and consultation in urban development.

2.4 FINDINGS AND CONCLUSIONS OF THE INTERIM EVALUATION

Performance under the Policy Action Plan.

The GOI has made, and continues to make, substantial progress toward the program's basic objectives. Over the course of the program, its major accomplishments have been: transforming the process by which urban infrastructure is programmed to one in which coordinated planning and project preparation occurs across sectors for individual cities (with strong local government participation and linkage to local resource mobilization, predominantly through the Integrated Urban Infrastructure Development Program--IUIDP); substantially improving the management of the property tax and other local own source revenues, and enhancing their yields; setting a sound base for

expanding private sector participation in urban services; establishing the groundwork for increased municipal borrowing for urban infrastructure and operationalizing the Regional Development Account (RDA) as a major step toward a market-based credit system for local government; and establishing and maintaining a viable framework for interministerial coordination at the central level.

These accomplishments are noteworthy and are sustainable if appropriate support is given in the next stages of program development. The GOI's continuing commitment to the program was underscored by the 1992 *Issues and Priorities Report* prepared by the National Planning Agency (BAPPENAS), which presents a critical evaluation of progress under the current program and priorities for the next stages in its development. Nonetheless, the program faces serious challenges at this point. Urban infrastructure investment is falling behind in relation to needs and government targets. Urban environmental degradation--not now being addressed by the program--threatens the basic objective of improving the living conditions of the urban poor. Some of the key reforms--particularly, the transition to a market-based credit system and decentralization of investment priority-setting--are vulnerable unless they receive further external reinforcement. Priority should be given to: central reforms that allow local governments to raise the revenues necessary to manage urban development effectively; preparation of a focused strategy for building on the RDA as a transition institution designed to open municipal access to private credit markets; new initiatives for effective urban environmental quality management; rapid development of an indigenous system for building local capacity in urban management; and establishing processes that allow clearer expression of local demand in framing, financing, and implementing local investment programs.

The Technical Assistance and Training Component

Performance under this component has been effective. Advisors have produced valuable outputs in all phases of the Project and their services are clearly valued by counterparts. They have reached out strategically to address priorities under the overall Plan and to promote interagency collaboration. Their activity is in large part responsible for key achievements under the Plan since 1990, particularly in private sector participation and program monitoring. Accomplishments include issuance of a series of research reports tied to critical policy choices; several major seminars to promote management reforms; and an extensive training program. Initial planning for an indigenous urban management training program, in collaboration with other donors, is an important achievement. Still, more forceful efforts would have been desirable in policy analysis and design to help motivate full achievement of basic reforms in the finance agenda and in expediting decentralized, demand-driven investment programming.

AID's Role and Recommendations for Future Program Development

USAID support has played an influential role in the GOI's program--it was most critical in the progress of the agendas for private sector participation and the RDA, has filled an important void in motivating the overall program continuity, and appears to have resulted in true additionality in urban infrastructure investment. Continued support from external donors for some years will be essential if the delivery system promised by this Plan is to become fully institutionalized and self-sustaining. Particularly considering the successes of its role of late, the potential contribution of an effective deployment of additional USAID resources should be substantial: a new HGL program will be required along with amendments to substantially expand the technical assistance and training component. The new program should be based on the GOI's perseverance with all elements of the Plan, but give special emphasis to new objectives designed to advance: (1) effective programs and policies to further urban environmental quality management and the provision of urban environmental infrastructure; (2) a viable and sustainable finance and credit system for local government; and (3) private sector participation in urban services. These emphases are fully consistent with the priorities for the future identified in BAPPENAS' *Issues and Priorities Report*.

2.5 THE NEED AND JUSTIFICATION FOR A SECOND HGL PROJECT

Consistent with the above findings and its own *Issues and Priorities Report*, BAPPENAS has requested AID to discuss proposals for a second HG Loan. The need for the new Project is supported directly by the findings and conclusions of the *Interim Evaluation*, but can be further clarified as follows.

Policy Action Plan and Associated Technical Assistance

1. *The Policy Action Plan (and associated technical assistance and training) for HG-002 will produce critical new outputs that do not duplicate past efforts and are not being supported by other donors.*

■ The first among these will be the development and implementation of a full system for urban environmental quality management, built into the fabric of the GOI's decentralized urban development program. This theme was not addressed at all in the prior Policy Action Plan and, while other donors are supporting individual city or sub-sector specific environmental projects, none is addressing the need for the development of a national system.

■ A second output will be the development of the RDA into a transition vehicle that facilitates market-based lending to local governments and integration of municipal credit into the private financial sector. The initial Policy Action Plan led to the establishment of the RDA in a form suitable to serve as the basis for this transformation.

HG-002 will support the transformation itself. Because of their own administrative requirements, the loans of other major urban sector donors in Indonesia must flow through special channels more complex than that offered by the RDA. These donors support in principle the market-oriented approach to domestic credit embodied by the proposed approach to the RDA but do not plan to take a leading role in sponsoring its evolution.

■ A third output will be the establishment of a national system that encourages and facilitates private sector participation in urban services. The HG-001 Policy Action Plan supported the introduction of this concept and initial analysis. HG-002 will develop the system (running from needed changes of laws and regulations through training of government officials). Technical assistance for this approach is being provided through the separate PURSE project. The HG-002 Policy Action Plan will be the basis for dialogues with the GOI to motivate needed policy change. Again, while other donors support this approach in principle, none is directly sponsoring its implementation.

■ A fourth output will be the development of an indigenous system of training and technical assistance in urban management. The earlier Plan led to a study which proclaimed the need for such a system but did not take steps toward its implementation. The concept for this approach was developed in coordination with other donors. They may later "buy into" its implementation following the design and development work provided in conjunction HG-002 Policy Action Plan objectives, but have no plans to provide the basic developmental work themselves.

2. *Each of these new outputs is critical to achieving the fundamental goals of Indonesia's decentralized urban development program; i.e., the program itself is unlikely to succeed if they are not provided.*

If nothing is done to directly and forcefully address the accelerating environmental degradation in Indonesia's cities, living conditions, particularly for the poor, will deteriorate despite the continuance of other elements of the program. The transition to a market based credit system is essential if there is to be sufficient resource mobilization to support the infrastructure investment (environmental and other) needed by the nation's burgeoning urban population. Similarly, given inherent inefficiencies and constraints in the public sector, sufficient urban infrastructure development simply will not occur unless private sector participation is substantially enhanced. Nonetheless, effective, financially disciplined, and tightly managed local governments will be vital to guide and facilitate the development process (if not always to directly provide capital services). This will require substantial improvement in local management capacity.

The HG-002 Investment Plan

As noted in the *Interim Evaluation*, urban infrastructure investment is falling behind in relation to needs and government targets. Part of the problem is management

capacity, but a large part is the lack of sufficient investment capital. All studies of the topic indicate that the infusion of external resources will be required for some years to come to avoid further deterioration of living standards and avoid deficits so great as to deter the full establishment of a self-sustaining indigenous delivery system. The addition of \$125 million in HG funds will contribute to meeting this need, directly supporting the provision of environmental infrastructure for below median income households in Indonesia's cities.

Chapter 3

THE POLICY ACTION PLAN

3.1 INTRODUCTION

This section presents suggested objectives, actions, first year targets, and end-of-project targets under each element of the proposed Policy Action Plan for the HG-002 Project. Before doing so, however, it describes the rationale for the structure and approach of the proposed Plan. The suggested elements of the plan are based on numerous discussions with GOI officials along with the BAPPENAS *Issues and Priorities Report* and are thus believed to be consistent with the current thinking of the GOI on the next stage of its decentralized urban development program. The suggestions made here, however, will no doubt be modified by the GOI in its own further planning and negotiations with USAID.

3.2 STRUCTURE OF THE NEW POLICY ACTION PLAN

The full implementation of decentralized urban development as envisioned in the GOI's 1987 urban policy represents a massive transformation, particularly since local government capacity was so weak when the process began. No one expected that this transformation would be completed in its first five years. The six themes of the current Policy Action Plan were designed as long term guides and, in the view of the *Interim Evaluation*, they remain as relevant today as they did when they were established. It was expected that goals would be set within each and, after those were accomplished, new goals would be added in each area consistent with the requirements of the next stage of the program's development. To date there have been no recommendations from any of the relevant agencies in the Indonesian policy community to alter the six basic themes themselves.

Accordingly, the proposed Policy Action Plan retains those themes and, relies on the BAPPENAS *Issues and Priorities Report* and the Municipal Finance Project *Interim Evaluation* as primary guides to setting new objectives and actions within them.

3.3 ADDRESSING PRIORITY CONCERNS WITHIN THE PLAN STRUCTURE

Even though the six basic policy themes are retained, HG-002 offers a new pattern of priorities that in some cases cuts across these themes. As noted earlier, the priorities for HG-002 include: (1) effective programs and policies to further urban environmental quality management and the provision of urban environmental infrastructure; (2) a viable and sustainable finance and credit system for local government; and (3) private sector participation in urban services. All objectives will receive attention in AID policy

dialogues with the GOI concerning performance, but the new priorities will receive special emphasis and will be the focus for the application of associated technical assistance and training resources.

It should be emphasized again, that while these new priorities represent the main justification for HG-002, their attainment depends on the coherent advancement of the GOI's decentralized urban development program as a whole; i.e., as embodied by the full six themes of the current Policy Action Plan. As per the conclusions of *Interim Evaluation*, failure in other elements of the overall program would threaten the achievement of reasonable objectives supporting the new priorities. Within the Plan, these priorities are recognized as follows:

1. Effective programs and policies to further urban environmental quality management and the provision of urban environmental infrastructure

This priority is reflected primarily under Policy 2 (investment programming) by the addition of a new objective that focuses on it directly and by adding it explicitly into the wording of the Policy theme itself. In addition, it is addressed under Policy 1 (clarifying responsibility for environmental quality management), Policy 3 (designing cost recovery policies to reflect environmental concerns, and giving emphasis to environmental infrastructure in private sector participation), Policy 5 (developing guidelines for local governments in urban environmental quality management and giving it special emphasis in developing indigenous capacity for technical assistance and training in urban management), and Policy 6 (national level coordination of a program of urban environmental awareness and education). It should be noted that, in each case, disaster prevention, mitigation, and preparedness (PMP) is incorporated as a part of the environmental management agenda. The full rationale for the approach to environmental management taken here is presented in Annex 3.

2. Viable and sustainable finance and credit system for local government

Under HG-002, new objectives to recognize this priority are presented under Policies 3 and 4 (the same themes that have been the focus of the municipal finance agenda under HG-001). The rationale for the priority policy approach in this area (development and strengthening of the RDA) is presented in detail in Annex 2). New guidelines for local government involvement in these areas, and the development of indigenous technical assistance and training capacity to support them are developed under Policy 5.

3. Private sector participation in urban services

Actions to further this priority are defined primarily under Policy 3 as they have been in the past, but it is also supported by adjustments to guidelines for decentralized

investment programming (Policy 2) and by new recognition of the private sector role in local government management guidelines and capacity building (Policy 5).

3.4 MAIN CHANGES TO THE POLICY ACTION PLAN AND THEIR RATIONALE

The following paragraphs are organized around the six themes of the ongoing Policy Action Plan. They summarize past achievements under HG-001 and new objectives and actions proposed under HG-002.

1. Strengthening and clarifying local government responsibility for urban infrastructure.

Now that laws and decrees clearly assign primary responsibility for urban development to the local level, with more detailed clarification of functional authorities, most basic objectives under this theme have already been achieved. The main objective that remains to be pursued under the new program is continuing to upgrade the administrative status of urban areas to enable more effective self government; i.e., establishing presently unclassified urban areas as Kota Administratif and moving a number of Kota Administratif up to Kotamadya status. There is also the need for new work to clarify responsibilities related to: (a) urban environmental quality management and disaster PMP; and (b) the setting of standards and implementation of monitoring programs related to the environment and other aspects of urban development.

2. Implementing a coordinated and decentralized process for programming urban infrastructure investment and environmental quality management.

The first wave of integrated multi-sectoral IUIDP planning is virtually complete for major urban areas nation-wide. The proposed new objective under this theme relates to the next wave of program development, emphasizing urban environmental quality management. Actions support: (1) much greater direct involvement and control by local leadership in investment planning and implementation; (2) reorientation of investment program strategies based on environmental criteria and analysis and the development of associated programs to address environmental degradation and disaster prevention, mitigation, and preparedness (PMP); (3) greater recognition of consumer demand and willingness to pay as the basis for infrastructure investment decisions; (4) the strengthening of the environmental impact assessment (AMDAL) process for all urban investment projects; (5) the use of management systems and other techniques to streamline the processes of project preparation, appraisal, financing, and implementation.

The BAPPENAS *Issues and Priorities Report* identified urban land management and economic development as priorities to be addressed in the future program. The local strategic planning process proposed here to build environmental considerations into

Investment programming will also, of necessity, examine land and economic development scenarios and tradeoffs. Thus, these issues will also be dealt with in the proposed program.

3. Enhancing local government resource mobilization, financial management, and involvement of the private sector in infrastructure and service delivery.

Although good progress was made on all these fronts during HG-001, continued progress is fundamental to HG-002. The Indonesian urban sector started from a very low base with respect to local resource generation, local financial management capacity, and private sector involvement in infrastructure and service delivery.

Local resource mobilization during HG-002 should focus on the two most important sources of local revenue: continued improvement in property tax administration and property tax revenue collection, and greater use of cost-recovery service pricing. Consistent with the emphasis on financing environmental infrastructure, priority should be given to the pricing of water supply, wastewater removal and treatment, solid waste collection and disposal, and other environmental services. Because these activities have a high degree of externalities, they cannot be priced solely on the basis of cost recovery. At the same time, pricing and revenue collection procedures must take account of the impact on local budgets.

Improvements in local financial management capacity can best be secured through technical assistance and training. As noted in the *Interim Evaluation*, the most important initiatives will involve indigenous institutionalization of training in collaboration with other donors. (See also Policy Theme 5)

New legislation is required to permit local governments to determine which of the very great number of current miscellaneous revenue sources it is cost-effective to impose. Ideally, this legislation would give local governments some flexibility over tax rates as well, to take account of differences in local revenue needs and local market realities.

AID's principal encouragement of private sector participation in "public" service delivery will be through the PURSE project. However, HG-002 should look for opportunities for local government to support greater private sector involvement in service provision and infrastructure investment.

4. Establishing effective mechanisms to support municipal borrowing and improving the system for allocating intergovernmental grants

Under HG-001, the Regional Development Account (RDA) was formalized as a universal credit vehicle for municipal governments and local public enterprises. RDA is now at a critical crossroads. As a lending mechanism to local government, it can evolve in any of three directions: (a) as a transition institution intended to pave the way for

commercial provision of credit to local governments; (b) as a permanent parastatal organization intended to meet local government credit needs, at below-market interest rates, on a non-political basis; (c) or as an integral part of central government planning and financing, which allocates capital, at below market rates, to local governments according to central government criteria.

It is likely that some negotiation among the many interested parties will be necessary to define RDA's character. However, HG-002 should support eventual integration of RDA into the commercial financial sector, by moving municipal lending closer to private market principles. In the intermediate term, RDA needs to establish its credentials as an institution that can swiftly and efficiently appraise projects, handle loan applications, make loans, and collect loan payments due. Once it has done so, it should then become the vehicle for donors' subsidiary loan agreements in the urban sector, moving these toward market terms. In the short term, it is critical to carry out an external evaluation of RDA's operating capacity and ways it can improve working relationships with local governments.

For the foreseeable future, central government grants and direct expenditures will continue to finance a large part of local infrastructure investment. The development of clearer criteria for allocating these resources is an important part of the municipal finance agenda. Central government grant resources are appropriately targeted on infrastructure facilities that service the poor, have substantial externalities associated with them, or are important for national economic development objectives. The HG-002 Policy Action Plan will support this targeting, while seeking to give local authorities greater control over the detailed allocation of grant funds to projects that meet these criteria. For more routine services, cost recovery pricing and debt financing of investment provide a sustainable basis for efficient service provision.

5. Strengthening the institutional capacity of local governments.

Earlier work under this theme produced a comprehensive analysis of present local government capacity and approaches to improving it. The agenda for the future should entail completing work to attain one previous objective (establishing and clarifying management guidelines for local government) and new work to address one additional objective (developing an indigenous system for training and technical assistance in urban management, including a special emphasis on urban environmental quality management).

6. Improving intergovernmental coordination and consultation in urban development

Accomplishments under the earlier plan include the establishment and solidification of TKPP to coordinate the program at the national level. Three objectives are proposed for the new program: (1) continuing the operation of TKPP; (2) strengthening

central monitoring and research support for the program; and (3) coordinating a nationwide effort to simulate awareness of environmental problems and solutions in Indonesia's cities.

3.5 THE HG-002 POLICY ACTION PLAN

The following paragraphs offer recommended text for objectives, actions, first year targets, and end-of-project targets for each element under the HG-002 Policy Action Plan.

1. STRENGTHENING AND CLARIFYING LOCAL GOVERNMENT RESPONSIBILITY FOR URBAN INFRASTRUCTURE

Objective 1.1: Establish appropriate administrative status for urban areas.

Action 1.1a: Classify new urban areas as Kotamadya and Kota Administratip and establish budget and administrative capacity accordingly.

First Year Target: Establish 3 new Kotamadya and 5 new Kota Administratip.

End-of-Project Target: Assignment of Kotamadya status to all urban agglomerations with 1990 populations of 100,000 or more, and Kota Administratip or Kotamadya status to all urban areas with 1990 populations of 50,000 or more.

Objective 1.2: Clarify responsibilities for urban environmental quality management, disaster PMP, and the establishment of related standards and monitoring.

Action 1.2a: Develop regulations and guidelines to clarify responsibilities for urban environmental quality management, disaster PMP, and the establishment of related standards and monitoring.

First Year Target: Regulations and guidelines drafted and acceptance negotiated with relevant agencies.

End-of Project Target: Regulations and guidelines disseminated and implemented.

2. IMPLEMENTING A COORDINATED AND DECENTRALIZED PROCESS FOR PROGRAMMING URBAN INFRASTRUCTURE INVESTMENT AND URBAN ENVIRONMENTAL QUALITY MANAGEMENT

Objective 2.1: Develop and implement local urban environmental quality management (UEQM) strategies and programs as a part of IUIDP implementation.

Action 2.1a: Develop guidelines for urban environmental quality management analysis, strategy preparation, project impact analysis, and implementation. Modify IUIDP guidelines to reflect these activities as well as greater explicit analysis of consumer demand and willingness to pay as a basis for investment programming.

First Year Target: Complete and disseminate guidelines.

Action 2.1b: Develop urban environmental quality and demand monitoring program.

First Year Target: Complete monitoring program design and begin implementation in 4 large or mid-sized cities.

Action 2.1c: Develop local urban environmental quality management/disaster PMP strategies and programs associated with IUIDP program updates.

First Year Target: Complete demonstration strategies in 4 large or mid-sized cities (and use results as basis for design of guidelines)

End of Project Status: Local urban environmental quality management/disaster PMP strategies complete in conjunction with IUIDP PJM updates, and implementation satisfactorily underway, in all cities with 1990 populations above 100,000.

Objective 2.2: Strengthen the management of IUIDP to improve the speed and effectiveness of program delivery.

Action 2.2a: Develop a practical management information system for monitoring IUIDP implementation.

First Year and End-of-Project Target: Information system developed being used as the basis for management status tracking and corrective actions to expedite delivery.

Action 2.2b: Prepare management studies of IUIDP processing at the provincial and central levels to identify bottlenecks and recommend actions to streamline processing and assure effective program delivery.

First Year and End-of-Project Target: Studies complete and corrective actions taken based on study recommendations.

3. ENHANCING LOCAL GOVERNMENT RESOURCE MOBILIZATION, FINANCIAL MANAGEMENT, AND INVOLVEMENT OF THE PRIVATE SECTOR IN INFRASTRUCTURE AND SERVICE DELIVERY

Objective 3.1: Enhance local government resource mobilization.

Action 3.1a: Improve revenue collection under the property tax.

First Year Target: Increase property tax collections by 10 percent in real terms.

End-of-Project Target: Increase property tax collections by cumulative 10 percent per annum in real terms.

Action 3.1b: Improve cost recovery of local water companies.

First-year Target: Complete study of financial condition of water companies in larger cities and their capacity to finance future needed investment through borrowing.

End-of-Project Target: Reduce by half the percentage of water companies in cities over 100,000 population that have current-account deficits. Increase the share of water company capital investment that is financed by borrowing or retained earnings by at least 60 percent.

Action 3.1c: Improve cost recovery of local solid waste collection.

First-year Target: Complete study of revenue collection, service costs, and surplus/deficit of solid waste collection in larger cities.

End-of-Project Target: Reduce by one-third the aggregate deficit in solid waste collection in universe of larger cities.

Action 3.1d: Devise pricing strategy for waste water collection, removal, and treatment.

First-year Target: Complete study of current pricing of wastewater-related services in larger cities.

End-of-Project Target: Complete economic and financial analysis of appropriate pricing strategy for wastewater-related services and implement variants of this strategy in two cities.

Objective 3.2: Improve local financial management. (Subsumed under Objective 5.2 and accompanying strategy)

Objective 3.3: Support private-sector participation in infrastructure and service delivery

Action 3.3a: Identify and support implementation of local public sector actions and investments that facilitate private sector involvement in service delivery.

First-year target: Identify 4 pilot cities and appropriate local public sector actions and investments to support private sector participation in service delivery.

End-of-project target: Carry out indicated investments and public sector support activities in pilot cities.

4. ESTABLISHING EFFECTIVE MECHANISMS TO SUPPORT MUNICIPAL BORROWING AND IMPROVING THE SYSTEM FOR ALLOCATING INTERGOVERNMENTAL GRANTS

Objective 4.1: Support development of RDA as a transition vehicle that facilitates market-based lending to local governments and integration of municipal credit into the private financial sector.

Action 4.1a: Carry out an external evaluation of the RDA's operations capacity, its working relations with local governments, capitalization policy, and collections record.

First Year and End-of-Project Target: Carry out evaluation.

Action 4.1b: Prepare a 5-year institutional development plan for the RDA. Negotiate agreements between Ministry of Finance, BAPPENAS, Ministry of Home Affairs, and major donors.

First Year Target: Prepare plan, begin negotiations for agreement.

End-of-Project Target: RDA is implementing agreed upon plan.

Sub-objective 4.11: Establish a track record of creditworthiness for borrowers participating in RDA.

Action 4.11a: Establish routine disclosure of local government borrowers under RDA, terms of loans, and repayment records.

First-Year Target: Prepare and publish list of RDA loans, loan terms, repayment record to date, and any forgiveness of loan amounts or modification of original loan terms.

End-of-Project Target: Routine preparation and publication of above information on a semi-annual basis.

Action 4.11b: Refuse new RDA loans to local governments that are not current in repayments of past loans.

First-Year Target: Incorporate above policy in Operations Manual.

End-of-Project Target: Application of policy, such that no new loans made to municipalities that are in arrears or default on outstanding loans.

Action 4.11c: Establish system for automatically withholding local government property tax entitlements or other central-government transfers for municipalities that are in arrears on RDA loan repayments. Amounts due on loan payments are automatically transferred instead to RDA.

First-Year Target: Prepare study of how such a system would function, based upon experience in other countries.

End-of-Project Status: Policy incorporated in Operations Manual and applied in practice, if recommended by preparatory study.

Sub-objective 4.12: Encourage private sector participation in lending to local governments.

Action 4.12a: Establish system for commercial banks to participate in RDA loans to municipalities.

First-Year Target: Prepare study of how commercial banks can participate in RDA lending (for example, as retail lenders who sell a participation in loan to the RDA), and how the revenue withholding system can be applied to repayments due private lenders.

End-of-Project Target: Prepare analysis of practical steps for implementing recommendations of study, including guidelines to be followed, based on consultation with municipalities, RDA, and potential private sector lenders.

Sub-objective 4.13: Establish a system of domestic capitalization of RDA.

Action 4.13a: Establish system for partially capitalizing RDA from reflows of outstanding loans under RDA management.

First-Year Target: Reach formal agreement that part of repayments from past loans will be retained within RDA as capitalization of new loans, in such a way that national control of investment priorities for central funds is retained.

End-of-Project Target: Above policy applied in practice.

Action 4.13b: Establish system of new capitalization of RDA from GOI resources and private market borrowing.

First-Year Target: Prepare study of options for GOI capitalization of RDA from domestic resources, borrowing on private market.

End-of-Project Target: GOI has contributed own-source resources to RDA capitalization, in addition to donor resources. Agreement has been reached on a strategy for private market capitalization.

Objective 4.1: Improve the system for allocating intergovernmental grants.

Action 4.2a: Prepare a study of how incentives can be built into the grant structure and system for allocating grants to encourage targeting of grant funds to activities most appropriate for central-level subsidy: (a) investment packages for poor regions; (b) investment projects that benefit low-income households; (c) investment projects that generate high degree of externalities.

First Year Target: Carry out study; describe current targeting policy

End-of-Project Target: Implement principal recommendations of study to improve targeting of grants.

5. STRENGTHENING THE INSTITUTIONAL CAPACITY OF LOCAL GOVERNMENTS

Objective 5.1: Develop coordinated system of urban management guidelines for local governments.

Action 5.1a: Prepare inventory and analysis of all existing laws, regulations, and guidelines concerning local urban management.

First Year Target: Complete inventory and analysis.

Action 5.1b: Design new system of guidelines for local urban management and modify existing laws and regulations as required for its implementation.

First Year Target: Complete design of principles and structure of new system.

End-of-Project Target: Laws and regulations modified as needed to implement new system of guidelines for local urban management.

Objective 5.2: Develop indigenous self-sustaining system of training and technical assistance for local governments in urban management.

Action 5.2a: Design urban management training and technical assistance system and negotiate with providers as a basis for implementation (including general urban management, financial management, service delivery management, capital investment programming, and spatial planning and urban environmental quality management).

First Year Target: Complete system design and reach final agreements on implementation.

Action 5.2b: Implement urban management training and technical assistance system.

First Year Target: Prototype training courses have been given and evaluated.

Action 5.2c: Strengthen the Association of Municipalities (BKSAKSI) to facilitate demand driven training and technical assistance in urban management.

First Year Target: Plan for Association strengthening completed, agreed to, and being implemented.

End of Project Status: Indigenous urban management training and technical assistance system implemented and in operation nation-wide. Association of Municipalities actively guiding and facilitating demand driven technical assistance training.

6. IMPROVING INTERGOVERNMENTAL COORDINATION AND CONSULTATION IN URBAN DEVELOPMENT

Objective 6.1: Continue the operation of TKPP in program coordination, monitoring, and policy development.

Action 6.1a: Hold TKPP meetings at least on a quarterly basis, with agendas that entail reviews of regular progress reports, the formulation of new tasks and corrective actions in relation to those review, and the revision of program plans in response to changing needs and conditions.

First Year Target: At least four TKPP meetings conducted with reports completed on meeting content and decisions taken.

Objective 6.2: Strengthen central monitoring and research support to facilitate decentralized urban development.

Action 6.2a: Develop national system of urban monitoring indicators.

First Year Target: Select indicators and establish data base.

End-of-Project Target: System operational with regular reports prepared and disseminated to TKPP agencies and TK.I and II governments.

Action 6.2b: Develop urban research agenda and support research on a competitive basis.

First Year Target: Initial agenda complete and first group of analyses initiated.

End-of-Project Target: Major policy analyses of urban development problems and opportunities complete and disseminated.

Objective 6.3: Develop national level urban environmental awareness program.

Action 6.3a: Design urban environmental awareness program.

First Year Target: Complete program design.

Action 6.3b: Implement urban environmental awareness program.

First Year Target: Program agreed to within TKPP and initial program elements being implemented satisfactorily.

Section 4
THE HG-002 INVESTMENT PROGRAM

4.1 INTRODUCTION

In the bilateral Program Implementation Agreement, AID and the GOI will jointly agree upon an annual investment program for urban shelter related environmental infrastructure in an amount equal to or greater than the rupiah equivalent of the loan guaranteed under the HG program. The agreed upon investment program will, in fact, be a menu of eligible program or project expenditures which are mutually acceptable. Expenditures from these eligible programs or projects may be submitted as evidence to liquidate the \$25 million equivalent loan "advance".

4.2 HG INVESTMENT OBJECTIVES

The investment program finance through the HG-supported loan program has two objectives:

- Provide additional capital financing for priority shelter-related urban environmental investments that would otherwise not be possible within the resources now available to central and local governments, during the period of policy transition.
- Encourage the targeting of resources toward investments that will improve the shelter conditions of the urban poor.

4.3 ELIGIBLE PROGRAMS

The HG authorizing legislation specifies that expenditures financed by the rupiah equivalent of the dollars lent under HG guaranteed loans be for shelter or shelter-related infrastructure suitable for below-median income households. In addition, through joint agreement between AID and the GOI, the full amount of such expenditures must be devoted to "environmental infrastructure": i.e., infrastructure and related services that directly improve the physical living environment of below-median income households and/or act to avert future degradation of that environment.

Annex 3 reviews both the environmental risks now being faced by the urban poor in Indonesia and the GOI urban infrastructure programs now in place to address them.

Based on that analysis, the following programs are classified as eligible on environmental grounds. Previous analysis (USAID, 1988) has determined that these same programs are HG eligible in that they provide "shelter related" infrastructure and services.

- **Water Supply.** Clean water is essential for life and to avoid the effects of the transmission of water borne disease now prevalent in urban Indonesia due to the pollution of ground water.
- **Human Waste Disposal.** The proper disposal (and treatment) of human wastes are directly essential to prevent the transmission disease.
- **Solid Waste Disposal.** Similarly, the inadequate disposal of solid wastes can lead to disease transmission and increase other life threatening risks (such as fire).
- **Drainage and Flood Control.** Floods can threaten life directly and standing water in residential areas can transmit water borne diseases directly as well provide breeding grounds for disease transmitting insects.
- **Urban Access Roads.** Access roads in low income settlements are necessary to avert the raising of particulate matter in the air and are often an inseparable part of other necessary environmental improvements (e.g., drainage).
- **Kampung Improvement Program.** This program combines environmental improvements as defined above in low income residential areas.
- **Urban Infrastructure Planning and Environmental Impact Assessments.** These activities are obviously essential to assuring the effective provision of environmental infrastructure and avoid negative environmental impacts in development.

4.4 THE BELOW-MEDIAN INCOME CRITERION

Studies were conducted for HG-001 to determine the shares of all government investments in these categories that typically benefit below-median income households. In monitoring program performance, those fixed percentages were then applied to documented expenditures on completed projects in these programs to determine the amount of such expenditures that could be classified as HG eligible.

It is recognized that analyses of every individual project to determine the share of expenditures that actually benefitted below-median income households would be infeasible. It is likely, therefore that some variant of the HG-001 procedures will have to be used in HG-002. Nonetheless, those procedures should be strengthened to improve accuracy and reinforce the major program goal of targeting resources to the poor. This strengthening should entail more frequent sample surveys, more frequent adjustment of eligibility ratios based on survey results, and incorporation of new incentives to encourage low-income targeting, where this is appropriate. Exact procedures in this

regard should be designed and proposed for AID review by the GOI prior to the signing of the Implementation Agreement.

4.5 REQUIREMENTS RELATED TO LOCAL CONTROL, ENVIRONMENTAL IMPACT ASSESSMENTS, AND THE RDA

New requirements are established under the HG-002 investment program to further support and reinforce important objectives within the GOI's decentralized urban development program.

1. The first relates to local control in the investment process, which is an essential part of the purpose of HG-002. The GOI has implemented the Integrated Urban Infrastructure Development Program (IUIDP) to expand such control. In IUIDP, local governments set priorities for investments in developing median-term local investment programs (PJMs). Then, local PJMs are aggregated and reviewed for financing at the provincial level before being channeled to the central government for consolidation across the country. Accordingly:

- *To be eligible, all projects under the HG-002 investment program must be either an accepted component of a local government approved PJM or otherwise (individually) approved by local government as adequately reflecting local priorities and plans.³*

2. The second relates to encouraging the application environmental impact assessments. In fact, the provision of environmental infrastructure specified above is normally, by definition, environmentally positive. Some larger projects, however, could have indirect effects that would be harmful from an environmental perspectives. The GOI's current environmental assessment process (AMDAL) appropriately begins with a screening process. Only those projects that screening indicates might have deleterious effects require a full impact assessment. Accordingly:

- *To be eligible, all projects under the HG-002 investment program must have passed through an initial screening in the AMDAL process, and impact assessments must be prepared for those for which AMDAL indicates they are needed.*

3. The third relates to support for the Regional Development Account (RDA) which, as per statements in the Policy Action Plan and supporting analysis in Annex 2, is to be a principle vehicle for expanding investment resources available to local governments. In HG-001, 22.9 percent of investment plan resources through the third tranche were channeled through the RDA. To further support for this institution, the share should increase in the HG-002 program. Accordingly:

- *In the HG-002 investment program, no less than 30 percent of the amount of each tranche shall be transmitted directly to the RDA to be onlent to local governments and enterprises consistent with established RDA lending terms and practices.*

It should be noted, that RDA criteria for granting loans will not always require their use solely for HG-eligible projects as defined above. Constraining the RDA to do so might conflict with the regular operating procedures and sound business practices of that institution, and thereby deter its strengthening as a link to the expanded provision of market-based credit for urban development in Indonesia. Therefore, it will not be required that the HG funds channeled directly to RDA be used solely for HG-eligible investments, only that the GOI be able to document HG-eligible investments equivalent to the full amounts so channeled.

4.6 PAST INVESTMENT PROGRAM EXPERIENCE AND FUTURE TARGETS

Trends in the GOI Urban Investment Program

Table 1 presents data on the core of the GOI urban investment program from 1986/87 through 1991/92 (including investment programmed by central agencies as well as directly through the PJM process--all data are actuals except for 1991/92 figures which are current estimates).¹ The program's total investment increased substantially from Rp. 429 billion in 1986/87 to Rp. 659 billion in 1987/88 and then again to Rp. 794 billion in 1988/89. The increase in these years is largely explained by the major increase in resources made available through the Urban Sector Loan (USL) from the World Bank. With the depletion of funding from that source, however, GOI contributions expanded significantly. Clearly, the phasing in of the HGL resources also played an important role in allowing the program to sustain the level in the range of from Rp. 728 billion in 1989/90.

Still that level was well below the Rp. 900 billion targeted for that year in Repelita V. And the 1990/91 total was only Rp. 751 billion. On a real per capita basis, the program has declined significantly over the past two years. Both the World Bank (1991) and BAPPENAS (1992) recognize this problem and judge that institutional constraints may be more responsible than financial constraints for this deterioration in performance in the short term: the pipeline of high quality projects ready for appraisal has declined and there are important bottlenecks in disbursement and implementation.

¹The data on these tables include O&M expenditures as well as capital investments for the basic needs subsectors covered under IUIDP. Similar data (isolating expenditures directly in urban areas) are not available for other subsectors such as energy, telecommunications, an port and market development.

For the six years shown, 38 percent of the total was spent on water supply and another 27 percent on access roads. Smaller shares went to flood protection, environmental sanitation and drainage, and the Kampung Improvement Program. This allocation of resources generally conforms to the priorities stated in Repelita V.

Table 1
THE URBAN INVESTMENT PROGRAM, 1986/87-1991/92
 (Current Rp. in billions)

	Total	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
USE OF FUNDS							
Water Supply	1,582.2	1,88.6	250.6	260.7	198.9	332.1	351.3
Flood Prevention	451.3	28.6	103.7	119.5	105.3	41.5	52.7
Env. San & Drainage	468.5	42.1	72.0	108.4	66.9	96.0	83.1
Kampung Improvement	283.8	23.4	38.8	59.4	52.0	58.4	51.8
Roads	1,116.0	115.6	146.7	204.3	255.8	186.4	207.2
Planning	248.0	30.2	47.3	41.2	48.8	36.3	44.2
Total	4,149.7	428.5	659.1	793.5	727.7	750.7	790.3
SOURCE OF FUNDS							
National							
Cipta Karya	1,345.4	133.8	215.5	235.8	202.0	239.7	318.6
Other	917.2	53.1	183.7	215.0	206.0	136.7	122.7
Subtotal	2,262.6	186.9	399.2	450.7	408.7	376.4	441.3
Local							
Domest. Loans	221.7	12.1	27.2	64.8	8.5	55.4	53.8
INPRES	447.0	60.5	70.5	72.0	106.8	71.9	65.4
SDO	34.2	4.8	4.2	19.7	2.0	1.2	2.3
APBD I & III	585.6	65.7	75.3	138.8	131.1	85.0	89.8
PDAM	598.6	98.5	82.8	47.6	71.3	160.8	137.7
Subtotal	1,887.2	241.6	259.9	342.8	319.6	374.3	349.0
Total	4,149.7	428.5	659.1	793.5	727.7	750.7	790.3

SOURCE: TKPP

HG-001 Investment Program Expenditures

Table 2 shows that under the first three tranches of HG-002 (through 1991/92), the GOI had invested a total of \$72.9 million in HG-eligible expenditures. Of this total, \$56.2 million went for projects in the regular program being administered by DG Cipta Karya: 45 percent of this amount went for water supply projects, and another 27 percent for Kampung Improvement Program (KIP) projects, while shares of 8 percent or less each were allocated for projects in human waste and sanitation, drainage and flood control, solid waste disposal, access road improvement, and urban planning. The remaining \$16.7 million was channeled to the sector via loans through Ministry of Finance Regional Development Account (RDA) representing 23 percent of the total (data on the sectoral allocation of RDA outlays are not available).

This sectoral allocation of HG-001 investments differs from that for the overall GOI program shown in Table 1, with much larger shares going to water supply and KIP and much less for roads. These differences do not represent a problem. In fact, it is quite appropriate for HG investments to give much heavier emphasis to the KIP program in which virtually all beneficiaries are poor.

As to the future, it is not appropriate to set targets for the composition of HG-002 program expenditures by sector, since that composition should be determined by the combined decisions of local governments as to their own priority needs within the sectors defined here as environmental infrastructure.

Table 2
THE HGL-001 INVESTMENT PROGRAM

	HG-001 Tranches 1-3		
	US\$ Mil.	Percent	
		Of Total	Excl.RDA
REGULAR PROGRAM			
Water Supply	25.5	35.0	45.4
Human Waste	4.0	5.5	7.2
Drainage	4.4	6.0	7.8
Solid Waste	3.0	4.1	5.3
Kampung Improv.	15.3	21.0	27.2
Access Roads	1.6	2.2	2.9
Planning and EIS	2.3	3.2	4.2
Subtotal	56.2	77.1	100.0
RDA	16.7	22.9	
Total	72.9	100.0	

SOURCE: Calculated based on TKPP data.

Section 5
LOGICAL FRAMEWORK

Project Title: Municipal Finance for Environmental Infrastructure

PROJECT GOAL: THE BROADER OBJECTIVE TO WHICH THE PROJECT CONTRIBUTES

Narrative Summary

To improve the physical environment for, and the economic status of, urban populations by facilitating the delivery of shelter-related environmental infrastructure which is sustainable, financially viable and environmentally sound.

Objectively Verifiable Indicators:

Measures of Goal Achievement

- An increase in the total level of investment in shelter-related environmental infrastructure.
- Inclusion of environmental infrastructure planning and financing within the standard intergovernmental capital investment process.
- Adoption of infrastructure pricing policies which permit significant cost recovery, while recognizing the externalities associated with different types of environmental infrastructure.
- Extension of the benefits of environmental investment to the urban below-median-income population .

Means of Verification

- Urban investment data as maintained by Cipta Karya and the SIKD information system developed under MFP.
- BAPPENAS reports on progress of urban sector planning/investment and IUIDP process.

- Monitoring of pricing strategies for environmental infrastructure services through TA studies.
- Special household and related surveys to measure income distribution of service coverage from environmental investments.

Important Assumptions

Assumptions for achieving goal targets:

- The GOI will continue to support its stated Policies for Urban Development.
- The IUIDP process or its equivalent will be expanded to cover investment in environmental sectors not now included.
- Governmental grants will be more highly targeted on the urban poor.

PROJECT PURPOSE

Narrative Summary

To assist the Government of Indonesia to promote an enabling framework of law, policies, and procedures for bringing urban environmental investment and management within a system of improved, decentralized municipal finance and planning.

Objectively Verifiable Indicators

- Procedures are developed and implemented for including environmental infrastructure within IUIDP decentralized investment packages.
- A stable institutional source of domestic credit is developed, under which municipalities can borrow to finance part of their capital needs, including investment in environmental infrastructure.
- The allocation mechanisms for central government capital grants and direct capital expenditures are modified to take into account local capital investment needs, local capacity to pay, and the importance of environmental infrastructure bottlenecks to local economic development.
- The private sector participates in a growing volume of environmental infrastructure investment and service delivery.

- Guidelines are established for pricing of environmental infrastructure services and for the cost recovery targets appropriate for different types of environmental infrastructure.

Means of Verification

- BAPPENAS and Cipta Karya data on IUIDP investment planning and investment packages.
- Special TA studies of the use of credit to finance environmental infrastructure.
- Ministry of Finance and SIKD/MFP data on grants allocation.
- PURSE data on private sector participation in municipal services.

Important Assumptions

- The GOI will continue to shift responsibility for the financing and planning of urban services/infrastructure to local government.
- The GOI will encourage more private sector participation in financing urban investments.
- Other major donors (IBRD and ADB) will support the project purpose.
- Environmental investments will become a greater priority in both central-government and local-government investment planning.

OUTPUTS

Narrative Summary

- Provision of shelter-related urban infrastructure, valued at the equivalent of \$100 million benefiting below-median income families.
- Shift of responsibility for making and maintaining investments in urban environmental infrastructure from the central government to local government, the private sector, and NGOs.
- Consolidation of the RDA as a viable credit mechanism for financing locally initiated capital investment projects, including environmental projects.

- Pricing and maintenance policies that promote the economic and sustainable use of urban environmental infrastructure.

Objectively Verifiable Indicators:

Illustrative Output Targets

- The rupiah equivalent of \$100 million is spent by the GOI and local governments to provide shelter-related urban infrastructure for the urban poor.
- Model assessments are carried out in at least four cities of environmental needs, the cost effectiveness of alternative technologies for environmental service delivery, and investment priorities across sectors.
- The environmental infrastructure priorities identified in the above assessments are incorporated into an approved intergovernmental capital financing plan, for at least four cities.
- Guidelines are established for the appropriate level of cost recovery that is appropriate in pricing different types of environmental infrastructure services, taking into account externalities and local capacity to pay.
- The RDA and/or other sources of domestic credit finance a growing volume of urban environmental infrastructure investment, measured in real terms.
- Private investment finances a growing volume of urban environmental infrastructure investment, measured in real terms.
- Guidelines are established and implemented for integrating environmental impact analysis into urban management practice.

Means of Verification

- Cipta Karya and SIKD/MFP data on capital investment and sources of capital financing.
- RDA data on credit financing.
- PURSE data on private financing of municipal services.
- BAPPENAS information on guidelines to be used in preparation of local capital investment and financing plans.

- TA reports on progress in pilot cities.

Important Assumptions

Assumptions for achieving outputs:

- Policy and output targets of project are embraced in practice by BAPPENAS, Cipta Karya, and Ministry of Finance.
- Domestic economic conditions continue to permit growth in urban capital investment measured in real, per capita terms.
- IUIDP process or its successors can be broadened to include environmental sectors not now covered.
- Externalities associated with different types of environmental infrastructure services can be identified clearly enough to be reflected in appropriate service pricing policies.
- Technical assistance financing through MFP can be expanded by approximately \$10 million, used to support HG-002, and extended to cover the period of implementation of HG-002.

INPUTS

Narrative Summary

- US\$125 million HG Loan
- Technical assistance financed through MFP and PURSE.
- GOI direct investment, grants, and capitalization of domestic credit facility.

Objectively Verifiable Indicators:

Implementation Target (Type and Quantity)

- US\$125 million authorization over the five year life of the project (1992-97).
- Modification of MFP Technical Assistance is approved, increasing level of funding by approximately \$10 million and extending period of performance

to 1997. Series of short-term technical assistance studies and training activities identified in the Policy Action Plan are carried out.

- GOI capital expenditures on urban environmental infrastructure through direct investment, grants, and domestically financed credit increase in real terms.

Means of Verification

- AID records.
- Project monitoring and evaluation.
- GOI expenditure records, supplemented by SIKD/MFP monitoring and special TA studies.

Important Assumptions

Assumptions for providing inputs:

- HG is authorized.
- Modification of MFP technical assistance is authorized, with approximately \$10 million additional funding.
- Timely completion of agreements with GOI.
- Timely HG borrowing and disbursements.
- Appropriately qualified TA will be available.

Section 6

TECHNICAL ASSISTANCE AND TRAINING PROGRAM

6.1 INTRODUCTION

USAID technical assistance and training to support the HG-002 Policy Action Plan will be provided under two separate projects. First is the technical assistance and training component of the existing Municipal Finance Project (MFP), which is scheduled for completion in August 1994. Work already funded under that Project will be reoriented to support the HG-002 agenda and an amendment is proposed to provide an additional US\$10 million to that Project in support of HG-002 objectives. Second, a significant portion of the technical assistance and training element of the existing Private Participation in Urban Services (PURSE) project will also directly support objectives under the HG-002 Policy Action Plan.

The PURSE program is already defined. This section offers recommendations as to the components of the MFP technical assistance and training program, including short term reorientation and its proposed \$10 million amendment.

Consistent with the new priorities discussed for HG-002 in Section 3 above, new MFP technical assistance and training initiatives will be focused on: (1) urban environmental quality management; (2) reform of the system of local government finance; and (3) the development of urban management guidelines and the development of the indigenous system of technical assistance and training in urban management.

6.2 TA/TRAINING FOR URBAN ENVIRONMENTAL QUALITY MANAGEMENT

TA/training resources under the expanded MFP. should be focused on what has been suggested as the primary environmental objective under the Policy Action Plan: the development of local UEQM strategies linked to IUIDP. Four work components will be required: (1) developing a program of urban environmental monitoring; (2) designing an approach to UEQM analysis and strategy formulation; (3) trying out the approach, working with local leadership to develop UEQM strategies in several cities; (4) building lessons from this experience into the broader plan for developing indigenous technical assistance and training capacity in urban management.

Environmental Monitoring

Developing hard facts on past changes in local environmental quality (and using them to predict future quality levels under alternative development scenarios) will be essential to motivating local leadership to take UEQM planning seriously. Attempts are often made to define ideal monitoring systems and data bases, but few such ambitious projects are actually implemented. It may make more sense to define a limited set of indicators at the start for a few cities and then assure that the capacity is provided so that measurements will be taken to update them on a regular basis. Additional, and more refined, indicators can be added later, and the program can be expanded to additional cities, as capacity growth permits.

GOI and local officials are developing a fairly complete monitoring program for Jakarta with support from the World Bank MEIP program (see Annex 3). This approach could be modified (probably slimmed down) to provide a model for AID supported efforts in other cities (mid-sized cities in the 100,000 to one million population range would probably be the most appropriate group of candidates). Given economies of scale, it is likely that environmental monitoring should be performed by a central or provincial level agency rather than by each locality on its own. It would be imperative, however, to assure that resulting data are rapidly and automatically provided to local government for use in their strategic planning processes.

Designing an Approach to UEQM Analysis and Strategy Formulation

Over the past decade, a number of technical studies have yielded appropriate methods that could be used in local UEQM analysis and strategy formulation. For example, these include methods for: (1) environmental risk analysis (determining comparative priorities among environmental problems); (2) analyzing the environmental effects of alternative investment/development plans for urban areas; (3) tracking and projecting service levels implied by such plans; and (4) combined comparative evaluation of environmental, cost, land use, economic development, and other impacts of such plans.

Technical assistance in this area will be devoted to adapting available methodologies for use in this type of analysis and strategy formulation for Indonesian cities. The work will entail the preparation of guidelines, computer software, and example analyses (in Bahasa Indonesia).

This work should emphasize simplification. There is often a tendency to make research and analysis like this much too complex and time consuming. If it moves too slowly there is the danger that, at best, it will be regarded only as an academic exercise--at worst, that it will never be completed. It is extremely important that these tendencies for over elaboration be avoided in the real analytic frameworks for UEQM in Indonesia.

The basic data collection and strategic planning required for UEQM can be done in a short period of time if a simple (understandable) framework is established. It will not be perfect the first time (many data, and perhaps conceptual, gaps will remain)--but the process can be improved incrementally as it is repeated in the future. Perhaps the best way to stop it from becoming too elaborate in any city would be to set a definite time limit for UEQM strategic analysis and planning (say, three to six months from start to completion).

Demonstration Projects: Working with Selected Cities to Develop UEQM Strategies

Given the development of the approach and methodology, the next step would be to apply it in demonstration projects in selected cities (probably four). Again, we would advocate cities in the mid-sized range for this purpose (100,000 to one million population).

The technical assistance team that would work with local governments in these efforts would have to include some expatriate specialists, but the teams would be led by Indonesians of two types: (1) central or provincial government staff who have received special training in the type of strategy formulation proposed; and (2) other specialists who will be responsible for developing and participating in the process of longer term technical assistance and training for local governments in UEQM (see further discussion below).

After the candidate cities have been selected, and terms of reference negotiated with Mayors, the process would proceed in each city as follows: (1) the technical assistance team would work with local government staff in preparing analyses of the development and environmental challenges faced by a city (and the relationship of the city's current PJM to those challenges) using the guidelines developed above; (2) the mayor would then call in his top management staff along with a few key private and community leaders for a series of meetings (or retreats); (3) at these meetings, local technical staff (with assistance from the TA team) would present their ideas coming out of their analyses; i.e., outlining alternative strategies for development open to the city and presenting rough estimates of the impacts of each (e.g., infrastructure and land development requirements, costs and potential financing, environmental impacts, impacts on job creation and economic indicators). The estimates would be presented only to stimulate the joint thinking of the local leadership team, not in the manner of hard forecasts; (4) in this context, the local leadership team would be forced to consider basic strategic choices in a realistic manner. The initial retreats might lead to other meetings, to policy decisions and guidelines after that, and finally to modifications to improve current PJMs.

Indigenous Technical Assistance and Training Capacity

The concept of developing forceful UEQM strategies and programs for all of Indonesia's mid- and large-size cities, and regularly updating and strengthening them, would be infeasible if it depended even primarily on outside AID assistance. The only way to further the concept will be to build capacity in Indonesian institutions so they can operate training programs for, and provide technical assistance to, local leaders and staff in UEQM over the long term.

This view is dominant in the recent proposal by the MFP Project team and the IUIDP Support Group to develop such capacity in urban management more broadly (as discussed below). All that will be necessary from the point of view of this objective is for AID to provide the additional TA resources needed to add UEQM as an emphasis in that program. Environmental themes should be added to most of its modules (i.e., general urban management, urban finance, service delivery, infrastructure programming) but the most emphasis would be given to modify the proposed module on spatial planning and land management. The materials that would serve as the basis for curriculum design would already have been provided in the work discussed above (i.e., guidelines for environmental monitoring, analysis, and strategy formulation, plus case studies of the demonstration project experiences).

6.3 TA/TRAINING FOR REFORMING THE LOCAL GOVERNMENT FINANCE SYSTEM

Two priorities dominate the technical assistance and training agenda for local government finance. First, strengthening local revenue generation is fundamental to the continued decentralization of infrastructure investment and service-delivery responsibilities. Given the constraints on central-government grant financing, local authorities will be able to meet their investment targets only by generating income streams that can help pay for the cost of capital. Moreover, effective pricing of local public services is a pre-requisite to gauging market demand and making market-driven choices about local investment priorities. It is thus central to the process of community choice in designing a local UEQM program. This element of the technical assistance and training strategy continues a theme that has figured importantly in MFP technical assistance under HG-001.

Second, technical assistance will be critical in assessing the current strengths and weaknesses of the RDA, developing a five-year plan for RDA's institutional development, and working with both RDA and local governments to improve the procedures used for loan application, project preparation and project appraisal, and debt management. This will involve a new area of emphasis for USAID technical assistance. Despite the central role that the RDA played in the Policy Action Plan under HG-001, USAID has not provided technical assistance to RDA, or to local governments in their dealings with RDA,

and has not made an independent assessment of RDA's performance as a credit institution.

The proposed technical assistance plan for municipal finance under HG-002, relative to the strategy adopted for HG-001, calls for: (a) greater focusing on a few key areas of institutional change, (b) stronger sequencing of technical assistance, so that studies of current institutional capacity and practice are performed first, and used to identify follow-up actions that are necessary for system strengthening, (c) greater use of short-term, specialized technical assistance teams to conduct the initial studies.

Although this section identifies two separate technical assistance themes--local revenue strengthening, and strengthening of RDA and the municipal credit system--the two are, in fact, very closely linked. As argued in Annex 2, the ultimate constraint on municipal borrowing in Indonesia is the capacity of local governments to repay loans. As long as the opportunities for local revenue generation are as weak as they are at present, local authorities will be prudently reluctant to take on debt, for the very good reason that they have such limited opportunities to raise revenues to make debt payments. In fact, initial studies conducted under MFP (McCullough, 1992) indicate that several local water companies may already have overextended themselves in taking on debt burdens. In the end, the most effective way to strengthen the municipal credit system in Indonesia is likely to be strengthen local revenue-raising ability, so that local governments and the local community, can make realistic choices about how much local investment to finance, given its cost in terms of service prices and local taxes.

Local Revenue Generation. Three important opportunities exist for increasing local revenue generation. First, yields under the property tax can grow rapidly, as long as registration procedures, assessment methods, and billing and collection procedures continue to be upgraded. HIID is providing high-quality technical assistance to the GOI in property tax administration, which there is no reason to duplicate under HG-002. However, MFP technical assistance in financial management should be more closely linked to the HIID technical assistance in property tax administration--e.g., in projecting probable revenue growth from the property tax in a particular city, given its stage in implementing property tax administrative reforms, so that realistic budget constraints can be used for budgeting purposes.

Second, local revenue growth can be substantially enhanced, and the efficiency of public service delivery increased, by more effective pricing of local public services. In most cases, this will mean more aggressive use of cost-recovery pricing, as well as administrative improvements in billing and collecting for service provision. However, in the case of some environmental services, such as wastewater collection, removal, and treatment, the external benefits are so important that it is undesirable to try to recover the full cost of service delivery from users. Part of the cost should be borne by the central government through grants or by the entire local community through local taxes.

As a first technical assistance priority under this theme, short-term teams should carry out a series of specialized studies on current service pricing practice, billing and collection practice, institutional capacity, capital financing needs, and the net surplus or deficit position of local public providers in each of the key environmental service areas: potable water supply; waste water collection, removal, and treatment; and solid waste collection and disposal. These studies would describe and assess current practices, based upon a series of local case studies, recommend practical changes for service and revenue administration, and analyze appropriate changes in pricing policy, in light of the economic and environmental characteristics of the respective services as well as their revenue generating capacity.

Each of these studies also would recommend a sequence of steps for improvement of local revenue generation and system administration within the service area covered. Once these were endorsed by the relevant government authorities, they would become the guidelines for the next stage of technical assistance involving implementation at the local level. This technical assistance in pricing and revenue administration should be carried out in collaboration with the technical assistance in investment planning recommended above.

Thirdly, central government legislation will be needed to give local authorities greater flexibility in deciding which local taxes they will impose, some flexibility in deciding appropriate local tax rates, and potential access to more buoyant revenue sources. Technical assistance in this area should consist of basic information studies--e.g., of the extremely limited revenue raised by various miscellaneous taxes in some regions, where the costs of tax administration exceed revenue collections, or of alternative ways that limited local discretion over tax rates could be introduced, consistent with central government constraints.

Strengthening RDA and the Municipal Credit System. Annex 2 proposes a five-step strategy for strengthening the institutional capacity of the RDA through technical assistance and training, and equipping it to serve as an effective transition vehicle to municipal access to private credit markets.

The first step in this process is to conduct an independent evaluation of RDA's current operations, institutional strengths and weaknesses, and relations with local governments. International support for the RDA has been hampered by a good deal of uncertainty as to how it functions in practice, and whether local authorities view it as a readily accessible source of credit responsive to their needs. The limited amount of information on RDA operations that is available in published form makes it impossible to reach an informed judgment about RDA performance from publicly available sources. Given the importance of RDA to the HG-002 policy agenda, this institutional assessment should be carried out as quickly as feasible. The technical assistance team conducting the study should collaborate with RDA's technical advisors from HIID.

Following completion of the institutional assessment, a five-year plan for development of the RDA should be prepared and agreed to by the Ministry of Finance, BAPPENAS, and representatives of local government. Technical assistance can be provided by USAID at this stage to help draft such an agreement. Most critically, a choice must be made by the GOI as to whether RDA is intended to develop as a permanent parastatal supply credit to the municipal sector at below market rates of interest, or whether it is intended to be a transitional institution, gradually moving municipal credit supply toward market terms.

The third and fourth steps in the development strategy involve technical assistance in project preparation, project appraisal, and debt management to RDA and local authorities, respectively. It is probable that the greatest emphasis should be placed on assistance to local governments. The DDI staff at RDA already has received training in project appraisal from HIID. Local government officials are likely to stand in greater need of these skills at this point. Moreover, in a decentralized system of infrastructure investment and finance, most of the work in project preparation and project appraisal should gradually be shifted to local governments themselves, where the responsibility for investment choice should reside. This stage of technical assistance could be carried out in conjunction with the urban management program described below.

Finally, the technical assistance in financial management should tie together local revenue generation options, described above, and local debt management and financial planning for capital investment. This will require development of guidelines for projecting year-by-year financing obligations under all sources of debt, comparing these with reasonable projections of revenue growth, and adopting prudent standards for coverage of debt payment obligations from unrestricted local funds. This work is central to the development of a stable credit system. At present, local authorities appear to waver between an exaggerated fear of taking on any debt obligations and an unwillingness to face up to the magnitude of annual debt payments already assumed through SLAs and other devices.

6.4 TA/TRAINING TO DEVELOP URBAN MANAGEMENT GUIDELINES AND INDIGENOUS TECHNICAL ASSISTANCE AND TRAINING CAPACITY

There are two sub-components in this work: developing urban management regulations and guidelines, and developing an indigenous technical assistance and training capacity in urban management. Considerable planning (and other preparatory work) for each has already been accomplished in the MFP project. New resources provided here would be devoted to extending and implementing these plans.

Urban Management Regulations and Guidelines

The MFP has already initiated a comprehensive inventory and assessment of all regulations concerning urban management (including finance). The next phase of this work will involve reviewing the results of this inventory, and then: (1) formulating a unified code of regulation (and specification of gaps in existing laws and regulations); (2) issuance of guidelines to help implement the regulations; (3) development of a system for coordinating the issuance of new regulations; and (4) training local government officials in the regulatory code.

Indigenous Technical Assistance and Training in Urban Management

A collaborative effort by the advisory teams of the MFP and the IUIDP Implementation Support Project prepared an inventory of all training programs currently available for local officials and used that as a basis for discussions with all of the subagencies participating in IMG. Agency counterparts recognized that present training options are highly fragmented with substantial gaps as well as overlaps. There was general agreement that the absolute level of technical assistance and training for local governments needed to be substantially increased, that a coordinated approach will be required, and that it should focus on building indigenous capacity in *urban management*.

The design calls for something in between large scale restructuring (that would require markedly greater centralized coordination) and an incremental approach that would only modestly adjust existing programs. It emphasizes targeted strengthening of parts of the current system along with selected program coordination. Suggested principles state that the system: should address both structural and content deficiencies; should target all relevant actors (central as well as local) while being focused on management of urban local government services consistent with the national policy of decentralization; should be "demand driven" and responsive to the job needs of local managers; should be paid for in large part by local governments; should merge the concepts of technical assistance and training; and should be consciously experimental.

The design for a new training program in urban management calls for "Tier 1 courses" which would offer materials on *strategic management* for Tk. II top management teams (assessing conditions and potentials of their cities, setting priorities, allocating resources, organizing and motivating staff, and monitoring results). "Tier 2 courses" would be aimed at lower level professional staff and focus more on "how to do it". There would be both Tier 1 and Tier 2 courses in four substantive areas: (1) financial management, (2) infrastructure capital investment planning; (3) service delivery management; and (4) spatial planning and land management. As noted above, the initial plans are to be modified, among other things, to give greater emphasis to urban environmental quality management (UEQM)

TA/training resources under HG-002 would be applied to extend the design of this system and implement it. This would include: (1) preparing an institutional development plan; (2) curriculum development; (3) training of trainers; (4) establishing training sites in selected location; and (5) assistance in managing the overall program.

ANNEX 2

THE ROLE OF MUNICIPAL CREDIT: A STRATEGY FOR STRENGTHENING RDA

One of the principal policy objectives of the Municipal Finance Project under HG-001 has been strengthening the role of credit in municipal finance, while establishing the Regional Development Account (RDA) as a market-oriented, routinely accessible source of credit for local authority investment.

This annex considers how much progress has been made toward the establishment of a municipal credit system, and how much priority should be assigned to this objective in the HG-002 policy program. It then recommends a specific strategy for strengthening the RDA. The strategy involves sequential steps, with later actions occurring only after earlier objectives have been achieved.

Although this annex deals expressly with the municipal credit system and RDA, in both HG-001 and the proposed HG-002 credit is but one element in an overall strategy to help establish a self-sustaining system of local and intergovernmental finance capable of meeting the country's urban investment and urban service needs. The municipal finance strategy is built around four pillars of reform articulated by the GOI in its urban sector policy:

- Strengthening local governments' own-source revenues.
- Rationalizing the intergovernmental grant system, so that local authorities have access to more predictable and transparent central-government transfers.
- Establishing a workable local government credit system, which can serve as a mechanism of transition to local authority borrowing from the private capital market.
- Strengthening the private sector's role as investor in infrastructure facilities and provider of local services.

HG-002, as proposed, will continue to support all of these policy themes. However, the credit system will receive special attention, largely because of the critical design issues that must be faced.

THE CASE FOR GREATER USE OF MUNICIPAL CREDIT

A municipal credit system is not an end in itself. It deserves donor support only if it furthers the basic development strategy of the government. Therefore, it is appropriate to ask at the outset why the establishment of a market-oriented credit system is important in Indonesia.

From the perspective of the central government budget, credit financing is essential if the government is to meet or approximate its investment targets for the urban sector. Formerly, almost all local capital investment was financed through central government grants or central government direct investment. However, central resources are not sufficient to pay for all investment needs. This is especially true now that revenues from the petroleum sector have subsided, and the government has committed itself to public sector spending restraint. If the government's ambitious investment goals are to be achieved, some of the resources used to finance investment projects must be recovered to finance further rounds of investment. Hence, the need to rely to a greater degree on loan financing.

From a local perspective, the possibility of accessing capital markets through borrowing lessens dependence on central government transfers, offers the opportunity to increase local investment levels and catch up on local capital needs, and can stabilize longer-term investment planning, by reducing the uncertainty attached to capital financing sources.

In the Indonesian context, there are additional reasons for strengthening the municipal credit system, which also suggest the form that such a system should take. As stipulated in Government Regulation No. 14 of 1987, which assigned responsibility to Level II local authorities for the development of urban infrastructure and services, the Government has chosen a policy of decentralization in the urban infrastructure sector. A municipal credit system supports decentralization by making resources available to local authorities to finance investment packages of their own initiative, as long as the local authorities are willing and able to bear the costs of borrowing. This suggests two requisites for an efficient municipal credit system: it should be responsive to local government credit demands (i.e., its lending should be demand driven), and it should lend funds at close to market rates of interest so that local authorities' choice whether or not to invest in infrastructure facilities is made after taking into account the true opportunity cost of capital.

As self-evident as these conclusions may seem to be, most municipal credit institutions in the developing world do not operate in this manner. Instead, the central government often uses credit as a way to force local authorities to share the cost of investments of the central government's choosing. Most municipal credit institutions channel capital to local governments at far below market rates of interest. That is, political factors, rather than market demand, are used to allocate capital. The effective rate of interest is lowered still further by weak and erratic collection practices. The establishment of a credit financing institution that systematically and consistently supports decentralization, by allowing municipal demand (i.e., municipal willingness to pay the true cost of capital) to determine loan allocations, is highly unusual.

Indonesia has made striking progress in de-regulating the financial sector and opening it to private-market competition. This suggests a further orientation for a

system of municipal credit: it should aim to be integrated within the same financial-sector principles. Eventually, municipal lending institutions, whether operated within the public or private sectors, should seek to raise capital on competitive market terms and lend to municipalities at market rates of interest, adjusted for credit risk. This is by no means the only model for a municipal credit system. In fact, in most of the developing world, and in many European countries, municipal credit historically has been supplied by institutions capitalized by government at zero or very low rates of interest, or from capital gathered at below-market interest rates from captive sources of savings. For example, in France the Credit Local de France in the past raised its capital at very low interest rates from small-saver deposits through the postal savings system. Below-market capital financing of this kind was possible as long as small savers had no options for their deposits. However, when the French financial system was deregulated, starting in the 1970s, small savers switched their deposits to alternative institutions paying market rates of interest. As the captive source of capital dried up, the Credit Local de France was forced to raise new capital by issuing bonds at market rates of interest, and has since adopted a policy of on-lending to local governments at market rates in competition with private lenders. Given the financial sector de-regulation that already has occurred in Indonesia, it would be counter-productive at this date to construct a municipal credit system that relied perpetually on privileged access to below-market sources of capital for its lending.

Constraints on Municipal Lending

Although there is a strong case for greater use of credit as part of the municipal financing system, and for moving toward market rates of interest on municipal loans, there are also practical constraints on both the volume of loans and interest rates.

Municipal Ability to Repay Loans from Local Revenue Sources. It is fundamental to credit financing that loans must be repaid. Unlike grants or other transfers from central government, loans by themselves do not add to the wealth of a local authority. Rather, they provide financial resources at a particular point in time, in return for a stream of future repayment obligations. This concentration of resources makes it possible to finance higher levels of investment, and can be of critical importance to local governments that are seeking to upgrade their infrastructure base, but in economic terms the true payment for the investment occurs over time as the loan is repaid.

The capacity of local authorities to finance investment through credit thus ultimately is constrained by their capacity to generate local revenue. Loan financing is most suitable for projects that themselves generate the revenue needed for loan repayment--either directly through service charges or other sources of project income, or indirectly through the growth they generate in the community's taxable base and consequent tax revenues. Infrastructure loans can, of course, be repaid from general local revenues (including unrestricted transfers from the central government), but in this case they are displacing other elements of the local government budget. It is customary

in municipal lending to require local authorities to prepare financial rate of return studies, which demonstrate that the projects to be loan-financed will generate direct or indirect revenues sufficient to cover loan repayment obligations.

How much revenue a project will generate, in turn, depends upon two factors: market demand for the project's services, and the structure of the local government revenue system. Household market demand for water connections, for example, may fully justify an investment in water system expansion, but unless the local tariff system captures this willingness to pay, local authorities may not generate enough revenue to be able to pay back a project loan. Or, public investment in local roads and markets may generate enough private investment to fully justify a project on economic grounds, but unless the local tax system is able to capture some of the economic growth in tax revenues local authorities may not be able to finance loan costs.

In Indonesia, a weak local revenue system currently limits municipalities' revenue options, and constrains their capacity to borrow. Recognition of these limitations has prudently constrained local loan demand. In the future, reform of the local revenue structure will have to go hand in hand with expansion of the municipal credit system, so that greater revenue-raising ability underlies the greater use of credit.

Some important reforms in this direction already have been implemented. For example, local water authorities (PDAMs) are now encouraged, and even required, to charge full cost-recovery tariffs, which allow them to raise the revenue to repay capital loans. Loans to water authorities have, in fact, accounted for the greater majority of local government lending (see below), consistent with local authority ability to pay. Solid waste collection tariffs have been increased in some municipalities, and can be raised in others to finance capital investment and borrowing. Considerable room for improvement exists in collection practices, as well, to increase effective revenue yields.

Local general tax rates in Indonesia, however, are extremely low, making it almost impossible to recover the cost of loans used to finance general improvements or economic development projects. For example, the most important local general revenue source, the property tax, is imposed at an effective rate of 0.1 percent--a nominal rate of taxation of 0.5 percent imposed on a valuation base that is supposed to equal 20 percent of the market value of property. Under this system, for an economic development project to be financially viable to local government, it would have to generate net private investment 200 times greater than the cost of public investment, in order to pay back a loan at 20 percent interest, the low end of current commercial rates! Such a payoff to public investment is extraordinarily rare.

If municipal credit is going to be used on a significant scale to finance general local investment, it will be critical to increase local taxing authority so that the loans can be repaid. (A doubling of the property tax rate, for example, to a still very modest 0.2 percent effective rate would allow local authorities to finance further expenditure

priorities, which might very well include the financing burdens of additional infrastructure investment.)

Ability to Pay Market Rates of Interest. Local governments often insist that they are unable to afford to borrow at market rates of interest, and that therefore municipal loans should be made at highly subsidized interest rates.

Under the current municipal revenue system, and given the poverty of many regions of the country, this inability to pay is rooted in fact. However, the appropriate solution is not to highly subsidize interest rates, which would create fundamental difficulties for ever integrating municipal lending within the commercial credit market, but to pursue the course which Indonesia already has adopted: mixing loans and grants, or loans for local investment with central investment installed locally at no cost to local authorities, in a single investment package.

The central government grant share can be adjusted to take account of important differences in local conditions. The grant share appropriately will be higher for poor regions of the country, for investment packages that target service benefits on the poor who have the least ability to pay, and for investments in environmental infrastructure that have significant externalities (i.e. benefits for others besides the service users who are asked to pay tariff charges). Using up-front grants to pay for the centrally subsidized portion of investment has two important advantages: it makes explicit the magnitude of subsidy rather than obscuring it through below-market interest charges, and it allows the municipal loan system to operate on the market principles that encourage investment efficiency.

EVOLUTION OF THE REGIONAL DEVELOPMENT ACCOUNT

Under HG-001 USAID supported formal institutionalization of a consolidated loan fund, the Regional Development Account, as the principal vehicle for demand-driven credit.

Previously, the GOI had extended credit to local authorities through a number of special arrangements. Domestic credit was provided, on a relatively modest scale, through several subsidized channels--most importantly, a special program for providing highly subsidized loans for local market development. In addition, the GOI on-lent donor funds for investment in water supply, wastewater treatment and collection, and other functions through subsidiary loan agreements (SLAs). The SLAs continue to be used for credit financing of local authority investment under new World Bank and Asia Development Bank programs. However, a number of existing SLA loans were transferred to the RDA for administration. Formalization of the RDA made it the principal vehicle for municipal lending outside of these international loan programs. (The Regional Development Banks also make some small-scale loans to local authorities.)

Procedures for operating the Regional Development Account were established by decree of the Minister of Finance on Sept. 30, 1991. On January 31, 1992 an operations manual was promulgated. Subsequently, the interest rate was established for loans made during 1992. The lending rate was fixed at 11.5 percent. Although this rate is well below the commercial rate for short to intermediate-term loans, currently in the range of 23-25 percent, it establishes a positive real interest rate which reflects the average inflation rate over the past three years (9.5 percent) plus estimated administrative costs (2 percent). Formalization of the RDA fully satisfies the sub-objective of HG-001 of creating a consolidated municipal loan fund, as specified in the Policy Action Plan.

Functioning of the RDA

In its present structure, the RDA is a funding facility for loans to local authorities, operated as a special account at Bank Indonesia. The account can receive funds for on-lending from the Government of Indonesia, foreign loans or grants, and payment of interest and principal on past borrowings.

Loans can be made to either general-purpose Level I and Level II governments (PEMDAs) or the corresponding regional enterprises (BUMDs). However, loans must be used to finance income-producing activities, and cannot exceed 75 percent of project cost. The RDA account, though not formalized by ministerial decree until 1991, actually has existed since before 1990. In addition, it has been assigned responsibility for administering a number of earlier, outstanding loans which were made under international donors' sub-lending agreements. As of March 31, 1992, loans for water sector development accounted for 82.6 percent of its portfolio. Bus terminals, solid waste projects, and estates were the next largest sectoral users of funds.

New RDA loans can be made for a maximum loan period of 20 years with a maximum grace period of 5 years. In the past, the RDA has not required either principal or interest payments during the grace period. However, the new Operations Manual states that the grace period is to be limited to principal payments (see discussion below, however). Because most of the loans that RDA administers (and all of the loans that it originated) still are in their grace period, there is only limited experience with repayment.

The procedures for loan application are spelled out in the Operations Manual. They require preparation of a Project Feasibility Study, which includes estimates of the economic benefits of the project, technical specification of the work to be undertaken, clarification of administrative responsibility for the project, and a financial analysis which includes a projected Internal Rate of Return and a monthly financial plan for the use of funds.

Although the RDA has been officially created and an Operations Manual prepared, many of the key issues regarding its form of operation remain to be clarified. This is especially true because, from the date of promulgation of the Operations Manual in

January, 1992, no new loans have been made, and no new loan applications that follow the Operations Manual application procedures have been received.

Loan Appraisal. The Operations Manual states that loan applications will be appraised by (a) the Director General of Monetary Affairs of the Ministry of Finance, (b) the Director General of the Budget, and (c) BAPPENAS. How this appraisal process will work in practice has yet to be determined. Officials at RDA report that they believe the principal project appraisal responsibility will rest with the Directorate of Investment Funds (DDI), whose staff has received training in project appraisal from the Harvard Institute for International Development. However, BAPPENAS has expressed a desire to review projects for their conformance with national or regional investment priorities. The amount and type of review that projects receive, as well as the ease of loan application, will go far to determine whether the RDA can function as a quick-disbursing loan facility and the extent to which it supports principles of decentralization.

Interest Rate. The Operations Manual states that a uniform interest rate will be used for all loans made during a year, and that the interest rate will be announced by the Ministry of Finance in January taking into account the average inflation rate over the past three years and the administrative costs needed to support the RDA loan facility. The rate of 11.5 percent announced for loans made in 1992 represents a positive real rate of interest plus a 2 percent margin for administrative costs. A number of local governments, supported by some officials at BAPPENAS, however have protested application of a uniform interest rate of this magnitude. They argue that the interest rate on loans should be adjusted to reflect local governments' ability to pay. Our interviews lead us to conclude that the interest-rate issue has not been fully resolved.

Loan Repayment. A great deal of ambiguity concerning loan repayment runs throughout the RDA Operations Manual and RDA practices. The Operations Manual first specifies that loans must be repaid on schedule, then qualifies this with the statement, "It is understood, however, that during the loan period, either the Borrower or the guarantor may sometimes encounter financial difficulty, so that they may be unable to fulfill their obligations. In such cases, the Borrower can request the Minister of Finance to reschedule loan payments." Similarly, after stating that the grace period applies to principal payments only, the Operations Manual notes that "In cases where the Borrower is unable to pay interest during the grace period, the interest occurring during the grace period will be accumulated with compound interest and will be capitalized." There are statements to the effect that if loan rescheduling occurs, the interest rate will be increased, and penalties will be imposed for late payments. However, no specific schedule of interest-rate adjustments or penalties is provided. On balance, the Operations Manual conveys the impression that not all borrowers are expected to make all loan payments.

This ambiguity carries over to the actual repayment record on outstanding loans. According to the RDA's records, the arrearage rate on the loans it administers is 29.0

percent on principal (measured as the ratio of principal payments past due to total principal due to have been paid, excluding local authority payments of monies not owed) and 24.3 percent on interest (additional interest has not been charged on late payments). The records on loan payments are not in good shape. Often, RDA records on principal amounts outstanding differ from local government records. RDA does not systematically notify municipalities of loan payments due in the next year, so that they can be budgeted in advance, and does not routinely notify borrowers as payments come due.

Funding. Although the Operations Manual states that interest and principal payments on past loans can be used to replenish the RDA account, up to now such payments have gone into a general state account. (The evaluation team was given conflicting information as to whether any loan repayments are now being retained in RDA.) BAPPENAS' position has been that since most of the funds initially were provided by external donors, subject to international agreements, interest and principal payments should be repaid to the state for new allocation decisions. No plan has been agreed upon for longer-term capitalization of the RDA, nor has there been a stable policy of government capitalization. As Figure 1 illustrates, RDA funds have moved ahead in fits and starts. Loan commitments have moved in close parallel as funds became available.

General. This summary should make clear that a number of uncertainties remain as to how the RDA will operate. These uncertainties can be resolved only by observing the RDA in practice. Unfortunately, since the RDA in its present form has made no loans, and has received no loan applications, prospective borrowers can only speculate on its *modus operandi*.

Despite the uncertainties, does the RDA represent the best base in Indonesia on which to build a municipal credit system? The Presidential Decree defining RDA procedures provides a good institutional base for municipal lending. The interest rate of 11.5% is a positive real rate, which is much higher than the rate at which loans were made in the past. The Operations Manual spells out a reasonable operating system for the RDA, though the applications procedure is more complicated than necessary (including such requirements as month-by-month spending projections and economic as well as financial rate of return projections).

Most fundamentally, there appear to be no viable alternatives on which to build a domestic municipal credit system over the short to intermediate term. Local governments have not established themselves as good credit risks, and therefore cannot expect to systematically borrow on the private market. A history of municipal borrowing and repayment will be a prerequisite of private entry into municipal lending. At present, municipal creditworthiness of this kind is a good way off.

Moreover, in the short to intermediate term there are a number of other impediments to a municipal bond market. First, current laws do not permit the issuance of municipal bonds. In addition, the central government has a longstanding policy of not

issuing bonds or otherwise borrowing from domestic financial sources, for fear in incurring imprudent obligations. Until this policy is changed, it is difficult to imagine the central government allowing municipalities to issue bonds. Finally, there are no organizations in Indonesia equipped to assess municipal credit risk for private sector lenders, and no relevant experience, besides the poor payment record on central government loans, on which to base credit assessments.

None of these observations is meant to discourage exploration of the possibility of issuing bonds, especially in the largest cities. In practical terms, however, the most promising path to eventual establishment of a private-sector municipal credit market is to establish municipal creditworthiness through an efficiently operating RDA, which gradually moves toward market terms of lending. In other countries (like Colombia and Zimbabwe), it has proved possible to "graduate" larger cities with good repayment records under a publicly-operated municipal credit system to the private market.

A second alternative to the RDA that has been discussed in Indonesia is use of the Provincial Development Banks as municipal lenders. These are public-sector banks, partially owned by the municipalities, which makes them more predisposed to municipal lending. The Provincial Development Banks, however, are politically oriented institutions. Although it was not possible to examine in detail loan repayment rates for the Provincial Development Banks, it is well known that they have been saddled with repayment problems, which would in all likelihood be more severe in the case of loans to municipal governments. The Ministry of Home Affairs which supervises the Provincial Development Banks has indicated that it would favor a more highly subsidized interest rate than is now available through the RDA.

There is no reason for the Project to oppose development of the Provincial Development Banks as municipal lenders, if they adhere to the lending principles outlined below. Indeed, a market-oriented lending system could spread faster if pursued simultaneously by the RDA, the Provincial Development Banks, and private lenders. At this point, however, a good deal of institutional development has gone into the RDA, which it would be unwise to abandon. It would be a substantial reversal to the principle of market-based municipal lending if the Provincial Development Banks were to enter the field with highly subsidized interest rates that undercut the RDA. Moreover, subsidized lending would jeopardize the financial status of the Provincial Development Banks, which (unless they received direct central government funding for the purpose) would have to tap their precarious financial reserves to pay for the interest-rate subsidy.

In summary, it was the conclusion of the Interim Evaluation that the Project should give priority to strengthening the RDA, but should do so within the context of a multi-year plan for the institution which will allow it to help municipalities establish eventual access to the private credit market.

THE LONGER TERM ROLE FOR CREDIT

Establishment of the RDA just begins the job of building a long-term role for credit in the urban sector. Credit presently finances only a small proportion of urban sector investment--estimated at about 15-20 percent in recent years. The greater part of this lending has been done through sub-loan agreements under international donor programs, outside of the RDA.

The GOI's report, Progress and Issues in Urban Development, points out that a longer-term approach to credit is needed, which will assure that local government lending is integrated with the rest of Indonesia's market-based financial system. Only the mobilization of voluntary domestic savings for investment in infrastructure can assure, over the long run, that urban investment needs will be met. As Progress and Issues notes, the true importance of the RDA is as a transition institution that can help municipalities eventually tap into private sector savings, via the private credit market.

If the RDA is to serve as an efficient transition vehicle to private credit markets, it needs to build on several key principles:

■ *There must be adequate and stable capitalization of the RDA.* Over the past two years RDA has made new loan commitments averaging about Rp. 60 billion per year, and has accounted for some 7 percent of investment in the Cipta Karya urban subsectors. For the last five months, however, the RDA has not made new loan commitments, primarily because it has no funds to lend. It has actively discouraged loan applications until it receives further capitalization.

The \$20 million in additional HG funding targeted to the RDA as the final tranche of HG-001 will be helpful in reactivating the RDA's lending program, but it will not solve the principal capitalization problem. To achieve its broader goals, the RDA needs regular capitalization from domestic sources and, as originally contemplated, needs to become the standard vehicle for on-lending at least a part of all donor funds for the urban sector.

There are various alternatives for strengthening domestic capitalization of the RDA. One route is to have a regular budget allocation over the next several years, until the RDA builds up a large enough portfolio to capitalize itself primarily through loan repayments. Another route is to transfer to RDA administration the outstanding SLAs from past donor funding. Payments on these outstanding loans, if retained by the RDA, would give it a stable capitalization from which to make new loans for several years, making the RDA a true revolving fund (Bastin 1990). From RDA's perspective, this alternative has the advantage of making capitalization more automatic and less dependent on annual budget decisions. However, this approach has the disadvantage of giving the RDA "automatic" capitalization from government funds at zero cost, without having new injections of capital tied to RDA performance.

■ *Loan applications should be encouraged.* The RDA currently is managed so as to discourage loan applications in excess of financing capacity. If the RDA is to become an instrument for expanding the use of credit, "excess" applications should be encouraged. Completed loan applications are the best measure of the demand for credit. The HIID advisors to the Ministry of Finance have estimated that potential demand for RDA loans is in the vicinity of Rp. 600 billion, based on their survey of local governments and local public enterprises. However, demand estimates are inevitably uncertain until they are translated into loan applications, particularly in view of some municipalities' resistance to the RDA interest rate. A backlog of loan applications for good projects is the best possible indication that the scale of credit operations should be expanded, and is the best guarantee that any new program of credit support can be quickly disbursed for worthwhile purposes.

■ *RDA's appraisal practices should be clarified as soon as possible.* The ambiguity surrounding RDA's loan appraisal process needs to be removed before the RDA can be considered a transparent or stable source of loan funding. This is a further reason for accelerating consideration of one or more pilot loans through the RDA, so that the appraisal process can be tested in practice, and any difficulties in the new procedures can be pinpointed and worked out before the new HG financing is received.

■ *Loan repayment must be taken seriously.* If the RDA is to facilitate transition to private credit market financing, it is imperative that it establish a rigorous record of timely debt repayment. The principal reason that government-operated municipal credit institutions in most other countries have failed, frequently becoming barriers to private lending rather than facilitators of it, is that they do not require prompt and universal repayment of loans. Once municipalities become accustomed to making late payments, skipping payments, or appealing to central government for re-negotiation of loan terms, lending to them acquires a political risk that is virtually impossible to overcome. Perhaps the most important steps that the RDA can take in preparing for private-market lending to municipalities are to appraise loan applications rigorously so as to ensure that projects have the capacity for repayment, then demand that local authorities make all debt payments as due. One step in this direction is to make crystal clear that the RDA under no conditions will accept loan applications from enterprises that are not current in all of their past payment obligations. Such a statement could be introduced prominently into a new version of the Manual of Operations. Another step is to introduce automatic covenants into loan agreements, which require that borrowing enterprises maintain a minimum margin of net-revenues-before-debt-servicing over repayment obligations (say, 30 percent) and that service prices be raised so as to restore the margin whenever it falls below the required level. Such covenants are a frequent feature of revenue bonds in developed countries, and have been included in modified form in the World Bank's East Java-Bali project.

■ *The RDA should develop a long-term plan for identifying and reducing local government credit risk.* As a transition institution, part of the RDA's role is to identify

(through its lending experience) the credit risks involved in municipal loans and gradually reduce these so that it becomes feasible for the private sector to lend to local authorities. Each of the RDA's lending practices should be re-examined in this light: will it help identify and reduce municipal credit risk? For example, the practice of providing a 5-year grace period, during which neither principal nor interest payments are required, has been found in other countries to obscure the costs of debt-servicing and encourage local authorities to borrow beyond their capacity. An analysis of the RDA's loan repayment experience could examine the record of initial payments after expiration of the grace period, as these begin to come due, to determine whether similar risks are being created through RDA loans. Perhaps of greater urgency, the RDA should have a systematic program of advising local authorities in advance when initial loan payments will come due, and ensuring that local authorities budget for these payments.

Experience in other countries also provides lessons about techniques that have succeeded in reducing municipal credit risk. For example, liens on central government transfers have proved to be extremely effective in reducing municipal default rates. These arrangements automatically give lenders first claim on central government transfer payments in the event a municipality does not make loan repayments on time. In Indonesia, the most suitable device probably would be a lien on central government PBB transfers. In the event of loan arrears, the RDA or a private lender would have prior legal claim on a municipality's PBB payments from the central government. Liens on central government transfers are used as loan security in such diverse countries as Colombia, Morocco, and the state of Rio Grande do Sul, Brazil, where they have essentially eliminated credit risk for the lender, and in many states of the United States where lenders to high-risk central city school systems can have their loans protected by prior claim on school aid payments by the state. In the United States, several distressed central city school systems, which were formerly shut out of the credit market completely, have attained AA or AAA credit ratings once loans were guaranteed by liens on state government transfers. The use of PBB revenues as a lien would have the further advantage in Indonesia of automatically establishing a maximum prudent level of indebtedness, since lenders would not be protected in cases where annual debt payment obligations exceeded annual property tax entitlements.

■ *The RDA should conduct its operations in an environment of full disclosure and transparency.* As the Interim Evaluation team concluded, it is very difficult to obtain information on the terms of outstanding RDA loans, the extent to which loan terms have been renegotiated, the extent of arrears/defaults in RDA's loan portfolio, or collection procedures. If the RDA is to smooth the way for private sector lending, it is critical that the true extent of credit risk be identified. The terms of all loans should be a matter of public record, as should borrowers' repayment histories. Information of this kind is necessary to permit assessments of credit risk, and to monitor improvements in risk reduction. Uncertainty about credit risk has been found in other countries to be the principal deterrent to private-sector lending to municipalities. Publicly disseminated

information on payment histories also would be a sign that the RDA takes repayment seriously; it may in itself discourage payment delays by local governments.

■ *A consistent interest-rate policy needs to be articulated.* As noted above, until the RDA actually makes a number of loans, there will remain some uncertainty as to whether its announced new policy of lending to all borrowers during 1992 at 11.5% interest actually will be implemented. Future interest-rate policy is even less certain. There is no mention in the decree establishing the RDA, or in the Operations Manual, of gradually moving RDA interest rates toward market rates. Without such a policy, of course, unsubsidized entry of private lenders into municipal credit markets will be impossible. There will be no demand for private lending, as long as municipal authorities can borrow from a public credit institution at lower rates.

Movement toward market rates of interest for municipal loans does not imply an end to central-government subsidy of urban infrastructure investment. Under the Indonesian municipal finance framework, it is impossible for more than a handful of investments nation-wide to be financed entirely by credit, given the limitations on local taxes and charges. Market-rate loans therefore will need to be blended explicitly with grants in a single financing package, applying agreed-upon criteria to determine the appropriate share of grant financing in the mix. Agreement on the principles for establishing the grant/loan mix in different types of investment was one of the policy targets in the Project Paper. However, no such agreement has been reached, except in principle for financing under the East Java-Bali project.

■ *Any protections against municipal credit risk should be equally available to private and public lenders.* It is likely to be many years before a private, commercial lender seeks to make a municipal loan. Nonetheless, the same conditions available to a public lender, such as grant-financing of part of the investment package or liens on central-government transfer payments, should be available to private lenders. One of the paradoxes of municipal credit operations in other countries has been that protection against credit risk has been available only to the public credit institution, not to private banks or other commercial lenders.

■ *Commercial banks could be integrated into the municipal lending system, first by serving as collection points for loan repayments and eventually initiating municipal loans that are repurchased by the RDA.* Commercial banks are now used as the collection point for PBB payments and, in many localities, as the collection point for payment of PDAM water bills. If the long-run goal is to introduce commercial banks to municipal lending, it would seem logical to have them collect municipal loan payments, as well. This would expose both municipal officials and commercial bank officers to current lending practices, and perhaps hasten experimentation with strictly commercial loans. It also is likely to improve the payment record, as has happened with property tax and water payments when commercial banks become the payment point.

For water bills and property tax bills the banks are "passive" collectors; that is, they receive payment but do not send out bills or pursue delinquent accounts. In the case of RDA loans, the commercial banks appropriately could be used as active collection agents, who are paid a fee for loan collection. This would help put RDA loans on a more commercial basis.

In the intermediate term, if the objective is to integrate the RDA with the private credit market, commercial banks could be used to initiate municipal loans on terms acceptable to the RDA. The RDA would gradually become a secondary purchaser of municipal loans made by banks, rather than a direct lender. This strategy probably holds the greatest promise for practical entry of the private sector into municipal lending. At the outset, RDA could re-purchase from banks loans made at its standard, below-market terms. Over time, however, it could re-discount loans at rates closer and closer to market rates.

RDA should operate as a credit institution that exists to serve local governments. The essence of a decentralized credit system is that it is demand driven. The RDA's priority should be to finance locally defined investment projects, as long as the RDA can assure itself that the local borrower is able to repay its loan. There is no need for close examination by DDI staff of the details of project spending, and no need for elaborate loan applications. RDA's goal should be to appraise loan applications as swiftly and simply as possible.

There is considerable disagreement as to how responsive RDA's current operations are to local demands. The draft report of the Asia Development Bank regarding its proposed new urban sector loan states that local officials told the project team that they were unfamiliar with RDA's new mode of operation, skeptical of what they believed were elaborate loan application, and reluctant to enter into loan negotiations with the RDA. RDA staff, in contrast, report that the institution is highly responsive to local authorities and the preferred vehicle for local government borrowing--as evidenced by its much faster rate of disbursement than found under World Bank SLAs.

Local government revenue-generating capacity needs to be greatly enhanced if RDA is to substantially increase the scale of its lending. As emphasized earlier, the ultimate constraint on municipal lending in Indonesia is local government's limited ability to raise revenue to repay the loans. Until the local sector has substantially greater flexibility to raise local revenue, municipal officials will be prudently reluctant to borrow large sums and are likely to continue to lobby for renegotiate past loans on the ground that they cannot generate the income necessary for repayment.

The only long-term solution to this problem is for central authorities to give local governments greater revenue-generating capacity. This also is critical to the entire program of decentralization of infrastructure responsibility. In the meantime, however, two other steps can be taken. Technical assistance teams can work with local

authorities, through MFP, to identify the revenue-generating opportunities that local governments have under current law. These opportunities typically include more aggressive cost recovery pricing for public services, better collection of revenue amounts billed, and updating tax and tariff records to ensure more comprehensive coverage in billing.

Second, the RDA can give greater importance in loan appraisal to local capacity to repay debt. Whereas the current loan application procedure requires a great deal of tangential information not central to loan repayment (and RDA has under consideration an even more elaborate loan application process), repayment capacity is inadequately analyzed. In particular, as municipalities begin to borrow from many different sources under SLA arrangements, typically with extended initial grace periods, it becomes critical to weigh year-by-year repayment obligations over time from all sources of credit against uncommitted sources of local revenue. Local governments can be given training in debt management and financial controls. But lenders also have a special obligation not to encourage borrowing beyond municipalities' ability to pay--whether the borrowing occurs under international donor SLAs or the RDA.

The Choice of Sectoral Credit Policy

Using a publicly sponsored municipal credit institution (MCI) to open the way to private-sector municipal lending is not easy. Most attempts around the world have failed. Typically, the MCI becomes a dead-end institution which makes loans at below-market interest rates, re-negotiates loans or fails to collect loan payments whenever municipalities face fiscal pressure, and becomes dependent for its survival on capturing low-cost or "free" capital from government or external donors. This approach permanently separates municipal credit markets from the private capital market, giving local authorities access only to government-provided funds rather than voluntary private savings.

Segmentation of the municipal credit market in this way would be an especially severe loss for local governments in Indonesia. The nation has made, and continues to make, such strong progress in financial market reforms that local governments in the long run can only benefit from integration with the private capital market. As Progress and Issues points out, voluntary private savings are the most reliable long-run source of financing for the cities' capital investment needs. The short-run appeal of subsidized interest rates and a flexible loan repayment policy is undeniable. Over the longer term, however, as the GOI urban sector policy emphasizes, local authorities will benefit more from a policy that uses central government grants to deliver subsidies and allows the municipal credit market to operate on private market principles.

A STRATEGY FOR INSTITUTIONAL DEVELOPMENT OF THE RDA

RDA is the most promising base on which to build a market-oriented, demand-driven municipal credit system. However, RDA is at a critical crossroads. If it is to become an effective vehicle for orienting municipal lending in support of decentralization and market principles, it must improve its operations systems and generate support for its role from local authorities as well as other agencies of the central government. The most effective way to do this is by beginning to make loans under its new policies, while launching an assessment of how it can upgrade its operations.

Below we recommend a five-step strategy for the RDA's institutional development. The reasoning behind the recommendations has been largely laid out in the foregoing analysis; hence, the explanations for the separate steps in the strategy are brief.

1. Conduct an external analysis of RDA's operations and local authorities' perceptions of how operations can be improved.

Ironically, in view of the size of USAID's financial support of RDA, it has never received an external evaluation of its performance. It is critical that one now be conducted. The low degree of disclosure about RDA operations makes it impossible to fully judge the organization's capabilities from publicly available information. Moreover, a number of conflicting perceptions exist, which are impossible to resolve without independent evaluation. Local authorities' perceptions of the ease or difficulty of dealing with RDA, for example, can best be determined by direct interviewing of local government officials. Similarly, a number of alternative explanations have been advanced for the high arrearage rate on the loans RDA now manages; an analysis of how delinquency rates differ by loan characteristics is necessary to discriminate accurately between these explanations.

Future channeling of ADB or World Bank subsidiary loan agreements through the RDA, following RDA loan procedures, will require that these donors appraise the RDA as a development finance institution. The external analysis should anticipate the types of issues likely to be raised in such an appraisal, and assess RDA operations in light of them.

Besides compiling information on the strengths and weaknesses of RDA's current operations, the assessment should make recommendations on the form of institutional development that will best meet the needs of a credit system that supports decentralization and can serve as a bridge to eventual access to the private credit market.

2. Prepare a five year plan for RDA's institutional development that has the support of the Ministry of Finance, BAPPENAS, and local governments.

Explicit agreement on a development strategy for RDA is necessary before decisions can be made about how RDA should operate with respect to specific issues. Perhaps the most fundamental question is whether the RDA is intended to be a transition vehicle leading to eventual integration of municipal credit supply within the private credit market, or is intended to be a permanent parastatal, supplying government-provided capital at below-market interest rates. Other important questions concern how responsiveness to local credit demands can best be built into the RDA structure.

The five-year plan would take into account the findings of the initial analysis of RDA capacity.

3. Provide technical assistance to RDA in the areas highlighted by the institutional assessment as priority needs.

It is difficult to anticipate the findings of the institutional assessment. However, technical assistance may be appropriate over a range of areas, including RDA assessment of local capacity to repay debt, RDA recordkeeping and disclosure, management of RDA's loan portfolio and collection of loan payments that are due, and collaboration with local governments to facilitate loan applications and project preparation.

4. Provide technical assistance to local borrowers and potential borrowers on debt management, project preparation, and use of the credit market.

In a decentralized credit system, the principal burdens of project preparation, loan applications, and financial management of debt obligations fall upon local governments. Targeted technical assistance should be provided in these areas to potential municipal borrowers.

5. Implement the policy changes within RDA that are necessary to fulfill its institutional development objectives.

Earlier sections of this annex recommended policy actions based upon the presumption that the RDA should serve as a transition vehicle paving the way for municipal participation in private credit markets. This list of actions is appropriate as long as the model of RDA as a transition institution is accepted. Agreement on an alternative model for RDA's development would require an alternative set of policy actions. To achieve the basic purposes of supporting decentralization and providing incentives for efficient local investment, however, basic market principles should be built into RDA's lending policy, whatever specific form its institutional development takes.

ANNEX 3

URBAN ENVIRONMENTAL QUALITY MANAGEMENT
AND INTEGRATED INVESTMENT PROGRAMMING

Section 1
INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

In March 1992, BAPPENAS submitted an *Issues and Priorities* Report to AID, assessing performance under its HG-001 Policy Action Plan and indicating new priorities for action in the next phases of its decentralized urban development program. Perhaps the dominant new priority identified was *urban environmental quality management*. This Annex reviews prospects for recognizing this issue as a major theme in the Policy Action Plan for the HG-002 Project and its associated technical assistance and training program.

The remainder of this section summarizes main findings and recommendations. Section 2 reviews available data on environmental conditions and trends in Indonesia's urban areas. Section 3 describes the nature and capacity of Indonesian institutions set up to date to deal with urban environmental issues as well as the support now being provided by other international donors in this field. Section 4 recommends an approach for the GOI that would address urban environmental degradation more forcefully and Section 5 proposes means of supporting this approach in the HG-002 Project.

1.2 SUMMARY OF FINDINGS AND RECOMMENDATIONS

Urban Environmental Trends

Research over the past few years suggests that environmental degradation is becoming Indonesia's most serious *urban problem*. Although it has not yet reached critical levels in most cities, air pollution is increasing rapidly, particularly with the enormous recent growth of motorized vehicles. Yet more serious now is water pollution which is accelerating with urbanization as more and more untreated wastes are discharged into rivers and streams and also contaminate ground water resources. Water borne diseases are already one of the leading causes of serious illness and death in Indonesia's cities. Also, unguided urban expansion into environmentally sensitive areas (particularly lands subject to flooding and watersheds) is growing and can be both life threatening to the residents and permanently damaging to ecosystems.

A recent AID sponsored study environmental conditions in Jakarta and Ujung Pandang finds that: (1) the problems are indeed severe; (2) individuals and firms have little understanding of how their own behavior impacts these problems or what might be done about them; (3) a large share of all urban environmental issues are really problems of inadequate development and management of land and infrastructure; and (4) responsibility for dealing with environmental degradation overall remains fragmented. Furthermore, it is generally conceded that the burdens of urban environmental degradation fall most heavily on the poor.

In Indonesia today, there seems to be widespread awareness that urban environmental degradation is already severe. The AID sponsored study indicated that households, commerce, and industry now believe environmental improvement is important and that many households (roughly 50 percent) are willing to pay for some basic improvements (better public toilets, cleaner and better-designed waste water ditches). Government leaders interviewed unflinchingly showed concern for the urban environment and an interest in policies and programs to improve it.

Past Efforts to Address Urban Environmental Degradation and Their Inadequacies

Indonesia is, in fact, ahead of many other countries in attempting to address its environmental problems. Major studies have been conducted, and strategies formulated, in such areas as industrial pollution and forest management. In 1986, the GOI established a process requiring the preparation of environmental impact assessments of government and major private sector projects (AMDAL) and a Presidential Decree in June 1990 formally established the Environmental Impact Management Agency (BAPEDAL), providing a general mandate for pollution control and oversight of the AMDAL process.

However, these steps alone are not likely to be forceful enough to address environmental degradation in Indonesia's rapidly growing cities. Much emphasis of late has been placed on strengthening AMDAL, and studies indicate the much needs to be done to improve it. But environmental specialists are increasingly recognizing that, while they are a necessary part of the process, environmental impact assessments in and of themselves are not enough. They often come too late to affect the key public decisions that determine environmental quality: i.e., much work has gone into a project's design by the time environmental assessment is conducted and there is much resistance to change at that point. Environmental criteria should be given prominence at the very start of the planning process but there is presently no mechanism to ensure that will occur.

A more comprehensive approach is being taken in Jakarta where the GOI and local officials (in conjunction with the World Bank supported Metropolitan Environmental Improvement Project--MEIP--and the Jabotabek Urban Development Project III) are

working to sort out institutional responsibilities and deal with issues such as joint wastewater treatment, institutional strengthening, environmental improvement in *Kampungs* (with a new emphasis on community participation), and informal-sector community-based composting and recycling enterprises. But similar activities are not underway elsewhere. The GOI has not yet developed a complete policy, let alone the institutional capacity, to deal with *urban environmental quality management (UEQM)* nationwide.

Implications for AID's Municipal Finance Project

The fundamental goal of the MFP is to improve shelter and living conditions for the urban poor, but accelerating environmental degradation will surely prevent the achievement of that goal. Thus, the MF is itself directly threatened unless some way is found to address environmental concerns more effectively. The Project's components as presently defined do not address these issues directly, although with modifications they represent a framework well suited for doing so (as explained below). Therefore, adapting the present approach to incorporate effective UEQM should be a high priority in the design of the new HG Loan program.

Suggested Approach: Local UEQM Strategies Linked to IUIDP Updates

The most basic understanding behind the GOI's urban Policy Action Plan is that local leaders have stronger knowledge and incentives to guide urban development effectively than central officials. Surely, that is also true of UEQM. Also, it is self evident that the solution to most urban environmental problems will depend on improved infrastructure and services, or programs closely linked to them; i.e., it is impossible to imagine effective UEQM that does not entail enhanced water supply, waste disposal and treatment, and guidance of land development (which is primarily influenced by the placement of major roads and water supply mains). Therefore, *the decentralized urban development program defined in the Policy Action Plan is not only the best, but probably the only effective, vehicle for addressing urban environmental degradation.*

The context offered as local leaders consider tradeoffs in infrastructure design could have a profound effect in stimulating their interest in other programs needed for UEQM. For example, the best time to gain their support for demand management programs to reduce wasteful use of water may be during PJM preparation, just when they have been confronted with estimates of the full costs of infrastructure to collect and treat all of the wastewater implied by present trends in usage. This context should also stimulate their thinking about community involvement in environmental management as well as roles for the government and private entities in sustainable urban service delivery.

One of the highest priorities for IUIDP now is to move local officials into a more commanding role in ongoing PJM/RIAP preparation and implementation. In the first

rounds of IUIDP, many local officials did work closely with the consultant teams and controlled key decisions but this was not true in many others (Tjahjati, 1990). Another problem is that the PJMs generally have suffered from a lack of analysis and strategic planning and priority setting across sectors before project lists have been compiled. Program staff admit that IUIDP guidelines have been weak in these areas. It might be possible to address both of these objectives by a new (but fairly low cost) program to involve local leaders in strategy planning to improve the efficiency and effectiveness of their action programs and, at the same time, give full recognition to environmental problems and opportunities.

The process might work as follows: (1) a central technical assistance/training team would work with local government staff in preparing analyses of the development and environmental challenges faced by a city (and the relationship of the city's current PJM to those challenges); (2) the mayor would then call in his top management staff along with a few key private and community leaders for a series of meetings (or retreats); (3) at these meetings, local technical staff (with assistance from the central team) would present their ideas coming out of their analyses; i.e., outlining alternative strategies for development open to the city and presenting rough estimates of the impacts of each (e.g., infrastructure and land development requirements, costs and potential financing, environmental impacts, impacts on job creation and economic indicators). The estimates would be presented only to stimulate the joint thinking of the local leadership team, not in the manner of hard forecasts. In this context, the local leadership team would be forced to consider basic strategic choices in a realistic manner. The initial retreats might lead to other meetings, to policy decisions and guidelines after that, and finally to modifications to improve current PJMs.

Urban Disaster PMP

The main arguments supporting this approach for UEQM are also highly relevant for disaster prevention, mitigation, and preparedness (PMP) in urban areas. In particular: (1) while supportive roles should be played by national and provincial governments, if it is to be effective, the main thrust of PMP activity should be designed and implemented by local leadership; and (2) early local strategic planning, linked to UEQM, is likely to do much more to relieve the pain and damage associated with disasters in urban areas, and at much lower cost, than anything done after the fact. An example is the Bhopal disaster in India. The problem there was fundamentally a land-use problem--squatter settlements would not have sprung up around the plant if local government had done more (provided trunk infrastructure, etc.) to open up sufficient land for low cost residential development in other locations. The same can be said for the emergence of kampungs in flood prone areas in Indonesia.

UEQM Program Themes

The following themes should be supported as a part of environmental management in the suggested program.

■ *Responding effectively to service demands that can be met by local governments, and helping to structure a tariff policy that recovers costs from beneficiaries to the extent feasible but recognizes income and demand limitations.* Households now pay for safe water, access to communal toilets, and garbage collection, and are willing to pay more for some types of environmental infrastructure. But it is the essence of markets that households not be forced to pay for services they don't want to buy. The decision as to which local environmental services should be delivered through markets, subject to consumer choice, and which should be delivered collectively through the public sector, and how these latter should be paid for, will be critical to establishing a self-sustaining system of environmental management. Greater exploration of demand, the cost of different options for environmental infrastructure, and the external (community-wide) benefits associated with each is needed before pricing decisions can be made.

■ *Appropriate technologies.* Water-borne sewage systems and piped water to individual households are clearly beyond the financial reach of many of the households that the HGL seeks to serve. However, alternative technologies of the sort supported by KIP offer lower costs and promise much greater coverage. Further exploration of these options must play an important role in any strategy to improve the urban environment.

■ *Building popular support for and awareness of the benefits of environmental quality.* More than most countries, Indonesia has a rich network of local organizations and heritage of community self-help, even in urban areas. This organizational network provides a foundation that can be built on for environmental infrastructure that reaches low-income people. It also provides the framework for collective choice at the community level in prioritizing environmental projects.

■ *Private sector participation.* Where markets are judged to be the appropriate institutional vehicle for delivering services, priority should be given to private providers. Already, private sector providers are active in such key areas as septic tank cleaning and sludge removal and solid waste collection. Community preparation for the use of private markets in environmental services provides a natural link between a new HGL and the PURSE project.

■ *Measurement and monitoring.* Better data collection and better analysis of the impact of environmental conditions on human health and economic growth are necessary conditions for better-informed environmental choices. Involvement of the kampungs in environmental quality monitoring is one way to give them a greater sense of control over environmental conditions and investment choices.

Building the UEQM Program into HG-002

The new HGL program should support the suggested UEQM approach by the addition of clear UEQM objectives into the Policy Action Plan, and by the allocation of significant technical assistance and training resources in support of those objectives. The work would entail: (1) efforts to begin to measure and monitor environmental problems in cities (e.g., the extent and spatial spread of ground-water pollution--it makes the most sense to start with selected and simple measures first and then improve monitoring capacity over time); (2) national level work to develop analytic techniques that can show local decision makers in a straightforward manner the implications of alternative strategies; (3) the mounting of the type of local strategic planning processes noted above in the context of the overall decentralized urban development program; and (4) supportive research, policy development, and technical assistance and training at the national and provincial levels.

Section 2

URBAN ENVIRONMENTAL CONDITIONS AND TRENDS

2.1 INTRODUCTION

Rapid urban population growth lies behind many of Indonesia's urban environmental problems. At 5.4 percent per annum, Indonesia's urban growth rate is among highest in the world. In the 1980s, its cities and towns had to accommodate an average of 2.3 million new inhabitants per year (more than twice the 1.1 million average of the 1970s) and the absolute urban growth increment is sure to be much higher in the 1990s.

This rapid urbanization stresses the environment for three reasons. First, while hard data on the differences remains elusive, it is generally accepted that the amounts of energy and materials used, and the amounts of waste generated in cities, per capita, are several times higher than in the countryside. Second, because these "residuals" of human activity in cities are so spatially concentrated, they are potentially more dangerous to human health than if spread more evenly over the national territory. Third, institutions, technologies, and infrastructure systems available to control these problems are often weak. Indonesia's environmental institutions and processes are still embryonic while the acceleration in the rate of urban population growth threatens to overwhelm government's ability to respond.

Indonesia does not yet have a system to regularly and reliably monitor changing environmental conditions in its cities. Nonetheless, a number of studies have been completed of late that permit at least a general understanding of problems and trends. Taken together, these studies indicate that urban environmental conditions and infrastructure are lagging behind economic growth and may become Indonesia's most serious urban problem.

This section summarizes the readily available evidence. The first part review measures of urban environmental degradation. The second, examines problems in public infrastructure and service programs that directly affect environmental problems in cities.

2.2 ENVIRONMENTAL CONDITIONS IN INDONESIA'S CITIES

Water Supply and Quality

Surface water represents the great bulk of water resources and is plentiful because of heavy rainfall. However, only 25 to 35 percent of the total is a steady flow and, hence, dependably available (KLH, 1991). In 1979, this steady flow provided 4,000 cubic meters per capita per year on average. By 1987, this amount had dropped to 3,270 cubic meters. Projections are that this level will drop to 1,987 cubic meters by year 2000. The water potential in Java, Madura, Nusa Tenggara, and Bali are projected to be critically low, ranging from 1,515 to 3,997 cubic meters.

In contrast, demand is expected to rise substantially in many areas. Relative to 1980, overall demand for water is project to increase, for example, by 57.5 percent for irrigation and 70.1 percent for industrial use by the year 2000 (BAPEDAL, undated). The total water demand for Java will, it is estimated, quadruple. Many cities are drawing the maximum from nearby rivers now and require great capital investments to bring water at high cost from long distances to meet this demand.

In contrast to surface water, groundwater represents a small part of Indonesia's water resources. The depth of groundwater from the surface varies from less than two meters to over 30 meters (KLH, 1991). Groundwater levels typically fall in the dry months of the year (around August). However, the overall level of groundwater--which supplies the drinking water to most of the urban population particularly the poor--is sinking across Indonesia, largely because of heavy extraction from industry and urban expansion.² The lack of waste water treatment in urban areas and salt-water intrusion appear to be rapidly decreasing groundwater quality, although no regular measurement program monitors it. Salt water infiltration is occurring in Medan, Cilegon, Jakarta, Semarang, Denpasar, and the northern coast of West and East Java. The most critical problem is in Jakarta.³

Groundwater represents a scarce and valuable water resource, particularly as it provides drinking water for most of the urban poor. However, lack of regulation, lack of municipal water provision capacity, and groundwater's low price (usually free) have joined to deplete it and cause its contamination.

²44 percent of the urban population receives drinking water from wells. An additional 18 percent rely on pumped water. Over two thirds of all households earning below the minimum wage rely on water from wells. (Biro Pusat Statistik, 1989).

³At present, 2,500 drilled (deep) wells in Jakarta pump 3.1 cubic meters per second. Shallow wells--mainly from households--pump an additional 2.36 meters per second.

While a raw-water supply crisis looms, water quality has also decreased, sometimes dramatically. PROKASIH--which has initiated the first regular water-quality monitoring in Indonesia--has measured substantial decreases in water-quality in the rivers running through urban areas in Java (Citarum, Ciliwung, and Surabaya River) including the Banjir Kanal--which provides water for Jakarta. The amount of heavy metal (except iron) has also risen in Banjir Kanal at the drinking water intake supplying Jakarta.

Infant mortality is an important indicator of health related to provision of safe water. Infant mortality declined from 137 per 1,000 live births in 1971 to 90 in 1985 (KLH, 1991). This drop coincided with heavy increases in investment and coverage under Repelitas I-III for the water sub-sector. Piped water coverage quadrupled in this period. However, further progress seems stalled. Ministry of Public Works (MPW) data indicate that safe water coverage--including safe piped and groundwater sources--remains at around 38 percent for all of Indonesia. Given spending and population projections, it is unlikely to rise much above 40 percent in the next five years. Analysis of this problem (World Bank, 1991a) indicates that institutional capacity--the ability to develop suitable projects for the water-supply funding pipeline--may be more of a bottleneck than funding constraints.

Since 80 percent of infant deaths are still caused by water-related disease in Indonesia (KLH, 1991), stalled progress in safe water threatens to have serious health impacts.

Waste Water and Sanitation

Worldwide, government investment programs often focus more on water supply than sanitation or sewage treatment (Kingsley and Ferguson, 1992). Water supply is more visible, a more immediately felt need, and earns political capital. The high cost of conventional sewage treatment--which has made extension a gradual process even in Western European countries--also contributes to low coverage.⁴

Even compared with this low norm, Indonesia has an extremely undeveloped sanitation and sewage treatment sector. Sewer systems reach less than 5 percent of the urban population, and only a fraction of this sewage gets treatment. The great bulk of the urban population--68 percent in Jakarta (MEIP, 1991)--use septic tanks. However, less than 10 percent of the sludge from these septic tanks gets treatment. In sum, most human waste gets dumped untreated. Jakarta households dump 147 tons of human waste into rivers *each day* (KLH, 1991). Household waste causes an average of 75-85 percent of Biological Oxygen Demand (BOD--a common measure of water pollution) in Indonesian rivers (KLH, 1991). It also contaminates groundwater, the principal source of drinking water of urban households, particularly the poor.

⁴ In 1980, Austria, Norway, Portugal, Belgium, and Japan treated less than 50 percent of their sewage.

Water pollution by human waste is the greatest threat to the health of the urban poor in developing countries (Hardoy and Satterthwaite, 1985). Studies show higher rates of many diseases in slum areas, and longer duration per illness.⁵

Solid Waste Disposal

Low-income residents of Asian cities generate about 0.4 to 0.7 kg/capita/day of solid waste, middle-income residents 0.5 to 1.0 kg, and high-income residents 0.8 to 1.5 kg (Shin et al, 1992). The per capita figure for Jakarta in the early 1980s, 0.75 kg (see Table 1) places it in the middle of the medium-income solid-waste generation range. In total, the amount of solid-waste Jakarta must deal with is enormous: 1.8 million tons per year.

Table 1
SOLID WASTE GENERATION IN SELECTED ASIAN CITIES (Early 1980s)

City	1,000s of tons per year	Kilograms per capita per day
Bangkok	1,380	0.88
Beijing	3,580	1.59
Bombay	1,150	0.55
Colombo	160	0.75
Jakarta	1,800	0.75
Kitayushu	405	1.06
Kuala Lumpur	730	1.29
Manila	1,380	0.50
Nagoya	890	1.14
Singapore	1,873	0.98
Tokyo	4,491	0.54

Source: Shin et al, 1992.

Unfortunately, solid waste collection is poor and shows few signs of keeping pace. Only 60 to 80 percent of Jakarta's garbage gets collected and transported out of the city. The share is substantially lower for many smaller cities. The uncollected garbage gets dumped into waterways, causes water pollution and drains to block. Even when dumped

⁵In Manila, diarrhea in shanty towns is twice as common as in the rest of the city. The infant mortality rate in the old city of Kabul, Afghanistan is 1.5 times that for the rest of the city. Studies of Delhi and Calcutta show higher rates of many diseases in slums areas, and longer duration per illness. See Shin, et al, 1992, pp. 100-105.

at sites, solid waste creates problems, including odors, smoke from fires, leaching of chemicals into surface and groundwaters, and breeding of rats, flies, and mosquitos. Incinerators create air pollution and ash disposal problems.

Air Pollution

Motor vehicles account for a substantial part of a wide variety of air pollutants in most urban areas.⁶ The rapid growth of the motorized vehicles in Indonesia--projected at over 10 percent per year (Midgley, 1991) and, thus, more than doubling by 2,000--bodes ill for future air quality. Table 2 shows vehicular emissions in Surabaya and projects them to year 2005 assuming a vehicle growth is constrained to less than half (5 percent) of the current rates.

Table 2
ANNUAL VEHICULAR EMISSIONS IN SURABAYA FOR 1987 AND PROJECTIONS FOR 2005
ASSUMING VEHICLE GROWTH OF 5 PERCENT PER YEAR
(in tons)

Emission	1987	2005	Pct. Increase 1987-2005
Carbon Monoxide	320,000	510,000	60
Hydro-Carbons	100,000	140,000	40
Suspended Particulate Matter	11,500	15,500	34

Source: Calculated based on Midgley, 1991; figures 43 and 44

Various studies indicate that Jakarta already has a serious problem with suspended particulate matter. This air pollutant causes the widest impact on human health by provoking respiratory illness. As of 1980-84, Jakarta had the eighth highest levels of suspended particulate matter of 40 cities selected for analysis by the World Health Organization (1987). Subsequent studies bear out this picture. A more recent study by the Population Crisis Committee (1988) gave Jakarta the worst ranking in air

⁶75-90 percent of carbon dioxide emissions, 55-95 percent of carbon monoxide emissions, 30-70 percent of nitrogen oxide emissions, 90 percent of lead in urban air, up to 60 percent of particulate matter, and considerable ozone (Faiz, 1990). Motor vehicles also pollute water and food.

quality--along with seven other cities--of the world's 100 largest cities based on either suspended particulate matter or sulfur dioxide concentrations for these cities.⁷

Decentralized and inefficient land use plays a key role in increasing vehicular emissions (Kingsley and Ferguson, 1992). Typically, land development occurs at the urban edge. The distance of residential locations from the city center or other sub-centers increases, and expands demand for motorized travel. Private vehicles replace traditional public modes of travel, such as walking, bicycle, water travel, and, even, public transit. Traffic speeds slow and commute times lengthen.

Indoor air pollution from burning biomass (wood, dried dung, agricultural wastes) is poorly researched in Indonesia and has received little attention. Yet indoor pollution typically harms the health of poor urban residents much more than ambient air pollution (World Resources Institute, 1990). Some data indicate that indoor pollution may be particularly severe in Indonesia. Twenty-one percent of households do not have windows (KLH, 1991). In addition, many households purposely keep smoke-producing fires going indoors in order to deter mosquitos and malaria. Poor indoor air quality tends to damage the health of women and children most. As incomes rise, people use less biomass and more modern fuels such as LPG and electricity, reducing indoor air pollution. Indonesia's indoor pollution should decrease with economic growth that allows shifting to cleaner fuels and provides better housing.

Industrial Pollution and Toxic Waste

Indonesian industry is projected to grow rapidly--at over 10 percent per year during the 1990s. The great bulk of industrial establishments are small, often with outdated, highly polluting technologies (98 percent of Jakarta's 4,000 industrial establishments are classified as small). Even large industries, however, have lagged in adopting modern processes and, with them, modern pollution control. Approximately 80 percent of Indonesia's large and medium-sized industries are located in Java.

Industries affect the environment both from their use of inputs and their discharges. Regarding inputs, industry has a particularly damaging role in depleting groundwater--the main source of water for the urban poor. In Bandung, the industrial sector is mainly responsible for drawing 4,000 liters per second in groundwater, more than twice as much as the entire city water system provides to its customers.

⁷ One on a scale of 10, with 10 as the best and one as the worst (Population Crisis Committee, 1989). Other measurements also indicate that Jakarta has high levels of particulate matter. McCullough et al, 1990, note that the recorded levels for Jakarta is 250 ug/m³ versus 200 for Bangkok, 150 for Kuala Lumpur, and a World Health Organization guideline of 60 to 90 ug/m³. Since these two sets of data were collected in the late 1980s, it should be noted that the city has reduced the number of two-stroke vehicles--such as motorized becaks--that are some of the worst polluters and emitters of particulate.

Fifty percent of the pollution burden in some major river basin areas in Java comes from industry (BAPEDAL, Undated). Most large industries have failed to meet the initial standards of waste quality proposed by Indonesia's pollution control agency, BAPEDAL, and the Ministry of the Environment and Population (KLH). In 1988-89, 61 percent of industries in West Java failed to meet waste quality standards (KLH, 1991). A similar study of 100 industries in the Citarum, Cisadane, Ciliwung, and Cileungsi river basins found that 70 to 80 percent fell short of these standards.

New toxic pollutants have accompanied the rapid growth of the industrial sector. Table 3 presents the per-capita levels and percent increase of toxic waste in selected Asian countries including Indonesia.

Table 3
TOTAL TOXIC WASTES RELEASES BY INDUSTRY IN SELECTED ASIAN COUNTRIES, AND
PERCENT INCREASE, 1977-1986
(pounds per US \$1,000 of Gross Domestic Product at 1989 prices)

Country	1977	1986	Percent Increase
Bangladesh	0.91	0.93	2
China	5.72	4.68	-18
Hong Kong	2.10	2.18	-1
India	2.19	2.80	27
Indonesia	0.42	1.28	204
Japan	3.62	2.85	-21
S. Korea	2.91	3.26	12
Malaysia	1.68	3.04	80
Pakistan	1.17	1.80	53
Philippines	1.75	1.62	-7
Singapore	3.43	3.94	14
Sri Lanka	0.67	0.76	13
Thailand	1.24	1.41	13

Source: Batstone and ENVAP, "The Industrial Pollution Projection System", World Bank, 1991.

The rate of increase in Indonesia's toxic waste greatly exceeded that of other Asian countries, although it was still the third lowest in absolute terms--only above that of Bangladesh and Sri Lanka. Clearly, the problem can be expected to accelerate in the future.

The PROKASIH Program of BAPEDAL and KLH have made some progress in reducing surface water pollution loads from the largest polluting industries. However, much remains to be done and small industries--which discharge the bulk of total industrial pollution--have yet to be addressed.

Agglomeration economies favor the location of industries in large urban areas. Industries can cause great health damage to nearby residents. GOI policy has successfully influenced many large and medium-sized industries to relocate to industrial parks. Again, however, no efforts have begun to examine the problem of pollution from small household industries, which typically adjoin residences.

Many illustrations exist of the danger and astronomical cost of unchecked industrial pollution. Estimates for cleaning up old industrial sites in the US with the environmental "super-fund" total US \$500 billion. Prevention is the only cost-effective alternative.

2.3 PERFORMANCE IN INFRASTRUCTURE PROVISION AND LAND MANAGEMENT

The following paragraphs focus on the performance of government in providing urban environmental infrastructure: water provision, sanitation and sweeping, and solid waste collection. We also examine a key cross-cutting issue that affects these urban environmental sub-sectors: land-use regulation and markets. This analysis relies partly on data from a sample of five cities; we visited Bandung and Ujung Pandang, interviewed extensively in Jakarta, and assembled data from accounts of Surabaya and Padang--Annex 3.A presents this information in tabular form.

Water Supply

The GOI has emphasized the extension of piped water to its urban population. Water represents 38 percent of the Urban Investment Program from 1986/87 to 1991/92. Roughly 5 percent of total government resources have gone into the water sector.

During the 1980s, GOI sought to decentralize water provision through the creation of self-sustaining local water companies linked with local government (PDAMs). Both GOI and donors have focussed considerable attention on the financial viability of PDAMs and their ability to operate as commercial entities. Despite the emphasis on financial viability, PDAMs still often structure their tariffs to achieve social policy objectives of income distribution, loosely based on the principle of cross-subsidizing from the rich to the poor. Currently about 151 PDAMs operate throughout Indonesia and approximately 140 BPAMs--centrally controlled water agencies that are to be converted into PDAMs by 1993 (USAID, 1991).

The results have been impressive. Piped water supply quadrupled under Repelitas I-III (USAID, 1991). But, despite these efforts, public piped water supply suffers from many problems. Most fundamental, piped water coverage is no longer gaining much on urban population growth.

Under Repelita V, 43 percent of expenditures in the urban services sector were to be allocated for water supply in order to extend service to 13 million people (almost twice the 7 million reached in Repelita IV), thereby increasing service coverage from 32 percent of the urban population to 80 percent. However, just an increase to 47 percent would require all the proposed resources in Repelita V (World Bank, 1991a).

Other problems affect the water sector. Leakage from systems is high--about 40 percent, on average, in large cities. PDAMs are often unable to provide a clean source of water to their customers. Many PDAMs remain financially weak. Key performance issues affecting water supply are as follows:

■ *Lack of strategic action plans to cope with growing raw-water shortages.* Many Indonesian cities have already used up the capacity of the nearest local rivers, where extraction costs are lowest. Four of the five cities in our sample--Bandung, Jakarta, Surabaya, and Ujung Pandang--face a painful dilemma by the year 2000: either make massive investments to draw water from distant sources resulting in high-cost water and increasingly negative cash flows; or go without these new investments and limit economic growth.

■ *Decreasing water quality.* Even when piped water is available, untreated city sewage, pollution from septic tanks, and industrial waste increasingly degrade its quality and that of rivers from which PDAMs draw, increasing costs or making treatment uneconomic. Even industries cannot use the water from the main river in Surabaya for four months of the year. Household surveys of Jakarta and Ujung Pandang (Chifos and Lubis, 1991) show that above 80 percent of respondents are unsatisfied with the quality of their water. Households are willing to pay more for better water. Water vendors succeed in charging households many multiples (5-10 times in Jakarta and Ujung Pandang) the price that PDAM charges.

■ *Groundwater degradation and depletion, and lack of enforcement of regulation.* From an environmental and economic perspective, groundwater is a valuable and particularly scarce water resource. Its cost should equate to its social value--rather than being free or virtually free. The Ministry of Mines and Energy under the Directorate of Environmental Geology (DEG) has responsibility for groundwater resources (USAID, 1991). This entity delegates its authority to monitor and license groundwater to local governments, which often place meters in deep wells and pumps. However, the prices charged are extremely low and enforcement inefficient--many unmetered deep wells exist even in areas that use them. The groundwater problem has its greatest negative effect

on low-income people, who frequently depend on groundwater rather than more expensive piped water.⁸

■ *Financial management, autonomy of PDAMs, and Pricing.* Water pricing is particularly difficult because of its "social" importance. At present, water tariffs are supposedly set to recover the full cost of production (O & M and some measure of capital costs), provide for income distribution through a social tariff, and provide for fiscal distribution to local authorities through a tax on "profits." Currently, most PDAMs fail to achieve these targets, failing to pay for any depreciation and capital formation.

Sanitation

The sanitation system of Indonesian cities remains extremely undeveloped. Despite recent construction of new sewer systems in Jakarta, Bandung, Medan, Surabaya, and Semarang, operating sewer systems serve less than five percent of residents in urban areas (USAID, 1991). Government also constructs public toilets under the Kampung Improvement and Program and has nominal responsibility for maintaining ditches and drainage systems.

Government spends relatively little on sanitation. In comparison to the substantial expenditures in the water sector (38 percent of the total), environmental sanitation represented only 11 percent of total urban investment in the Cipta Karya sub-sectors from 1986/87 to 1991/92 (Kingsley and Peterson, 1992).

Most households provide their own sanitation facilities. Approximately 35-40 percent of urban residents have access to sanitation facilities equipped with either a septic tank and drainage field or with a leaching pit. The remainder of urban residents use facilities that discharge directly to the surface drainage network, to septic tanks without a drainage field (which, therefore, overflow into surface drainage) or to deep pits. Important performance issues in this sector are as follows:

■ *Little Treatment of Human Waste and Lack of Enforcement of Regulation.* Four out of our five sample cities cover only a fraction of their urban populations with sewers and provide no or little sewage treatment--Jakarta, Padang, Surabaya, and Ujung Pandang. Only a small fraction of households hire private companies to drain their septic tanks with de-sludging trucks because of the high cost (Rp. 15,000-20,000). Even if willingness to pay increased, little treatment capacity for sludge pumped from septic tanks exists.⁹ The great bulk of households desludge their septic tanks manually into ditches themselves, often by hiring inexpensive day labor.

⁸ The cost of connection, alone, often deters those below median-income from using piped water.

⁹ Stabilization ponds for septic-tank pumpage have been built in Surabaya, Jakarta, and Ujung Pandang, but cover a small part of need.

Although the GOI has laws that permit such regulation, many cities fail to require new formal-sector residential development to provide sewer systems. Typically, developers opt to avoid this cost¹⁰ and build septic tanks. Downtown businesses also often discharge directly into ditches rather than the sewer system. The high densities in kampungs--sometimes over 500 people per hectare relative to city averages of around 100 people per hectare--force location of septic tanks closer than the 10 meter minimum distance from shallow wells recommended by health codes.

■ *Low public awareness of the health consequences of poor sanitation.* Households surveys in Jakarta and Ujung Pandang (Chifos and Lubis, 1991) show that many people do not clearly connect diseases such as diarrhea, typhoid, and para-typhoid with poor sanitation that contaminates their water supply. Other uses of money--such as buying a television or investing in a business--often take precedence over building or cleaning a septic tank. In contrast, residents appear to pay more attention to the aesthetic aspect of sanitation. GOI's clean cities award (ADIPURA, see Section 3) has succeeded in stimulating people to clean up by appealing to civic pride in the look and smell of their city, *not* by focussing on health concerns. The problem of public awareness intertwines with that of low incomes. People making the Indonesian minimum wage--Rp. 2,100 per day or about US \$1.05--have great difficulty paying for better sanitation.

■ *Financial problems of agencies with responsibility for sanitation.* Conventional water-borne sewage systems are expensive. In Bandung, the sewer coverage rate (40 percent of the population) and treatment rate (25 percent of the population) are higher than for any other Indonesian city. But the PDAM there faces severe financial problems in paying off its debt from the US\$60 million loan that helped build this system. Low awareness of the connection between sanitation and health make cost recovery and, hence, finance of sanitation systems extremely difficult.

Sewerage tariffs are calculated to recover only operations and maintenance costs, not the original capital costs or replacement. Typically, regulations require commercial customers--especially large commercial buildings and hotels--cross-subsidize residential customers. Public subsidies have a role in sewage treatment because its public health and environmental benefits exceed the willingness of households to pay. However, these subsidies should be carefully managed and part of an improved cost recovery effort. Because of the high cost of installing conventional water-borne systems in existing cities, sanitation is a sub-sector where experimentation with new technologies--both at the community and city level--will be essential.¹¹

¹⁰ In Jakarta, the cost for a residential connection is between rp. 250,000 and 400,000.

¹¹ Continuous micro-filtration is an example. This system works by forcing water through thousands of thin polyethylene tubes with pores small enough to filter out bacteria and viruses. An Australian company has built a US \$1.7 million demonstration of such a plant capable of treating 3 million liters of sewage daily. Such plants have the potential to revolutionize water-treatment infrastructure and replace

Solid Waste Management

Solid waste management in many Indonesian cities is seriously deficient and deteriorating. On average, some form of garbage collection serves only 40 percent of households; the largest cities cover 60 percent, while cities of around 100,000 people typically serve only 20 percent (USAID, 1991). Coverage varies by income as well; 70 percent of wealthy households receive service compared to 19 percent of the poor. Under Repelita V, GOI has allocated US\$220 million for improving solid waste management, but this sum represents only about two-thirds of that necessary to meet the plan's goal-raising household coverage from 40 to 70 percent.

Typically, neighborhoods leaders organize the collection of solid waste directly from households and have more control over charging for this service and disposal than the "municipal cleansing agency" (Dinas Kebersihan or DK). The DKs' job becomes transporting this waste from temporary collection points to a sanitary landfill. Attempts made by DKs to displace the neighborhood organizations in this function often fail.

In some cities, private companies have a role in both primary collection and transportation from secondary collection points (LPS) to the dump site (LPA). Private companies collect garbage in 27 of Jakarta's 264 Kelurahan. Most notably, P.T. Sarana Organitama Resik services 17 kelurahans and has a number of private contracts for area's served by DK that desire better service. The following are the main performance issues in this sector:

■ *Control of revenue collection by the neighborhood organizations, poor cost recovery, and poor financial management in most cities.* The cost recovery problem is most extreme in Jakarta. Neighborhood organizations collect Rp. 100 billion from households for solid waste service. However, only Rp. 4.5 billion reaches the DK budget. Thus, over 95 percent gets absorbed by many parties in between. This creates an enormous vested interest in keeping the system the way it is. The DK must make up the balance of its total budget of Rp. 34 billion with public subsidies. DKs in cities over 100,000 cover an average of only 28 percent of their operation and maintenance costs--overall, DK receipts cover only 5-10 percent of their total costs, including capital and land (Cervero, 1991).

The loss of potential revenue is one of a number of factors that discourage DKs from providing good service. In addition, DKs--local government agencies--must meet civil service and other requirements that greatly reduce their incentive and ability to manage operations efficiently. DKs often blame poor transportation from temporary collection sites to landfills on the age of their truck fleets, which have a high proportion

huge centralized systems connected by hundreds of kilometers of pipes with compact units next to the communities served.

of vehicles out of service. In Ujung Pandang, only 50 of the DK's 90 trucks are in operation.

■ *Demonstrated potential for improved financial management through administrative and billing reform.* A number of cities have made dramatic advances in increasing cost recovery and the efficiency of public garbage collection. Two innovations appear key to this improvement (Cervero, 1991): transforming DKs into independent public enterprises (PDKs), which increases flexibility and creates incentives for better operation; and charging for solid waste collection in tandem with water or electric bills. Campaigns by mayors have also played a role in getting the public to pay.

Land Development and Use

The impact of land use cuts across water, sanitation, and solid waste management. Development over aquifers and water recharge areas pollute urban water supplies. Tight land markets caused by regulation and oligopolies raise land prices and force low-income people, in particular, onto the most environmentally precarious sites, such as lowlands subject to floods. Alternatively, high densities in inner-city kampungs rise and contribute to contamination of shallow wells by many septic tanks. Concentration of offices and business in one city center helps cause long commutes, air pollution from auto use, and high densities.

Several agencies have or potentially have some responsibility in the area of land use (KLH, 1991). The National Land Agency (Badan Pertanahan Nasional), the Ministries of Home Affairs and Public Works, the Center for Land Research of the Department of Agriculture, and provincial and local BAPEDAs all are supposed to have roles in the land-use decision-making process. At present there are few means for coordinating these various parties and reaching agreement on basic land-use matters (KLH, 1991). This is an important obstacle to improving the urban environment. Even if environmental impact assessments are conducted they can seldom reverse bad locational decisions. Key performance issues in this area are:

■ *Inappropriate development regulations.* The land titling and development approval system is a complex, lengthy procedure. Many aspects have some effect in hindering development and creating land shortages. However, the first step in this process--acquisition from government of a "location permit"--is often the most important bottleneck (Hoffman and Ferguson, 1991).¹²

¹² After informal talks with local government officials, developers typically make a formal submission to develop a parcel of land. On approval, the developer is given a location permit. Essentially, the location permit reserves this piece of land for the development company that receives it even though this company may not own the land. No other developer can buy and develop the land within the permitted area against the wishes of the permitted developer. Typically, the permitted developer renews this location permit for long-periods--10-20 years--and gradually buys the land and develops it over this period of time.

In effect, the location permit allows the developer to hold land out of development--to hoard it for speculation or future use--at low cost. Comparison of the amount of land under location permits in Jabotabek indicates that this mechanism is, indeed, being used to stockpile land, thereby decreasing supply and raising its price. In comparison, land titling and zoning have a relatively minor impact on development.

■ *Oligopolistic land markets.* Ten large companies dominate real estate development in the Jakarta area--residential, commercial, and industrial (Hoffman and Ferguson, 1991). These companies have many offshoots, often forming a separate company to exploit a location permit. These companies control much of the developable urban land in Jabotabek through ownership or location permits. This concentration of ownership tends to limit competition and raise land prices.

■ *Lack of roads.* Because of transportation bottlenecks, access is the key to land value in much of urban Indonesia. Land brokers in Jakarta classify parcels into three categories depending on their distance from major roads. The lack of adequate road access greatly limits the amount of land suitable for development in Indonesia's large cities.

Joined with potential conflicts between different public agencies on basic land-use issues, these factors have contributed to raising the price of urban land and constraining the supply of urban land available for development. These problems hit low-income households hardest, forcing them to live in increasingly crowded conditions often on environmentally sensitive lands and almost always without the benefit basic public services. A new Spatial Planning Act is now before Parliament and may address some of these problems, but final decisions on the act have not been made.

Section 3 INSTITUTIONAL ANALYSIS

3.1 INTRODUCTION

Among developing countries, Indonesia has had an unusually strong commitment to environmental management (Fisher, 1991). BAPPENAS established a Bureau of Natural Resources and the Environment in 1972. Professor Emil Salim was appointed to head a new State Ministry concerned with the environment in 1976, later renamed the "Ministry for Population and the Environment" (KLH). The Environmental Management Act laid the legal foundation for environmental regulation in 1982. In 1986, GOI issued national regulations for environmental impact assessment--the AMDAL process. By 1990, 55 environmental study centers had been created in public and private universities. The national Environmental Impact Management Agency, BAPEDAL, was established in July 1990. Over 300 NGOs are active in environmental issues. However, environmental institutions and processes are still new and face daunting challenges.

This section reviews the roles and activities of key environmental institutions: the Ministry of Population and the Environment (KLH) and BAPEDAL; the Clean Rivers Project (PROKASIH); the Clean Cities Award (ADIPURA); the environmental impact assessment process (AMDAL)--generally, and specifically within the Ministry of Public Works; environmental education centers (PSLs); and NGOs oriented to environmental improvement. It also summarizes the support now being provided by other donors for urban environmental management in Indonesia.

3.2 THE MINISTRY OF POPULATION AND THE ENVIRONMENT

From its inception in 1978, KLH has had primary responsibility for coordinating environmental management (Fisher, 1990 and KLH, 1991a). KLH has four branches (Asmen). Asmen I tracks population statistics and other demographic information to formulate policy. ASMEN II has had programs for: (1) national resources management including adoption of standards; (2) spatial planning; (3) geographic information systems; (4) joining resource management and land-use planning; and (5) conservation and bio-diversity. Asmen III's main role is planning, policy making, and strategic development for environmentally damaged areas--such as mining areas. Asmen IV trains KLH staff, operates a computerized information management center, liases with NGOs, does media out-reach, coordinates an AMDAL information center, has a resources library, and provides resource economics and accounting information.

3.3 THE POLLUTION CONTROL AGENCY (BAPEDAL)

Before the creation of BAPEDAL in 1990, provincial governors had the responsibility for environmental management at the regional level--that is, implementation. This system failed to work because the sectoral departments through which governors operate had little interest in environmental matters (Makarim, undated). During its first ten years, KLH focussed on increasing public awareness. However, its Minister had long wanted to move beyond public awareness to implementation. This led to his sponsoring the creation of a new interministerial board and agency for pollution control--BAPEDAL--in 1990.

In June 1990, Presidential Decree No. 23 established the Environmental Impact Management Agency (Badan Pengendalian Dampak Lingkungan--BAPEDAL). BAPEDAL's mandate is to: (1) assist the president in formulating pollution control policy and other tasks, as needed; (2) hazardous waste management; (3) monitor and control activities with important environmental impacts; (4) develop a laboratory and handle pollution control data; and (5) promote public participation.

BAPEDAL operates with sixteen Strategic Management Units (SMUs), assigned to different pollution control activities (KLH, 1991a). These SMUs have responsibilities for: (1) surface water pollution control; (2) ground water pollution control; (3) environmental degradation control; (4) small-scale industry impact control; (5) environmental impact assessment; (6) enforcement; (7) air pollution control--mobile sources; (8) air pollution control--stationary sources; (9) coastal pollution control; (10) sea pollution control; (11) noise pollution control; (12) national contingency plan; (13) hazardous waste management; (14) emergency response; (15) the Clean Cities Program (ADIPURA); and (16) sewage pollution management.

3.4 THE CLEAN CITIES PROGRAM (ADIPURA)

The ADIPURA program is of particular interest because it deals with the urban environment. It is an award to show appreciation to mayors who have done a good job in the environmental management of their city. The program has been in effect since 1986, at one time under the auspices of the Directorate General of Urban and Regional Development in the Ministry of Home Affairs and is now under BAPEDAL. The President gives cities in four different size categories that meet acceptable criteria of cleanliness

receive awards yearly.¹³ The GOI conceived the program as a human approach to monitoring the environmental management of cities.

Overall, the program gets good results by appealing to civic pride and motivating residents to help their city win. The number of cities that participate has grown steadily.¹⁴ KLH also names cities with the dirtiest environments. Once labelled, these cities sometimes get motivated to clean up.

3.5 THE CLEAN RIVER PROGRAM (PROKASIH)

The first priority of BAPEDAL, however, is surface water pollution (Jardine, undated). The Clean River Program (Program Kali Bersih or PROKASIH) seeks to implement surface water pollution control and is BAPEDAL's flagship program. BAPEDAL developed PROKASIH in 1989 as a "crash program" with a narrow focus.¹⁵

PROKASIH began by consulting with provinces to select stretches of river degraded by industrial pollution (Jardine, undated). They identified the 20 most polluted rivers in the 8 most industrial provinces, and targeted the program to reduce industrial discharges along limited stretches of these rivers.

PROKASIH set an initial goal of reducing pollution loadings from the most polluting industries in these stretches by 50 percent. Each governor entered into voluntary written agreements with each of these industries for reductions in their pollution loadings using three simple parameters that local laboratories can measure to assess results: biochemical oxygen demand, chemical oxygen demand, and total suspended solids. In 1991, PROKASIH replaced the three parameters with pollution control standards suited to each of 14 different industries. The effluent from industry was monitored every three months.

DKI has achieved the best record, surpassed the initial pollution reduction goals, and received an award. Success in other provinces varies. Larger provinces have the trained staff and resources to implement the program and have had better results than

¹³ Cities send in standard application forms about 50 pages long that require collection of data, photographs, and other information. A multi-sectoral/multi-agency team reviews the materials and chooses cities that meet the criteria to visit. The visit provides an event to affirm and publicize the mayor's efforts. The city makes presentations to the team. Each city that receives a satisfactory score gets an award.

¹⁴ 57 cities applied in 1992 and 24 of these won awards, compared to only 2 winners in 1986.

¹⁵ Because of rapidly decreasing river water quality, even companies had begun complaining that water treatment was too expensive. A water quality control program had existed before PROKASIH, but was uncoordinated. PROKASIH is the first national program to address surface water quality.

smaller ones. In its second year (1991), PROKASIH added three more provinces and four rivers. The program has decided against incorporating more provinces and rivers and to focus on those currently in the program this year.

PROKASIH has achieved striking success in important ways. Most fundamental, it has established a system of pollution control and monitoring at the provincial level where none existed. PROKASIH has also enhanced its effectiveness by targeting a discrete, soluble problem and carefully adding only what the program can handle. PROKASIH's focus, of course, also limits its scope. BAPEDAL is well aware that its success in reducing pollution loadings of the largest industries has a small impact, even on the rivers it targets.¹⁶

BAPEDAL and KLH's strategy is to achieve success on discrete problems and build their institutional influence with these successes and by educating key-decision makers in other Ministries. Neither organization has plans to try to tackle such large, complex issues as household waste, although household waste is essential to their primary goal of clean surface water.

3.6 THE ENVIRONMENTAL ASSESSMENT PROCESS (AMDAL)

Article 16 of the Environmental Management Act of 1982 (Law 4/82) provides the legal basis for environmental assessment in Indonesia (Fisher, 1990). As with most laws, it did not provide operational guidelines. Ministerial decrees beginning in 1987 have provided such guidelines which thus define the environmental assessment process: Analisa Mengenai Dampak Lingkungan, or AMDAL.

The Process

The process is set up to: (1) screen projects to determine if they need preliminary environmental information reports (PILs), detailed environmental assessments (ANDALs), or are exempt; (2) provide guidance for carrying out PILs and ANDALs; (3) guide the preparation of environmental management plans (RKLs) specifying mitigatory measures and monitoring plans (RPLs); (4) condition project approval upon approval of RKLs and RPLs based upon findings of PILs and/or ANDALs; (5) assist Ministers and provincial Governors in establishing environmental review commissions--Komisi Pusat and Komisi Daerah--to provide a basis for project approvals; (6) require public notification and participation in review of PILs and ANDALs; and (7) establish a time limit within which

¹⁶ For instance, waste from large industries contributes only 6 percent, by one estimate, to biological oxygen demand of the Ciliwung River--one targeted by PROKASIH in DKI. The great bulk of the remaining 94 percent comes from household waste. However, domestic waste is a much less discrete and more intractable problem than industrial waste. BAPEDAL is likely to begin to address domestic waste in a similar fashion to PROKASIH--by targeting large polluters such as office buildings, hospitals, and hotels

a Minister or Governor must act after submission of assessments by the review commissions.

The AMDAL process applies to all new public development and urban infrastructure projects, in general.¹⁷ Thus, since its inception in 1990, AMDAL has covered all new AID-sponsored investments under the HGL. The AMDAL process would be applied to all urban infrastructure projects under a new HGL, whether funding is channelled through Cipta Karya or under the Regional Development Account. It applies to projects funded and developed both centrally and locally.

KLH and BAPEDAL have overall responsibility for guidance and support of the AMDAL process. However, each Ministry implements the process for its own projects--with provincial and regional environmental review commissions. Thus, there is not one AMDAL process, but many, and they vary between Ministries and, even, between Directorate Generals within Ministries.

Operating Problems

Not surprisingly, the task of rapidly introducing the AMDAL process has encountered difficulties. Fisher (1990) notes the most important: First, the technical quality of AMDAL reports and their evaluation by Central and Regional Commissions and by Investment Coordination Boards (discussed below) has been uneven, often poor. Typically, consultants prepare AMDALs for infrastructure projects. GOI staff are responsible for management (as project proponents) and evaluation (as members of Central and Regional commissions).

But few consultants and GOI staff have adequate skills and training for their task. AMDAL study courses at university environmental centers tend to be general and long--often several months. AMDAL studies also tend to be general and descriptive rather than focussed and problem-solving. Consultants, who are paid by the project proponent, are less likely to find negative impacts than an impartial observer. Generally, no meaningful community participation occurs.

Second, AMDAL is not well integrated into the project cycle. By the time mitigatory measures and monitoring plans (RKLs and RPS) are ready, most projects have already reached the stage of land acquisition and completion of detailed designs. The costs of unexpected changes at this point are often unacceptable, whatever the environmental impact.

A related third problem involves central and regional Investment Coordination Boards (BKPMs and BKPMsDs), which issue licenses for projects involving tax and other incentives in all sectors. Although these Boards take AMDAL into account, official

¹⁷A parallel process, named SEMDAL, was established for existing projects, but ends in December 1992.

procedures make it the "last step", which reduces its importance. Thus, Investment Boards often bypass or make their decision before AMDAL findings appear. One evaluation of the AMDAL process for BAPEDAL found the low importance given to AMDAL by Investment Boards to be its main problem (KLH 1991a).

Approaches to Strengthening AMDAL

The gap between AMDAL's objective and implementation is understandably large, but this gap may also be growing. Four themes have been suggested in strengthening AMDAL (Fisher, 1990):

Human resources and training. Environmental analysis and assessment is still a very new topic in Indonesia. Little expertise exists. Many Ministries have training programs for AMDAL underway, either in-house or through sending their staff to PSLs. This training could be improved and expanded. Coordination among different Ministries' environmental training programs also promises dividends.

Reduce overlaps and coordinate with other agencies. Many groups of organizations have some role in the environment: KLH and BAPEDAL; the line ministries and non-departmental agencies; provincial governments; local governments; universities and PSLs (see below); and public and private enterprises. Clarifying responsibilities and coordinating the efforts of key Ministries, will be an important in improving the process.

Link AMDAL with the project cycle. Project managers give environmental concerns low priority and tack them on at the end of projects, as do Investment Boards. Environmental assessment should be pushed forward to the beginning of the project cycle before projects have proceeded so far (e.g., land and licenses acquired) that they are, in practice, impossible to change.

Establish regional environmental monitoring and leading, eventually, to compliance. BAPEDAL and KLH have little presence on the ground in cities and provinces. Other ministries--particularly MPW--are much more deconcentrated. However, the evidence suggests that they, too, have little environmental monitoring capacity at the regional level.

3.7 AMDAL IN THE MINISTRY OF PUBLIC WORKS

The Ministry of Public Works is one of the leaders in developing and applying AMDAL. The three directorate generals within the Ministry--Human Settlements (Cipta Karya), Roads (Bina Marga), and Water Resources (Pengairan) share one EIA Commission and Technical Team and operate under overall guidelines. However, each Directorate General also has considerable control over its environmental assessment process.

Process Steps, Rules, and Responsibilities

The process starts with the project proponent, typically either the MPW Directorate General or, for urban infrastructure, a local government. The key figure is the project manager, who has the direct responsibility for project development, but also for arranging for the environmental assessment process and incorporating any required mitigation measures in implementation.

Each Directorate General has a Working Team. These teams screen all projects and place them in one of three categories: exempt from any environmental assessment, preliminary environmental assessment (PIL), or full environmental assessment (ANDAL). In contrast to some ministries that deal with a few dozen large projects each year, each of the three Directorate Generals of MPW deals with thousands of projects annually. Therefore, the Working Teams use standards joined with common sense to screen projects.¹⁸ MPW staff we interviewed suggested that these screening procedures are a problem at present. Too many projects are assigned the ANDAL--an expensive and time-consuming process (see below). The screening procedures for RPLs and RKLs are also seen as problematic.

The proportion of PILs, ANDALs, and "exempts" varies greatly between the three Directorate Generals. For instance, about 70 percent of Pengairan's (Water Resources) projects get ANDALs, while only 10 percent of Bina Marga's and 25 percent of Cipta Karya's projects do. The substantial environmental consequences of land acquisition for building dams and distribution networks (displacing many households, erosion, use of agricultural land etc.) explain the high share of ANDALs for water resources.

While project managers are generally encouraged to prepare PILs in house, they contract the preparation of the great bulk of ANDALs to consultants, including private firms, environmental study centers at provincial universities, and--if the project requires special expertise and is large--foreign consultants.¹⁹ Typically, ANDALs cost at least Rp. 50-75 million and take six months or more to complete. Hence, an ANDAL is expensive and time-consuming.

¹⁸ For instance, Bina Marga (Roads) Working Team generally assigns a road improvement project without widening generally a PIL. However, if such a project seems to have unusual environmental consequences, it might be assigned an ANDAL. In contrast, toll roads typically require an ANDAL. Depending on the outcome of the PIL or ANDAL, an environmental management plan (RKL) or monitoring plan (RPL) is prepared.

¹⁹ The project manager negotiates with the consultant on the terms of the assignment. The fee depends on the consultant's experience. A monthly fee for a local consultant with substantial experience averages about Rp. 5 million. For road projects, the average ANDAL takes 10-15 person months, and often takes six months or more to prepare. Hence, the total cost is Rp. 50-75 million (US \$25,000-37,000). This sum comes out of the project's budget.

On completion, the ANDAL or PIL (sometimes with accompanying RKL and RPL) is submitted to either the EIA Central Commission (for centrally funded projects) or EIA Regional Commission (for regionally funded projects) for approval, often with mitigating measures recommended. The Technical Team assists the EA Commission in assessing the project.

Our interviews indicated that projects are virtually never flatly rejected because of AMDAL, but mitigation requirements are often applied. The project manager has responsibility for incorporating these measures and overseeing their execution. In theory, a working unit of 5-10 people under the direction of the head of a local testing laboratory (under Kanwil P.U.) monitors the construction and, on completion, the operation of projects to ensure that mitigation measures are implemented. In practice, this working unit seldom has a sufficient budget and little monitoring gets done.

Generally, since the project manager's main responsibility is to get the project built, and there are few incentives or penalties to promote incorporating environmental concerns, the effect of environment assessments and mitigation plans is often weak.

Problems and Proposed Solutions

A team sponsored by the Asian Development Bank (ADB) is now completing a project aimed at strengthening AMDAL within Cipta Karya. Their main findings and outputs are as follows:

Training and Human Resources. MPW has made efforts to develop the AMDAL process in house and to train staff. To date, over 1,000 staff have been trained in, at least, the rudiments of environmental problems and management. Training has been provided by the Indonesian university system--particularly its Environmental Studies Centers (discussed below)--which has developed a basic environmental curriculum of three courses. Level A is the beginning principles of the environment. Level B is for evaluation of environmental assessments. Level C is for preparation of environmental assessments.

The skills of most people at all levels of the AMDAL process within MPW, however, are still inadequate in relation to their responsibilities (this includes members of the EIA Commissions, the Technical Teams, and the Directorate General Working Teams in the three Directorate Generals). In the judgement of the ADB team, the members of these bodies should have completed at least level B--evaluation of environmental assessments. However, few have done so.²⁰

²⁰ Only 2 of the 20 members of the Bina Marga Directorate General Technical Team, for instance, have taken this course--in effect, this team--supposedly experts--advises the Commission on ANDALs and PILs based on no instruction or on a "beginning" knowledge of environmental principles. Even the head of the sub-directorate in Cipta Karya in charge of AMDAL has yet to take course level B. Most Commission

Preparation of manuals, screening and standard operating procedures, and training materials. A major product of the ADB project was the preparation of a 300-page manual on environmental management of urban development which the team leader describes as an "encyclopedia" to assist in incorporating mitigation measures into projects.²¹

The ADB team also has sought to simplify screening procedures and better define when projects pass from one phase to another--such as from preliminary environmental assessment (PIL) to environmental management plan (RKL)--and tried to decrease the number of unnecessary AMDALs and, hence, the expense and length of environmental assessment.

Monitoring at the provincial level. A key problem running throughout environmental assessment and pollution control in Indonesia is the lack of a provincial presence for monitoring and, eventually, enforcement. BAPEDAL's development plan gives BAPEDALDA II--at the local level--this role (KLH, 1991a), but BAPEDALDA-IIs do not now exist and prospects for their creation are unclear. In contrast, the MPW has a strong presence at the provincial level and, in theory, a working unit headed by the director of local laboratories in place for monitoring. However, the capacity at this level is not yet strong. The MPW technical staff interviewed for this study suggested two crucial next steps: (1) make the environment a priority of the project managers; (2) establish units to manage and monitor the environmental effects of projects at the projects level

Various means exist to support this logical and necessary evolution. However, for these measure to become feasible, a third task is crucial: increase the influence of the sub-directorate in charge of the AMDAL process within Cipta Karya and the other two Directorate Generals.

Increase the influence of units and the prestige of staff involved in the AMDAL process within MPW. A major problem of AMDAL within MPW is that its status is low and the people that work on environmental assessment get few career rewards for it. Cipta Karya is a good example. The unit in charge of AMDAL is the section of Impact Development (Assessment Dampak). Structurally, this unit is under a sub-directorate and has a low structural position. Its staff currently consists of three people, including its head. The head of this unit occupies a cramped office and his two staff have desks nearby. Only three AMDAL staff are sufficiently trained to do the work necessary to

members also have not taken this course.

²¹ The idea is that project managers and ANDAL preparers and evaluators are able to look up a problem and find environmental mitigation measures to incorporate into the project. This manual supplements the official Cipta Karya guidelines and official approval is being sought to make parts of it an appendix to these guidelines.

make AMDAL function properly within Cipta Karya. However, they also have other duties that use their time.

The overall problem is that AMDAL has no structural position within Indonesian government: it only has functional status. Hence, basing a GOI career on being an environmental expert is problematic. Staff that take time from their structural duties to help out on environmental assessment receive little credit for this activity. Changing AMDAL positions from a functional to a structural classification would require a decision at a high level within GOI, and it appears unrealistic to expect this to happen in the near term. However, as noted, other steps can be taken to increase the influence and status of AMDAL within MPW and Cipta Karya.

3.8 THE LACK OF ENFORCEMENT

A major drawback of PROKASIH and the AMDAL process is the lack of a serious threat of enforcement (Fisher, 1990). This problem has both a legal and administrative aspect.

Lack of a Legal Basis for Enforcement

Many programs--such as PROKASIH and AMDAL started without lawful enforcement mechanisms and, to date, there are no legally based sanctions for non-compliance with their requirements. With few exceptions, the main enforcement mechanisms have been informal--public pressure and embarrassment.

The case of PROKASIH and industrial pollution is illustrative. The 1982 Environmental Management Act allows police action to shut down polluting activities, but only on proving that ambient pollution levels come from a particular source--a virtually impossible task in most cases. In addition, PROKASIH and other pollution control efforts have no licensing system.

With no legal mechanisms of enforcement, KLH has used many ingenious informal mechanisms to secure compliance (Jardine, undated). PROKASIH has used letters of understanding with industries to specify pollution reduction targets. Governors summoned the heads of these industries to mass signings. When over 400 industries in Jakarta failed to meet the targets specified in the letters of understanding, Minister Emil Salim had their names published in the press. These informal mechanisms have succeeded in exercising considerable pressure and effecting some compliance.

On a handful of occasions, administrative action has shut down a factory. DKI forced P.T. Tribor--a London-based company--to shut down its glucose operation pending

installation of pollution control.²² BAPEDAL and KLH have a schedule to develop legal mechanisms of enforcement based on effluent standards and other criteria.²³ In the meantime, the lack of legal enforcement mechanisms hampers pollution control and the AMDAL process.

The Lack of Regional Presence

A key issue facing BAPEDAL is the structure, authority, and function of pollution control at the local and regional levels (KLH, 1991a). Currently, KLH and BAPEDAL function at the central level with offices in Jakarta. The legislation that created BAPEDAL and its development plan call for regional BAPEDALDA in each province and local BAPEDALDA at the municipal level. However, BAPEDAL has yet to establish these offices. In effect, KLH and BAPEDAL has little presence on the ground and the prospects for establishing a forceful presence are unclear.

At the national level, KLH and BAPEDAL--relatively new entities--lack the influence of ministries such as MPW and MHA. BAPEDAL and KLH respond to initiatives and educate key decision-makers to gain their commitment to the environment (KLH, 1991a). Frequently, their responsibilities overlap with those of more powerful Ministries. Hence, BAPEDAL is still too weak at a national and regional level to be able to implement a pollution control program effectively.

3.9 ENVIRONMENTAL NGOs AND ENVIRONMENTAL STUDY CENTERS (PSLs)

Environmental NGOs

Over 2,000 NGOs exist in Indonesia. Many have some role in the environment. NGOs are a relatively new form of organization in Indonesia. Most have started very recently, during the 1980s. The oldest date from the 1970s. Student activists staff many of these organizations. Although passionate advocates of their cause, most lack the training to function effectively and have an impact.

²² This action forced the company to look at the factory's production process and management. The firm discovered many problems, restructured the plant, and has, reportedly, paid for pollution control out of the savings from these improvements. Thus, pollution problems are often symptomatic of production and management difficulties.

²³For instance, Minister Salim has promised that smoke-belching vehicles that emit black smoke for 10 seconds or over will be subject to fines by mid-1993 and that emission of harmful products from various industries will "be brought down to tolerable levels" within four years. "We are now in the phase of informing the public, but we will impose penalties when the time comes" (Jakarta Post, July 4, 1992). Some polluting technologies have been banned, including the mercury cell technique for chlor-alkali operations that produce chlorine products and caustic soda. Although all letters of agreement have been based on end-of-pipe discharges, KLH and BAPEDAL are examining changes to industrial processes as well.

Only a handful of NGOs are potentially significant players in environmental issues. WALHI--an umbrella organization of two hundred environmental NGOs headquartered in Jakarta--acts as an advocate and channels fund, much of it from donors, to some of its members. SKEPHI (Secretaria Kercasma Hutan Indonesia) deals mostly with forestry issues and has the reputation for vocal and radical advocacy that criticizes industry and government. YLK (Yayasan Lembaga Konsumen) is one of the oldest NGOs in Indonesia. It is a relatively well-organized consumer group. LBH (Lembaga Bantuan Hukum) is a legal aid foundation active in human rights and environmental land issues.

NGOs have acted primarily as advocates on environmental issues. Occasionally, this activism has helped stop an environmentally damaging project or get reparations for villagers affected by pollution.

Environmental Study Centers (PSLs)

When KLH started, it had no line departments and needed technical support in regions. Minister Salim's support was crucial in establishing environmental study centers in universities each of Indonesia's 27 provinces. Currently, PSLs number over 50.

PSLs organize courses--both for students and government officials--conduct research, and consult on ANDALs. MPW sends its staff to AMDAL course levels A, B, and C at Indonesia University in Jakarta. PSLs vary considerably in their capacity. The top ones are important resources for environmental training, research, and assessment.

3.10 ENVIRONMENTAL ACTIVITIES OF OTHER DONORS

KLH and BAPEDAL receive substantial funding from many donors. The donors that most support the environment are Canadian Assistance (EMDI) and the World Bank. Each is discussed below. Donor assistance to BAPEDAL and KLH is substantial--approximately US \$500 million is in the pipeline for a wide range of projects. The major gap in donor assistance is household waste--a critical area to improving environmental conditions--such as surface water quality, which is BAPEDAL's main target.

The World Bank

The World Bank conducts three types of environmental assessments: project, sector (generic recommendations for selected project types), and area-based or regional assessments. Major World Bank-sponsored or administered projects in Indonesia with important environmental components include the following (see further discussion in Kingsley and Ferguson, 1992):

- The Jabotabek Urban Development Project III. JUDP III builds on two GOI efforts with substantial environmental effect: the Jakarta Metropolitan Development Plan and the Kampung Improvement Project. The KIP component of JUDP II funds many improvements to low-income kampungs in 95 districts in Jabotabek and totals US \$74.8 million. A solid waste management component of JUDP III funds better collection and clean up of dump sites in 83 districts. An Environmental Protection and Pollution Control component seeks to renew environmental planning efforts in Jakarta. Finally, a fourth major component--the Urban Spatial Management and Monitoring--funds updating of the Jakarta Metropolitan Development Plan.
- The Metropolitan Environmental Improvement Program. The UNDP and the World Bank started MEIP in 1989 to help Asian cities tackle their rapidly growing environmental problems. The UNDP funds the program while the World Bank operates it. In 1990, an MEIP central office opened at the World Bank and five national governments endorsed the program. Work programs began in five cities--Beijing, Bombay, Colombo, Metro Manila, and Jakarta. In Jakarta, the Jabotabek Urban Development Program III sets the framework for many MEIP efforts, including support for joint waste-water treatment, institutional strengthening of provincial pollution control authorities, environmental improvement in low-income settlements, and informal-sector, community-based composting and recycling enterprises.
- BAPEDAL Development Plan. A World Bank-administered Japanese grant of \$400,000 has been provided to BAPEDAL to support development of a recently completed five-year plan prepared by REDECON consultants. This plan profiles BAPEDAL's needs and identifies about \$250 million in GOI projects requiring environmental assessments. A \$12 million IBRD loan under negotiation would provide initial donor support for environmental assessment preparation.
- East Java/Bali Urban Development Program. In form, this project resembles many other decentralized urban development programs undertaken by the World Bank in some 30 countries. The World Bank lends funds via GOI to 45 local governments in East Java and Bali (World Bank, 1991). Local governments invest the bulk of these funds in small urban infrastructure projects. However, this project works through IUIDP and puts great emphasis on AMDAL to incorporate environmental concerns into sub-project design from the beginning. Hence, it promises to be one of the Bank's first urban development efforts to incorporate effectively the environment into the design and construction of urban infrastructure.

Canadian Assistance (Environmental Management and Development in Indonesia--EMDI)

EMDI has the largest environmental program of any bi-lateral donor. EMDI staff work on a broad range of topics at both BAPEDAL and KLH, including PROKASIH, AMDAL, and spatial planning. EMDI has two main focuses: (1) the Integrated Regional Environmental Development Program, which tries to develop a spatial planning process at the national level; and (2) Water Quality Standards, which works with PROKASIH, in particular. Most of EMDI's support focuses on regional and resource management issues, rather than the urban environment. The annual budget over the last five years has run at US \$7-9 million.

Section 4
URBAN ENVIRONMENTAL QUALITY MANAGEMENT:
A SUGGESTED APPROACH²⁴

4.1 INTRODUCTION

This section begins with a summary assessment of the key problems with current urban environmental quality management (UEQM) institutions and approaches in Indonesia, based on the reviews in Sections 1 and 2. It then uses this assessment as the base for suggesting a new and more forceful approach to UEQM that will be built into the fabric of Indonesia's decentralized urban development program.

4.2 NEED TO IMPROVE CURRENT UEQM INSTITUTIONS AND APPROACHES

It is clear that the concern about environmental degradation is increasing markedly among the residents of Indonesia's cities. The reviews presented in the Sections above suggest that the GOI is making a sincere effort to begin to address the problems, but they clearly do not give confidence that these efforts are either forceful enough or focused enough to deal with the issue effectively at scale.

How can Indonesia's approach to UEQM be strengthened? It is argued here that approaches to date have not recognized two fundamental lessons that are the keys to a more forceful approach. The first is based on international experience: *UEQM objectives must be built into initial urban development planning processes (after-the-fact assessments are necessary, but alone insufficient to have a major effect on environmental trends)*. The second is perhaps the most basic lesson already learned by Indonesia with respect to urban development: *local leadership is likely to be much more effective than central government in directing the urban development process, including UEQM, in individual cities.*

Problems with After-the-Fact Environmental Assessments

There is no doubt that Indonesia's AMDAL process is a basically sound approach and that a high priority should be given to strengthening it. The view presented here is simply that AMDAL alone is neither the sole, nor even the most important, component

²⁴Arguments and approaches suggested in this Section are adapted largely from Kingsley and Ferguson, 1992.

of an effective UEQM process. The logic for this view starts with evidence on the failures of earlier "after the fact" environmental impact assessments in many other countries (e.g., the United States) where they have been applied more diligently than they have to date in Indonesia.

In the traditional project planning and design process, developers and their design teams (public and private) make decisions through a complex series of tradeoff analyses (some are explicit and quantified, most normally are not). A particular site plan or route design is put forward and then evaluated, balancing the quality of the physical product (in relation to specific project objectives) against its cost. This may occur solely within the mind of the principle designer, or as a part of joint decision making by a team, or most often, as a mix of both. In all cases, many adjustments are made as the work proceeds. The process takes time and resources and the participants build strong allegiance to what they have created along the way. When a group of "outsiders" then assesses the design from an environmental point of view and recommends changes, the development team and its sponsors are naturally likely to resist. And evidence from around world indicates they can be very powerful in doing so.

Take the example of the architect designing a tourist resort. If the architect places high value on environmental impacts, as well as costs and other design requirements, while design alternatives are first being conceptualized, it is much more likely that maximum creativity will be applied in finding solutions that will achieve a reasonable balance between all relevant objectives. Clearly, there are situations in which value tradeoffs cannot be avoided; e.g., where protecting the environment will cost more. But this is not the typical case. Many times, creativity at the outset has led to solutions that avoided environmental problems and achieved substantial cost savings. Yet such solutions are not likely to be searched for if value is not placed on environmental objectives in the design process itself.²⁵

The point is that *environmental considerations need to be there at the very moment that other types of tradeoffs are being assessed*; every trial design needs to be considered from the point of view of product quality (in relation to project objectives), cost, and *environmental impact* at the same time. This does not mean that there will be no continuing need for outside pressures. Regulations, taxation, fees and other techniques will always be important to create strong incentives for design teams to give enough weight to environmental impacts (the longer term objectives of sustainable development) rather than short run outcomes alone. Nonetheless, it is clear that UEQM goals will not be achieved by such pressures alone. Environmental considerations must be brought inside initial planning processes.

²⁵An example of this type of approach occurred in Bali Tourism Project where, in the development of the Nusa Dua hotels, infrastructure designers from the start worked closely with local residents as well as the hotel developers to find a cost-effective planning solution that minimized dislocation and adverse environmental impacts.

Giving Primacy to Local Leadership in UEQM

What are the major instruments available to government to influence environmental outcomes in cities? The most important are the programming of urban infrastructure and services. While related programs are needed as well, it is impossible to imagine effective UEQM that does not entail enhanced water supply, waste disposal and treatment, proper drainage, and the guidance of land development (which is primarily influenced by the placement of major roads and water supply mains). Indonesia has already decided on the most effective institutional means for planning and implementing urban infrastructure: place primary reliance on local government.

With the many failures of public sector attempts to deliver goods and services, there has been a natural tendency of late to shift functions to the private sector where possible. But it is clear, that UEQM as a whole is not something that simply can be left to the workings of the private market to resolve. Because it guides and coordinates the activities of both public and private institutions, and because there are many externalities to be dealt with, UEQM must begin with what is inherently a public sector decision making process. Furthermore, basic standard setting, monitoring, enforcement, and record certification activities are activities that must always remain government controlled (if not always government performed).

This being said, however, there are strong reasons to involve the private sector in UEQM and to do so much more actively and positively than has generally been the case in the past. Private sector leaders can participate in the process of planning and standard setting by making recommendations, and they can play an active role as partners in educating the public about a new strategy. Private institutions (firms, NGOs, community groups, households) also can take on a much larger share of the work in implementation. But it must be emphasized that leaders likely to be most effective in these areas (public and private) are local leaders; i.e., those most directly affected by future change in their own communities.

It should be emphasized, probably more than anything else, operationalizing UEQM means building it into the regular decision making processes of those who plan and implement infrastructure and other elements of urban physical development. Unless this is done, simply establishing a new environmental office in city hall will be a purely symbolic act (possibly a counterproductive one, if it done in a way that perpetuates the "separateness" of environmental issues).

4.3 BUILDING UEQM INTO LOCAL INVESTMENT PROGRAMMING

Indonesia's decentralized urban development program (as supported under the HG-001 Policy Action Plan) has done much to improve the effectiveness of infrastructure investment programming, predominantly through the approach of the Integrated Urban

Infrastructure Development Program (IUIDP). While this program still has many faults (see Tjahati, 1990, Kingsley and Peterson, 1992) it offers important inherent advantages in addressing the issues for UEQM implementation raised above.

Advantages of UEQM/IUIDP Linkage

The capital budgeting process of IUIDP (PJM preparation) is perhaps the only forum in which many of the key actors are forced to sit together and think about the future development of a specific city in a serious way (budget decisions have to be made). At a minimum, such multi-sectoral capital planning forces coordination. It also enforces financial discipline by including analyses of cost and financing potentials and requiring a prioritizing of projects to fit the plan within real funding constraints.

It seems reasonable that, because of these advantages, local capital planning processes of this type could be incrementally expanded to accomplish a broader range of objectives, explicitly including UEQM. Why not add better analytic support and invite a broader range of actors (e.g., private sector leaders) to participate in the discussions (if not vote on the outcomes)?²⁶

The context offered as local leaders consider tradeoffs in infrastructure design could have a profound effect in stimulating their interest in other programs needed for UEQM. For example, the best time to gain their support for demand management programs to reduce wasteful use of water may be during PJM preparation, just when they have been confronted with estimates of the full costs of infrastructure to collect and treat all of the wastewater implied by present trends in usage. This context should also stimulate their thinking about community involvement in environmental management as well as roles for the government and private entities in sustainable urban service delivery.

The Next Step: Investment/UEQM Strategies

One of the highest priorities for IUIDP now is to move local officials into a more commanding role in ongoing PJM/RIAP preparation and implementation. In the first rounds of IUIDP, many local officials did work closely with the consultant teams and controlled key decisions, but this was not true in many others. Another problem is that the PJMs generally have suffered from a lack of sufficient analysis and strategic planning and priority setting across sectors before project lists have been compiled. Program staff admit that IUIDP guidelines have been weak in these areas.

The first wave of IUIDP PJM development is virtually complete nationwide, and the time is near to begin the second wave; i.e., adjusting and extending the current programs to better reflect local priorities while responding to new trends in physical, social, and

²⁶Recent legislation in the Philippines has required growing involvement of NGOs and other private sector leaders in the committees that prepare local capital budgets (Kingsley and Mikelsons, 1991).

economic development. It is recommended that at the beginning of the next phase in each city, the front-end process of strategic analysis and planning be expanded along the lines discussed above: (1) to put local leaders fully in control of the most important decisions; and (2) to explicitly add UEQM strategy formulation.

The process might work as follows:

1. A central technical assistance/training team would work with local government staff in preparing analyses of the development and environmental challenges faced by a city (and the relationship of the city's current PJM to those challenges). These would include analyses of trends and strategic options related to land development patterns and economic development as well as environmental conditions. Results of surveys of consumer demand would also be incorporated.
2. The Walikota would then call in his top management staff along with a few key private and community leaders for a series of meetings (or retreats).
3. At these meetings, local technical staff (with assistance from the central team) would present their ideas coming out of their analyses; i.e., outlining alternative strategies for development open to the city and presenting rough estimates of the impacts of each (e.g., infrastructure and land development requirements, costs and potential financing, environmental impacts, impacts on job creation and economic indicators). The estimates would be presented only to stimulate the joint thinking of the local leadership team, not in the manner of hard forecasts.
4. The leadership group would review, discuss, and debate the results of the analysis. The circumstance would force them to consider basic strategic options, and tradeoffs between conflicting objectives, in a realistic manner.
5. They would then make basic policy and program decisions that would set definite guidelines, not only for PJM revisions, but also for revising and adding other programs as needed to achieve environmental, and physical and economic development objectives.

Urban Disaster Prevention, Mitigation, and Preparedness

The main arguments supporting this approach for UEQM are also highly relevant for disaster prevention, mitigation, and preparedness (PMP) in urban areas. In particular: (1) while supportive roles should be played by national and provincial governments, if it is to be effective, the main thrust of PMP activity should be designed and implemented by local leadership; and (2) early local strategic planning, linked to UEQM, is likely to do much more to relieve the pain and damage associated with

disasters in urban areas, and at much lower cost, than anything done after the fact. An example is the Bhopal disaster in India. The problem there was fundamentally a land-use problem--squatter settlements would not have sprung up around the plant if local government had done more (provided trunk infrastructure, etc.) to open up sufficient land for low cost residential development in other locations. The same can be said for the emergence of kampungs in flood prone areas in Indonesia.

4.4 ELEMENTS OF A LOCAL UEQM STRATEGY

What should be the components of an effective local UEQM strategy? It is impossible to answer that question definitively since the priorities of individual local governments can legitimately differ. Some themes, however, are likely to be applicable in most cities. The following paragraphs illustrate approaches that a review of recent international literature suggests should be applicable in urban Indonesia. These approaches can be grouped into six basic substantive elements that together comprise most of what UEQM needs to accomplish: (1) water supply; (2) household wastes; (3) industrial wastes; (4) transportation; (5) urban land development and use; and (6) programs providing economic incentives, effective regulation, and stimulating environmental awareness.

Water Supply

Contaminated water probably represents one of Indonesia's most serious health problems. Assuring the provision of an adequate supply clean water to the growing populations of its cities must be a primary environmental goal, and affordability studies suggest that almost all of those populations should have the incomes needed to support its achievement. There are three key principles: The first, is to provide a mix of services that match customers willingness and ability to pay--and then to insist on recovering full costs. Doing so will not only meet financial needs but also provide strong incentives for conservation. Greater analysis of demand, the cost of different options for environmental infrastructure, and the external (community-wide) benefits associated with each is needed before pricing decisions can be made.

The second principle is to recognize that the most cost-effective way to provide water for new populations today is to cut down on waste in current water usage (rather than to draw totally new supplies). This can be accomplished through better maintenance and repair programs to reduce leakage; sensible recycling (e.g., reusing partially treated wastewater for functions like irrigation, industrial cooling, and toilet flushing); and demand management techniques (including technological improvements like showerheads that markedly reduce water use, as well as financial incentives like requiring firms to pay fees to dispose of industrial wastewater).

The third, is to adjust the current institutional framework for water supply. Recent research suggests that public institutions responsible for setting water tariffs and formulating and enforcing regulations should ultimately not retain direct production and distribution responsibilities themselves; rather they should be charged with establishing an environment that will enable and facilitate the work of a variety of competitive providers. Private firms can play a much expanded role, either by competing from time to time to operate city-wide systems or to perform sub-functions for public agencies. NGOs and community groups should also be encouraged to take on more responsibility for water distribution in specific communities (see Attachment 3.2).

Household Wastes

The share of Indonesia's urban population with access to basic sanitation is much lower than that with adequate water supply. As noted earlier, an extremely small share of the sewage that is collected is ever treated before disposal. Also, too small a percentage of all of municipal solid wastes is collected--much of the rest often dumped in drainage canals. Themes for improvement here parallel those for water supply: recovering a large part of the costs from users (although it is recognized that given the externalities implied, some subsidization is warranted for treatment and disposal if not for collection); recycling (in addition to the reuse of liquid wastes noted above there are many opportunities for recycling solid wastes, some of which are already being exploited by informal enterprises that could be moved up to become stable and efficient businesses); and institutional change (again, involving community groups in responsibilities for intra-community collection systems is promising).

With regard to sanitation, there is a need to expand the range of technical options being applied. Realistically, collection by conventional piped sewers is the only option for the high-density cores of most Indonesian cities (and considering land values there, it should be feasible to require developers to provide them and occupants to pay the required cost), but most urban residents cannot afford this level of service. Low-cost on-site options (ventilated improved pit (VIP) latrines and pour flush latrines) can substantially reduce the negative health and aesthetic effects of untreated human waste, but these options remain near the low-end of the spectrum and are not satisfactory everywhere. A promising alternative at an intermediate level is the small-bore sewer: solids are collected in an on-site tank before they reach the sewer connection, so that it becomes possible to use smaller pipes, lay them at flatter gradients, and use fewer manholes--all of which can substantially reduce cost. Further savings are possible where the households in a block develop a joint system in which pipes are run from yard to yard before reaching the street sewer (rather than the conventional approach of having each house independently connected to the street sewer) and where they assume joint responsibility for maintenance inside-the block. Vacuum cartage systems offer another intermediate cost option that has been successfully applied in some cultures.

Industrial Wastes

Asian countries generally have made little progress in controlling wastes generated by industry. The lack of political will and perceived high cost of industrial pollution control are key obstacles. Indeed, cleaning up and treating industrial waste is expensive. In contrast, reducing through recycling, process modification, and other means is much less costly and offers a better alternative for solving the waste problems of many existing industries. New industries should be required to use clean technologies. Joining rewards (tax rebates, low-interest loans, accelerated depreciation, reduced excise taxes, lower customs duties) with punishments (fines, user charges, and intervention) offers the most effective inducement. Collective treatment at industrial estates can contribute to making recycling and treatment economically feasible.

Small industries represent a special problem because they lack the means to control pollution and are difficult to monitor. Indirect instruments such as taxation of inputs and deposit-refund schemes can induce these industries to comply while demonstration projects can show them the feasibility of cleaner alternatives. These measures require better monitoring and analysis of industrial discharges and enforcement. Finally, the location (e.g., spatial clustering) of industry matters. Rigid zoning controls and estate plans in the past have often failed in this regard because they ran counter to market realities. Nonetheless, some locational steering to avert serious environmental threats should be possible. Solutions lie in the type of strategic spatial planning for cities discussed earlier, particularly as it affects urban land (see discussion below).

Intracity Transportation

The growth in the sheer number of motorized vehicles in Indonesia represents a great challenge to air pollution control. Introducing cleaner fuels with the necessary technologies offers the greatest promise for short-term reduction of the most dangerous discharges. Spreading reliance on unleaded fuel is particularly important to reduce lead, which causes neurological damage to young children. Road paving is important since road dust is itself a major pollutant. Pricing and inspection and monitoring programs can play a key role in encouraging widespread adoption of better maintenance, thus reducing emissions. Ultimately, slowing vehicular pollution requires control of the growth in total vehicle miles travelled through land-use planning, public transport, and other means.

Urban Land Development and Use

It is now generally recognized in Indonesia that public sector dominated urban land development is prone to failure and a more promising approach for local governments is to facilitate a market oriented development process. Efforts to improve land titling systems and reform overly restrictive development regulations are important

in this regard. Nonetheless, little progress has been made in adopting workable mechanisms to assure that sufficient land will be developed to keep up with burgeoning urban population growth and that it will be developed at appropriate densities and in an appropriate spatial pattern so as to promote resource conservation and avoid the degradation of environmentally sensitive areas. The key to solutions here probably rests, once again, with the local capital budgeting process since the placement of major roads and water mains are the primary determinants of where land will be opened up for development. Some efforts along these lines can be found in the planning process for JABOTABEK since the early 1980s. This work should be strengthened and similar themes need to be introduced in work with other Indonesian cities.

Cross-Cutting Themes: Economic Incentives, Effective Regulation, and Stimulating Environmental Awareness

The paragraphs above discuss proven approaches specific to each of the key substantive elements of UEQM, but there are other important themes for action that warrant emphasis consistent with all of them. First, in all areas, UEQM managers should always be on the look-out for workable economic incentives to enhance environmental quality; e.g., pricing strategies, user charges, and other techniques that "make the polluter pay." Tradeable pollution permits are a good example. These have a number of benefits over regulatory approaches--principally, they stimulate innovative actions to reduce pollution by thousands of households and other actors in the marketplace without requiring an intensive government presence. Clearly, these economic techniques will not eliminate the need for regulations, but they should take some of the pressure off regulatory approaches--important since enforcement capacity is weak. Many existing regulatory systems do need to be streamlined. The keys to effective regulation seem to be (1) keep the rules simple and realistic; and (2) do not bother to put a regulation on the books without a "credible threat of enforcement."

Another activity to be stressed is using a range of techniques to stimulate awareness of the importance of environmental issues and educate all segments of society about their potential role in support of UEQM. The techniques range from mass-media campaigns to building environmental themes into work with community groups and other NGOs related to other programs. Indonesia has a rich network of local organizations and a heritage of community self-help, even in urban areas. This organizational network provides a foundation that can be built on for environmental infrastructure that reaches low-income people. It also provides the framework for collective choice at the community level in prioritizing environmental projects. There is much evidence that these approaches do change attitudes and, thus, they can make all of the other programmatic approaches discussed here work more easily.

Some economic incentives, regulations, and awareness programs, of course, are most appropriately implemented at the national level. But others will be essential components of local UEQM as emphasized here. Their forcefulness should be much

enhanced if they emerge from the type of consensus building process with public and private sector leaders (organized around the annual capital budgeting cycle) that we have proposed as the center-piece of UEQM at the local level.

Section 5
BUILDING URBAN ENVIRONMENTAL QUALITY MANAGEMENT
INTO THE HG-002 PROGRAM

5.1 INTRODUCTION

In light of its own analysis, covering many of the facts and conditions reviewed earlier in this Annex, BAPPENAS in its *Issues and Priorities Report* (1992) has identified urban environmental degradation as among the highest priorities to be addressed in the next stages of the GOI's decentralized urban development program. Environmental degradation is now becoming Indonesia's most severe urban problem, yet a primary goal of the GOI's program, as well as AID's concerns as reflected in the Municipal Finance Project Policy Action Plan, is to improve shelter and living conditions for the urban poor. Thus the program itself will be fundamentally threatened if environmental concerns are not dealt with effectively. It is recommended, therefore, that urban environmental quality management (UEQM) be identified as one of the highest priorities in the new HG-002 program.

To accomplish this, UEQM can and should be built into each element of the three basic elements of the program: the new Policy Action Plan, the technical assistance and training program, and the investment program.

5.2 GIVING PRIORITY TO UEQM IN THE POLICY ACTION PLAN

Like the Plan for HG-001, the Policy Action Plan for HG-002 will be organized around the six basic policy themes of the GOI's continuing decentralized urban development program.

1. Strengthening and clarifying local government responsibility for urban infrastructure.
2. Implementing a coordinated and decentralized process for programming urban infrastructure investment.
3. Enhancing local government resource mobilization, financial management, and involvement of the private sector in infrastructure and service delivery.
4. Establishing effective mechanisms to support municipal borrowing and improving the system for allocating intergovernmental grants.
5. Strengthening the institutional capacity of local governments.
6. Improving intergovernmental coordination and consultation in urban development.

Summary

Priority for UEQM can be legitimately reflected by adding environmentally related objectives under several of these themes. The most important, will be to build into Policy 2 the type of locally based UEQM strategy and program development discussed in the previous section. However, other objectives to be added include clarifying responsibility for environmental quality management (under Policy 1), designing cost recovery policies to reflect environmental concerns, and giving emphasis to environmental infrastructure in private sector participation (under Policy 3), developing guidelines for local governments in urban environmental quality management and giving it special emphasis in developing indigenous capacity for technical assistance and training in urban management (under Policy 5), and national level coordination of a program of urban environmental awareness and education (under Policy 6). In each case, disaster prevention, mitigation, and preparedness (PMP) should be incorporated as a part of the environmental management agenda.

Implementing a coordinated and decentralized process for programming urban infrastructure investment and urban environmental quality management (Policy 2)

The primary objective to be added in this area should be to "Develop and implement local urban environmental quality management (UEQM) strategies and programs as a part of IUIDP implementation". To achieve this objective, several actions would need to be taken.

a. The first action required would be to develop guidelines for urban environmental quality management analysis, strategy preparation, project impact analysis, and implementation. Discussion earlier in this Annex also suggests that these guidelines also provide for explicit analysis of consumer demand and willingness to pay as a basis for investment programming. Once developed, these guides would have to be incorporated into overall guidelines for the IUIDP process.

b. A second required action would be to develop an urban environmental quality and demand monitoring program. The data this program will be a necessary ingredient in strategic planning. It cannot be expected that fully adequate environmental monitoring can be developed for all major urban areas in a short period of time. The program will have to begin with a modest number of indicators, with built-in plans to expand both the number of indicators and the quality of measurement as the program is improved over time.

c. Thirdly, given the above, it would be possible to proceed to actual implementation: i.e., work with local governments, using the guidelines, to develop local urban environmental quality management/disaster PMP strategies and programs associated with IUIDP program updates in, at least, Indonesia's larger cities (over

100,000 population). The approach would start by trying out the process in a small number of cities on a demonstration basis. The results of the demonstrations would be used as a basis for revising the guidelines and then proceeding with additional strategic and program planning efforts elsewhere.

Strengthening and clarifying local government responsibility for urban infrastructure (Policy 1)

The objective to be added here would focus on clarifying responsibilities for urban environmental quality management, disaster PMP, and to establishing related standards and monitoring. It is understood that the basic responsibility for urban environmental quality management rests, as does the responsibility for urban infrastructure programming, with local government. Much of the work in addressing this objective will relate to clarifying responsibilities of central and provincial agencies in facilitating the process.

Enhancing local government resource mobilization, financial management, and involvement of the private sector in infrastructure and service delivery (Policy 3)

In this area, the new Plan should incorporate new actions under already established objectives. Most important in relation to enhancing local resource mobilization will be to: (a) undertake studies and follow up on recommended actions to improve cost recovery of local solid waste collection; and (b) to devise an appropriate pricing strategy for waste water collection, removal, and treatment. In many ways, the entire objective of furthering private sector participation in urban services is environmentally oriented. However, the Plan in this area should explicitly give emphasis to environmental infrastructure.

Strengthening the institutional capacity of local governments (Policy 5)

In this area, the new plan should call for two basic objectives: (1) developing a coordinated system of urban management guidelines for local governments; and (2) developing an indigenous self-sustaining system of training and technical assistance for local governments in urban management. Environmental management can, and should, be given emphasis as a part of both of these objectives. Specifically, initial demonstration projects in developing UEQM strategies and programs should be explicitly designed to yield lessons that will be incorporated in both these general management guidelines and in technical assistance and training programs. An additional element of this work should be to involve the Association of Municipalities (BKSAKSI) in the process of developing guidelines and facilitating training and technical assistance programs. This could take the form of a city sharing program in which the leaders of different cities arrange to share knowledge about approaches of UEQM (see further discussion of this idea in Attachment 3.4).

Improving intergovernmental coordination and consultation in urban development (Policy 6)

While the primary responsibility for UEQM must rest with local governments, there is an important role for central officials involved in the decentralized urban development processes (agencies that are a part of TKPP) to play in supporting UEQM. That is to design and implement a national level program to promote awareness of environmental problems in Indonesia's cities and the ways in which they may be addressed.

5.3 TECHNICAL ASSISTANCE AND TRAINING: SUPPORT FOR THE DEVELOPMENT OF LOCAL UEQM STRATEGIES

It is suggested that, as they relate to the environment, TA/training resources under the expanded MFP, be focused on what has been suggested as the primary environmental objective under the Policy Action Plan: the development of local UEQM strategies linked to IUIDP. Four work components will be required: (1) developing a program of urban environmental monitoring; (2) designing an approach to UEQM analysis and strategy formulation; (3) trying out the approach, working with local leadership to develop UEQM strategies in several cities; (4) building lessons from this experience into the broader plan for developing indigenous technical assistance and training capacity in urban management.

Environmental Monitoring

In the context of local strategy making, qualification will be necessary to make a compelling case to give UEQM the priority (and resources) it deserves. Mayors and other local leaders will be unlikely to take forceful actions unless they have a sense of past, current, and possible future environmental quality levels for their city, the meaning of alternative levels (in relation to effects on human health and other basic societal goals), and the comparative costs and benefits of alternative strategies that might lead to differing environmental outcomes.

Beginning a program of regular monitoring of environmental quality is an essential starting point. Attempts are often made to define ideal monitoring systems and data bases, but few such ambitious projects are actually implemented. It may make more sense to define a limited set of indicators at the start for a few cities and then assure that the capacity is provided to assure that measurements will be taken to update them on a regular basis. Additional, and more refined, indicators can be added later, and the program can be expanded to additional cities, as capacity growth permits.

The World Bank is working with government officials to develop a fairly complete monitoring program for Jakarta under the MEIP program. This program and its broader implications are described in Attachment 3.3. This approach could be modified (probably

slimmed down) to provide a model for AID supported efforts in other cities (mid-sized cities in the 100,000 to one million population range would probably be the most appropriate group of candidates). Given economies of scale, it is likely that environmental monitoring should be performed by a central or provincial level agency rather than by each locality on its own. It would be imperative, however, to assure that resulting data are rapidly and automatically provided to local government for use in their strategic planning processes. These issues are also discussed further in Attachment 3.3.

Designing an Approach to UEQM Analysis and Strategy Formulation

Given the always limited resources and the multiple demands on resources, a major problem for local officials with respect to environmental projects in urban areas is how to establish priorities. Initial analysis of overall environmental quality for a city (drawn from the monitoring program noted above and other sources) prior to the beginning of the PJM related strategic planning process could be extremely helpful in this regard. It could well offer surprises as to which aspects of UEQM warrant the most attention in that particular city (and which indicators are most critical to track in the future). (See, for example, the AID sponsored study to rate the comparative seriousness of different environmental problems in Bangkok--Abt Associates and Sobotka and Co., 1990.)

What is needed next is the development of an analytic framework for analyzing the environmental effects of alternative investment/development plans for urban areas to be used as a part of UEQM/PJM strategy development. Such a framework would start with conditions in a base year in terms of the spatial pattern of activities, estimated discharges, and estimated environmental quality. Proposed projects and projected population and economic growth (by sector) would be imposed on that base, for whatever target years were under consideration, and environmental (as well as cost and spatial pattern) effects estimated. Good models for such approaches have been developed and successfully applied in the past (see, for example, Hufschmidt et al, 1983, and Shin et al 1992).

Improving environmental quality in urban areas often is considered to be related also to the *provision of services*, e.g., water supply. A question analogous to that framed above is, what would it cost to provide different levels of service? How much is society willing to invest to improve the level of service? Developing and regularly updating a set of service level indicators (SLIs) for a city would provide a quantitative means of relating output to investment, analogous to the relationship between environmental quality and cost (With respect to SLIs, see Stevens and Cook, 1991a and 1991b.).

This type of rational analysis of environmental problems linked to policy formulation has been often proposed, and actually implemented in some locations. There is often a tendency, however, to make research and analysis like this much too complex and time consuming. If it moves too slowly there is the danger that, at best, it will be

regarded only as an academic exercise--at worst, that it will never be completed. In part, it was this sort of elaboration and complexity that made the urban master plan harder to link to action and, thus, pushed it toward irrelevance.

It is extremely important that these tendencies for over elaboration be avoided in the real analytic frameworks for UEQM in Indonesia. The basic data collection and strategic planning required for UEQM can be done in a short period of time if a simple (understandable) framework is established. It will not be perfect the first time (many data, and perhaps conceptual, gaps will remain)--but the process can be improved incrementally as it is repeated in the future. Perhaps the best way to stop it from becoming too elaborate in any city would be to set a definite time limit for UEQM strategic analysis and planning (say, three to six months from start to completion).

Demonstration Projects: Working with Selected Cities to Develop UEQM Strategies

Given the development of the approach and methodology, the next step would be to apply it in demonstration projects in selected cities. Again, we would advocate cities in the mid-sized range for this purpose (100,000 to one million population). Such efforts in larger cities would probably have to be too ambitious and other donors are involved in somewhat similar approaches in the major metropolitan areas. Cities smaller than 100,000 are probably not experiencing the level and complexity of environmental degradation that warrants such strategies.

The technical assistance team that would work with local governments in these efforts would have to include some expatriate specialists, but the teams would be led by Indonesians of two types: (1) central or provincial government staff who have received special training in the type of strategy formulation proposed; and (2) other specialists who will be responsible for developing and participating in the process of longer term technical assistance and training for local governments in UEQM (see further discussion below).

After the candidate cities have been selected, and terms of reference negotiated with Mayors, the process would proceed in each city following the sequence of steps outlined above in Section 3.

Indigenous Technical Assistance and Training Capacity

Clearly, the concept of developing forceful UEQM strategies and programs for all of Indonesia's mid- and large-size cities, and regularly updating and strengthening them, would be infeasible if it depended even primarily on outside AID assistance. The only way to further the concept will be to build capacity in Indonesian institutions so they can operate training programs for, and provide technical assistance to, local leaders and staff in UEQM over the long term.

This view is dominant in the recent proposal by the MFP Project team and the IUIDP Support Group to develop such capacity in urban management more broadly (see Municipal Finance Project, 1992, and Kingsley and Peterson, 1992). All that will be necessary here is for AID to provide the additional TA resources needed to add UEQM as an emphasis in that program. Environmental themes should be added to most of its modules (i.e., general urban management, urban finance, service delivery, infrastructure programming) but the most emphasis would be given to modify the proposed module on spatial planning and land management. The materials that would serve as the basis for curriculum design would already have been provided in the work discussed above (i.e., guidelines for environmental monitoring, analysis, and strategy formulation, plus case studies of the demonstration project experiences).

After having started in this way and built experience and credibility, it might make sense to turn this activity into a permanent UEQM "extension service." The services would be staffed by indigenous experts trained, in part, as a part of the initial demonstration projects. Over the longer term it could provide training for new local staff, keep up with new developments in the field and communicate them to local leaders, and provide special consulting assistance on an as needed basis. This service could be based in regional Universities and assisted working cooperatively with central technical staff (e.g., from BAPPENAS and DG Cipta Karya).

5.4 ENVIRONMENTAL CONCERNS AND THE HG-002 INVESTMENT PROGRAM

Under the HG-002 Implementation Agreement, the GOI will be obligated to prepare, and regularly update, an Investment Plan for the use of HGL funds. In accord with this Plan, it will be required that the GOI spend funds at least equivalent to the amount of the HGL resources received (exclusive of support from other donors) on shelter-related infrastructure investments benefiting below-median income households. To give appropriate emphasis to environmental concerns in HG-002, it would be appropriate to add a further requirement: that only "environmental" infrastructure and services be eligible under the Plan (i.e. those that directly improve the physical living environment of below-median income households and/or act to avert future degradation of that environment).

Analysis of program elements in Sections 1 and 2 suggests that the programs that best meet this requirement are those that have been supported under HG-001, plus the addition of support for the preparation of Environmental Impact Assessments.

- Water Supply. Clean water is essential for life and to avoid the effects of the transmission of water borne disease now prevalent in urban Indonesia due to the pollution of ground water.
- Human Waste Disposal. The proper disposal (and treatment) of human wastes are directly essential to prevent the transmission disease.

- **Solid Waste Disposal.** Similarly, the inadequate disposal of solid wastes can lead to disease transmission and increase other life threatening risks (such as fire).
- **Drainage and Flood Control.** Floods can threaten life directly and standing water in residential areas can transmit water borne diseases directly as well provide breeding grounds for disease transmitting insects.
- **Urban Access Roads.** Access roads in low income settlements are necessary to avert the raising of particulate matter in the air and are often an inseparable part of other necessary environmental improvements (e.g., drainage).
- **Kampung Improvement Program.** This program combines environmental improvements as defined above in low income residential areas.
- **Urban Infrastructure Planning and Environmental Impact Assessments.** These activities are obviously essential to assuring the effective provision of environmental infrastructure and avoid negative environmental impacts in development.

Attachment 3.1
LIST OF REFERENCES

- BAPEDAL (Environment Impact Management Agency). Undated. *PROKASIH, Clean River Programme*. Jakarta: Environmental Impact Management Agency, Government of Indonesia.
-
- _____. 1991. *AMDAL, A Guide to Environmental Assessment in Indonesia*. Jakarta: Environmental Impact Management Agency, Government of Indonesia.
- Biro Pusat Statistik. 1989. *Indikator Kesejahteraan Rakyat 1989*. Jakarta: Biro Pusat Statistik, Government of Indonesia.
- Cervero, R. 1991. *Improving the Revenue Performance of Solid Waste Management in Indonesia*. Unpublished paper. Jakarta: Harvard Institute for International Development. July.
- Chifos, C. and R. Lubis. 1991. *Urban Environmental Management as a Component of an Integrated Development Strategy*. Report prepared for USAID/Indonesia. Research Triangle, N.C.: Research Triangle Institute.
- Faiz, Afif. 1990. *Automotive Air Pollution, an Overview*. Working Paper. Washington, D.C.: The World Bank.
- Fisher, Ben. 1991. *Indonesia, Infrastructure, Environment and Impact Assessment*. The World Bank/Resident Staff in Indonesia. Office Memorandum and Draft Report. April.
- Hardoy, J. E. and D.E. Satterthwaite. 1985. "Third World Cities and the Environment of Poverty." In Repertto, Robert, ed., *The Global Possible*, New Haven: Yale University Press.
- Hoffman, M. and B. Ferguson. 1991. *Modernizing Land Administration in Indonesia*. Prepared for Badan Pertanahan Nasional, Republic of Indonesia and the U.S. Agency for International Development. Washington, D.C.: The Urban Institute. May.

- Hufschmidt, M.M., D.E. James, A.D. Mester, B.T. Bower, and J.A. Dixon. 1983. *Environment, Natural Systems, and Development: An Economic Evaluation Guide*. Baltimore: Johns Hopkins Press.
- Jardine, C.G. Undated. *Water Pollution in Indonesia, The Clean River Program (PROKASIH)*. Unpublished paper.
- Kingsley, G. Thomas and Bruce Ferguson. 1992. *Urban Environmental Quality Management in Asia*. Urban Institute Project Report prepared for the World Bank. Washington, D.C.: The Urban Institute.
- KLH (Ministry of Population and the Environment). 1991. *State of the Environment: Indonesia 1991*. Jakarta: Government of Indonesia, Ministry of Population and the Environment.
- KLH (Ministry of Population and the Environment). 1991a. *BAPEDAL Development Plan, Draft Final Report*. Prepared by REDECON under The Japanese Trust Fund of the World Bank. Jakarta: Government of Indonesia, Ministry of Population and the Environment. November.
- Levine, C.L. 1991. *A Framework for Private Sector Participation in Municipal Solid Waste Services in Indonesia*, prepared for The World Bank, Jakarta, November.
- Makarim, B. and C.G. Jardine. Undated. *Environment Policy and Legislation in Indonesia*. Unpublished Paper. Jakarta.
- McCulloch, J., D. Rondinelli, J. Taylor, D. Foster, and J. Kasarda. 1990. *Urban Strategy Assistance: Indonesia*. Report prepared for USAID/Indonesia. Research Triangle, N.C.: Research Triangle Institute.
- MEIP (Metropolitan Environmental Improvement Programme). 1990. *Asia's Cities and The Environment: Pressures of Growth, Strategies for Management*. Hawaii: The East-West Center. December.
- Midgley, P. 1991. "Urban Transport and the Environment in the Asia-Pacific Region." Washington, D.C.: The World Bank, first draft, April.
- MPW (Ministry of Public Works). 1989. *Housing and Human Settlements Development in Repelita V (1989/90-1993/94)*. Jakarta: Ministry of Public Works, Government of Indonesia. September.
- Population Crisis Committee. 1988. *Life in the World's 100 Largest Metropolitan Areas*, Washington, D.C.: Population Crisis Committee.

- Puerbo, H. 1991. *Urban solid waste management in Bandung: towards an integrated resource recovery system*. In *Environment and Urbanization*. vol. 3., no. 1. April.
- Shin. Euisoon, R. Gregory, M. Hufschmidt, Y.S. Lee, J.E. Nickym, and C. Umetso. 1992. *Economic Valuation of Urban Environmental Problems--With an Emphasis on Asia*, prepared for The World Bank. Holulul: East-West Center.
- USAID (United States Agency for International Development). 1991. *Project Paper: Private Participation in Urban Services*. Project 497-0373. Jakarta: USAID/Indonesia.
- _____. Undated. "A Conceptual and Operational Framework of the Proposed Sharing Program for Cities."
- _____. 1992. *Operational Framework for Private Sector Participation in Urban Infrastructure Development*. Jakarta: USAID. May
- World Health Organization (WHO) and United Nations Environmental Program (UNEP). 1987. *Global Pollution and Health*. London: Yale University Press.
- The World Bank. 1987. *Indonesia: Investment Strategies Management of Natural Resources, The Urban Sector*. Washington, D.C.: The World Bank. April.
- _____. 1991. *Staff Appraisal Report, Republic of Indonesia, For An Urban Development Project in the Provinces of East Java and Bali*. Washington, D.C.: The World Bank. February.
- _____. 1991a. *Project Completion Report, Indonesia, Urban Sector Loan*. Washington, D.C.: The World Bank. June.
- World Resources Institute. 1990. *World Resources, 1990-91*. World Resources Institute in collaboration with the United Nations Environment Programme and the United Nations Development Programme. New York: Oxford University Press.

Attachment 3.2
**COMMUNITY INVOLVEMENT IN ENVIRONMENTAL
INFRASTRUCTURE AND SERVICES**

Community involvement will be essential to the success of local UEQM strategies. This Attachment provides initial information on this topic that may be useful in program planning. It first reviews the role community residents now play in the budget process and environmental decision making. It then considers evidence of community demand and willingness to pay. Finally, it describes an example of successful community involvement in service provision--a community composting project in Bandung.

**THE INFLUENCE OF LOCAL PEOPLE ON THE BUDGET PROCESS AND
ENVIRONMENTAL INFRASTRUCTURE DECISION-MAKING**

Ultimately, the potential for greater decentralization, cost recovery, and, thus, the ability to supply adequate environmental infrastructure lies in responding to local demand. Below median-income people represent a particular challenge. In many developing countries, local government officials do not understand poor neighborhoods, have little access to them, and have great difficulty delivering services to them effectively. Sometimes, the infrastructure that gets built is the wrong type, in the wrong location, local people feel no ownership of it, and do not maintain it. NGOs and, in some regions, organizations with religious affiliation sometimes do a better job.

A key test of responsiveness is the extent to which local people can influence the municipal budget process. The RW and RT, who are elected directly, act as the advocates for their area with higher levels of government. A good RT will forward a stream of requests based on his neighborhood's need upwards. These requests usually deal with small matters at the community level, such as the need for a new public water pipe, complaints about no garbage pick-up, the location of a public toilet. A portion of these requests get responses. One RT that we interviewed had made 32 such requests in the past six months and had 12 granted.

Typically, the Lurah--the lowest official level of government--holds an annual meeting of its council (Lambaka Katahanan Masyarakat Desa) to discuss the budget. Council members are nominated by the RW and the RTs, but appointed by the Lurah. The infrastructure preferences decided by the kelurahan are considered in a subsequent annual meeting on the yearly budget at the kotamadya level. The Walikota and his staff develop the budget and take it to the city council. Typically, the council discusses packages that contain many individual projects. At many levels of government, the details of these infrastructure packages are not divulged. Hence, they remain the decision of the

executive--at the kotamadya level, the walikota. Individual local people rarely go to meetings of the council at the kelurahan and kotamadya levels and never to the yearly budget meeting. Occasionally, groups of people present their requests.

This evidence suggests that local people do have some influence on small, community level infrastructure. However, they appear to have virtually no formal influence on broader decisions about water, sanitation, and road systems and the formal budget process. Informal channels present greater opportunity. Typically, many groups exist in kampungs--youth, women's, ethnic (based on area of origin), religious, and political groups form and engage in activities. These groups seem to exercise greater informal influence on the kelurahan and kotamadya than do people through the formal budget channels. PKK--a women's group--seems to have particular influence in many areas.²⁷

The environmental movement occasionally offers a means for local people to have an impact beyond the community level, usually in the form of stopping a polluting industry that threatens their livelihood. Currently, local people seldom have the opportunity to participate in AMDAL. However, AMDAL regulations and structure at least contain provisions for public participation in environmental assessment. As the AMDAL process evolves, it may offer a means for local influence on urban environmental infrastructure.

COMMUNITY DEMAND AND WILLINGNESS TO PAY

First, as proposed in the *Interim Evaluation of MFP*, more evaluation is necessary of citizen-taxpayer demand for public services and willingness to pay for publicly provided capital facilities. Some studies both completed and underway give partial information on this topic.

Chifos and Lubis (1991), for instance, conducted household surveys of Jakarta and Ujung Pandang that asked questions about what households are paying now for water, sanitation, and solid waste. Although these questions did not go into contingencies to determine what effective demand might be, what households pay now is of interest in itself and a starting point for thinking about how to determine willingness to pay. Chifos and Lubis opted not to ask household's about their income directly, judging that the information they would receive would be inaccurate.²⁸

²⁷See Chifos and Lubis (1992), Report Volume III, p. 58. We also noted the presence and influence of PKK in field visits to RTs in Ujung Pandang.

²⁸2 Instead, they classified households based on possessions such as radios, televisions, automobiles etc.

Their data suggest a very wide range of payments for basic infrastructure. Table 3.2 presents the average ranges for payments for these basic environmental urban services in 6 neighborhoods in Jakarta.²⁹

Table 3.2
AVERAGE RANGE OF WATER, SANITATION, AND SOLID WASTE COSTS PAID PER MONTH BY HOUSEHOLDS IN SIX JAKARTA NEIGHBORHOODS, 1991 (in rupiah)

Service	Low	High
Water	5,090	14,640
Solid Waste	500	2,000
Sanitation	0	15,000
Total	5,500	31,640

Source: Based on data in Chifos and Lubis, 1991

Many factors influence these costs. Water provides a good example. If potable ground water is available, households pay nothing. If a water has bacteriological pollution, households would have to boil it to attain similar quality, adding the cost of energy. Water vendor rates fluctuate from Rp. 5,070 to 14,640. PAM Jaya rates range from an average 10,200-16,375. However, people tend to obtain water from different sources for different uses, depending on the suitability of the water for the use and its cost. For instance, people tend to buy water from PAM Jaya and vendors for consumption and use free water from public wells or groundwater sources for washing and bathing. Thus, households water expenditures vary greatly depending on the

²⁹ Jakarta households that bought water from water vendors paid an average of rp. 9,000 per month for it--with a range of rp. 5,090 to 14,640. The reported average range paid to PAM Jaya was rp. 10,200-16,375. However, many households use well water for free (3 of the 6 sites in their Jakarta sample), with only the cost of boiling in areas where this water is bacteriologically contaminated. In addition, people tend to obtain water from different sources for different uses. Households paid rp. 250 to 20,000 for garbage collection, with "average ranges" running from rp. 775-3,400. However, payment for garbage collection is not enforceable--hence, some households pay nothing. Over 50 percent of households had septic tanks. Of those without septic tanks, 25-38 percent used a public WC facility costing rp. 75-100 per trip--assuming a household of 5 people making one trip per day, the monthly total would be a maximum of rp. 15,000.

available sources and their strategy for their use. These factors condition the demand for water from a private company or PDAM.

Household incomes are a particularly slippery subject in Indonesia for cultural and other reasons. Households may have many sources of income that questions on income do not elicit. Individuals living in cities may make substantial sums, but send much of it back to their families in rural areas. Although they do not appear poor based on income, they act and live poor. Some researchers have used surrogates for income because of the many barriers to eliciting accurate information on this subject. For instance, Chifos and Lubis' household surveys asked questions about material possessions and depended on the interviewer to observe the conditions of the household's material circumstance.

Greater study of demand that takes these factors into account is necessary to determine if a dilemma exists between the goals of cost recovery and of targeting urban infrastructure services to the poor. Such investigations should start by assembling the existing studies that bear on the subject. Most likely, gaps will exist.

AN EXAMPLE OF COMMUNITY SERVICE PROVISION: COMMUNITY COMPOSTING IN BANDUNG

Communities may also, of course, become directly involved in service provision. Many such projects have been initiated in Indonesia in several fields. One example is provided here--the experience of a community composting program in Bandung.

Such efforts can involve local people, generate income for the community, and save on transport cost of solid waste to distant landfills. Thus far, however, they have had limited success, although one study indicates that small-scale community based efforts could be profitable in Jakarta.³⁰ The main weakness of this good idea has been inadequate analysis of demand for the compost and lack of a marketing strategy. The experience of ITB in Bandung and the Integrated Resource Recovery System model developed by Professor Hassan Puerbo offers clues to how to make community based composting financially self-supporting.

³⁰ With assistance from the Harvard Institute for International Development (HIID) and Columbia University, the Center for Policy and Implementation Studies (CPIS) developed a model "Enterprise for Recycling and Compost Production (ERCP) in Jakarta to develop a composting technique appropriate for Indonesia, provide relevant training in this technique, and analyze the costs of production and potential demand. At the current price in Jakarta, this study concluded that ERCPs could produce compost profitably, without including transportation costs. However, the demand for compost within Jakarta went largely unexamined.

In 1980, the Centre for Environmental Studies at Bandung Institute of Technology (ITB) undertook a study of the urban informal sector that focussed on scavengers in co-operation with the Institute for Social Studies in the Netherlands. After the completion of this study in 1982, the project grew into participatory action research with a group of 35 families who had illegally occupied land in the center of Bandung. Over a three-year period, the project accomplished the following: (1) intensified sorting of waste and sale of recovered material; (2) introduction of aerobic composting of organic waste; (3) introduction of seed farming, using seeds collected from the waste; (4) raising 200 rabbits; (5) incremental improvement of shelters; (6) a unit to purchase and make available goods for daily needs, such as rice, sugar, and oil; (7) health care through the Municipal Health Department; and (8) a double-pit public toilet built by the community as field test for UNDP.

The owners of the site took it over at the end of this three year period for construction of a parking lot. By this time, the scavenger community had grown to 88. Rather than remaining marginal, these people had achieved some economic stability. This experience became the basis for design of a community composting project directed to scavengers, dubbed the "Integrated Resource Recovery System."

Professor Puerbo and ITB has worked with an RW in Bandung to implement community based composting. The most recent version of this project has operated for four months. A lot on a steep slope provides space for composting. The RW of the area organizes collection of garbage. Local young people, who are paid the minimum wage, use a wooden box to compress the organic component--which represents about 80 percent of the total--into two-meter cubes, roughly 10 cubic meters in volume. Then, they stack the cubes on the lot to compost over a 46-day period and put the compost through a chopping machine, which ITB purchased for Rp. 3,000,000, to produce fine compost. The fine compost sells for rp. 240 per kilogram. So far, the project has sold all the fine compost produced locally as fertilizer to local residents. Such high-grade compost also is used to grow algae for shrimp and other aquaculture. Rougher compost has, potentially, a greater market for use in landfills in construction projects.

This system depends financially not only on the income from sale of compost *but also from receipt of payments for garbage collection*. In Bandung as in most other Indonesian cities, the RT/RW do the primary garbage collection. Households pay from rp. 500 to 4,000 to the RT/RW for this service. The city transports this garbage from intermediate collection points to landfills and charges rp. 1,250 per household for this service in tandem with electrical bills--collection efficiency is good, over 90 percent. In ITB's model, the RT/RW payment and a portion of the payment (about half) made to the city go to the community based composting project.³¹ ITB is currently negotiating with

³¹The rationale for the city's contribution is that 80 percent of kampung solid waste is organic and can be composted while only 20 percent remains to transport to the landfill. Thus, the city's garbage collection burden is much reduced and a portion of the payment that households make to the city should go to support

the city of Bandung for this contribution. Professor Puerbo estimates that joining the city's contribution with the RW/RT funds would produce roughly the amount necessary to support the project's operation. Income from compost would then provide extra support.

Incremental growth represents a second key to overcoming demand and marketing difficulties. Community based composting can be established one lot at a time. These increments allow time to develop new markets--such as for shrimp aquaculture in Jakarta and other cities. They also provide an appropriate activity for organizing local communities and promoting community development. In contrast, capital intensive, large-scale composting projects immediately run up against the need to sell large amounts of their product at relatively high prices and have little impact at the community level.

Finally, government could help create a market. Such actions could include tax incentives for industrial use of waste materials, import restrictions on raw and waste materials, and annual government purchases of compost for various programs (landfill for construction projects, reforestation, and improvement of environmentally sensitive lands and plantations). Cost/benefit analyses of such interventions would determine if the public benefits from composting exceed their cost. A sustained research program that addresses both technologies and pricing would be a necessary complement to any scale effort.

In sum, community based composting deserves careful investigation and experimentation best done through support of research joined with pilot projects. Local communities should provide the land for such projects. Steep slopes, bends in rivers, and plots in irregular and difficult to use shapes have few other uses. These parcels should represent the community's contribution to the project. Donors could usefully fund the purchase of chopping machines, stipends for local young people, training of development consultants to spread these methods, research, and dissemination of information in print. Universities such as ITB and their environmental research centers are logical organizations to develop such demonstrations.

Attachment 3.3
APPROACH TO URBAN ENVIRONMENTAL MONITORING³²

Regular monitoring of changes in environmental conditions is a fundamental requirement of any UEQM program. Such a project should measure the quality of surface and groundwater, ambient air, indoor water, and indoor air. This section outlines its parameters, equipment, staffing, cost, and institutional affiliation.

First, however, a monitoring project must have a strategy to link measurement with decision-making and demand. Some monitoring programs measure parameters but little gets done with the information, either by local government or at the neighborhood level. To achieve economies of scale, it is likely that monitoring should be the responsibility of central and provincial agencies. Nonetheless, it should be emphasized that the primary purpose of the program is to develop information for use by local leadership in strategy and program development and in management. The provincial Bureau of Population and the Environment may be the best candidate to administer such a program in many Indonesian cities. This agency reports directly to the governor and can influence other local and regional agencies. Generally, the monitoring program should follow two guidelines:

- Identify the problems that concern poor people most before designing the monitoring program and orient the program through community input. The problems of the poor are often radically different from the ones that government officials imagine. Consultation with local people through meetings at the neighborhood level should inform decisions on where and what to monitor. The program administrator should take the results of monitoring back to the community to orient further monitoring and to prioritize problems for action.

- Target the program to critical areas and needs that new infrastructure and other measures could help meet. Kampung with densities over 150 people per hectare typically suffer from significant surface and well-water pollution and are appropriate areas for sanitation investments. Surface and groundwater monitoring should focus on areas that seem near such thresholds.

Monitoring Surface and Groundwater Quality

³² Based on interviews with: E. Budirahardjo, Director, Office of Urban Research and Environment, Capital City of Jakarta; and Suhadi Hadiwinoto, National Project Coordinator, Metropolitan Environmental Improvement Programme.

Sophisticated environmental monitoring programs measure many parameters. That of Jakarta measures 34 water-quality characteristics, including color, odor, turbidity, bacteria counts and types, and chemistry. However, five parameters matter most for decision-making to reach the urban poor: biological oxygen demand, E. Coli count, pH, turbidity, and conductivity.

1. *Biological oxygen demand.* Biological oxygen demand reflects the amount of organic waste in water, the most common pollutant. Hence, it is one of the parameters used most widely. Oxygen is a critical factor in the health of potential health of aquatic organisms. The cost of a package of equipment suitable for frequent measurements and analysis of BOD totals Rp. 30 million.

2. *E. Coli count.* E. Coli is the most common bacteria in human faecal matter. Measurement of E. Coli reflects the level of human waste in water. The cost of an incubator and other equipment to collect and measure E. Coli totals Rp. 25 million.

3. *pH.* If water is acidic, it can cause stomach problems. Alkaline water tastes bad and, eventually, increases calcium content of bones and, thus, makes them brittle. A pH meter capable of frequently measuring this parameter costs Rp. 2 million. The simplest, although crudest measure of pH--litmus paper--costs rp. 10,000 per pack, but each sheet can only be used once.

4. *Conductivity.* Conductivity indicates the degree of soluble salts in water--hence, saltwater intrusion. A conductivity meter costs Rp. 9-10 million.

5. *Turbidity.* Turbidity parameters--such as suspended particulate in miligrams per liter--measure the deposits in water. A turbidity meter cost Rp. 15 million.

Monitoring programs directed at surface water quality usually measure upstream of the polluting area, in the polluting area, and downstream--in this case, the kampung. In contrast, a program to provide a basis for action planning would focus more within kampungs. Overlaying maps of urban population densities with geographic maps of groundwater levels and rivers can help determine where to measure.

The Jakarta program measures these five water-quality parameters every month. A minimum frequency would be two times per year--once in the dry season and once in the rainy season. Each measurement involves taking at least 4-5 samples over a 24 hour period at different times and mixing them to get a composite sample.

For groundwater from shallow wells, only BOD and E. Coli need be measured. These parameters show septic tank pollution of groundwater. If monitoring includes deep artesian well water, the chloride content (through measuring conductivity) and level of the water table should be added.

Monitoring Ambient Air Quality

Two groups of parameters must be measured to monitor air quality: suspended particulate and gaseous components.

1. *Suspended particulates.* Dust and other matter in air falls into two categories: total suspended particulate; and suspended particulate matter. Suspended particulate matter is the portion of total suspended particulate smaller than 10 microns. SPM damages human health most. In Indonesian cities, particulate comes mainly from motor vehicles and soil, including that from agriculture and from garbage.

2. *Gaseous components.* Carbon monoxide, sulfur dioxide, and nitrogen oxide comprise the main gaseous air pollutants. They come heavily from motor vehicles.

A fairly sophisticated equipment package capable of measuring and analyzing both particulates and gaseous components costs Rp. 300 million. Typically, state-of-the-art air pollution monitoring is more expensive than that of water pollution and requires greater technical know-how.

However, the minimum equipment necessary to have an air quality monitoring program consists of a high-volume sampler to measure total suspended particulates (at a cost of Rp. 25 million) and a 5-tube sampler to measure gases (costing Rp. 13 million). The sample collected by this equipment can be sent to outside laboratories for analysis.³³

The Jakarta monitoring program measures air quality 8 times per year. A minimum would be twice per year--once in the dry season and again in the wet season. Each measurement requires taking constant samples over a two-day period at a particular location. Both the location of kampungs and that of major roads should help determine where to measure.

Monitoring Indoor Pollution

Monitoring of indoor air pollution requires more sensitive equipment than ambient pollution. Two parameters have greatest importance: total suspended particulate and carbon monoxide. A total-suspended-particulate portable pump costs Rp. 15 million. One pack of carbon monoxide tubes--containing 50 tubes--costs Rp. 24,000.

Monitoring should occur twice per year--once in the dry season and once in the wet season. The number of households monitored should reach that necessary for a

³³ An analytic balance (costing Rp. 10 million) for particulates and a spectro analyzer (costing Rp. 125 million) for these gases are necessary if the analysis is done in-house.

statistically accurate sample--from 100 to 200. Indoor water pollution monitoring can occur at the same time with the same households.

Measurement of E. Coli is the one essential parameter for indoor water pollution. The E. Coli measuring equipment described above can be used. However, sample of water should be taken from various sources destined for indoor use--from public hydrants, from containers in households, and from glasses to be drunk.

Staffing and Total Cost

Four staff were recommended as the minimum for a monitoring effort. The monthly salary necessary to attract sufficiently well-trained people is Rp. 250,000-350,000 per person. The yearly staffing expense would run about Rp 13 million. The cost of purchasing the equipment described above depends on the options chosen--particularly for air pollution. If the least expensive options were chosen, it would total Rp. 135 million, as follows:

Surface and groundwater	Rp. 80 million
Ambient air	Rp. 38 million
Indoor air	Rp. 17 million
10 percent contingency	Rp. 14 million
Total Equipment.	Rp. 149 million

Attachment 3.4
AN ENVIRONMENTAL CITY-SHARING PROGRAM

The networks for disseminating information between Indonesian cities appear primarily ad hoc and informal--mostly between individuals. Much stronger connections appear to exist vertically--within ministries and directorate generals at the central, regional, and local levels--than horizontally between different cities. Developing horizontal communication between cities could be very beneficial, not only for sharing techniques and approaches to urban environmental problems but also to promote decentralization. It could help cities develop a greater identity and better institutions within the Indonesian governmental system.

An environmental city-sharing program with some of the characteristics of the AID-sponsored city sharing program in the Philippines could further these objectives (USAID, undated, Kingsley and Mikelsons, 1991). This program involves the exchange of personnel among city governments to learn from each other's experience. AID-Philippines has contracted with the Philippine League of Cities--a trade organization of city officials--to administer this project. The program highlights exceptional projects in critical areas of local government administration. It is based on the premise that decentralization should come from below.

Steps in the process include: (1) a field visit to the city with the exceptional project to assemble materials related to the "model" and to meet the city officials involved; (2) preparation of case study materials on this city; (3) selection of participants from other cities and invitation to an initial workshop; (4) a four-day visit of this group to the profiled city, involving presentations by the local officials in charge based on workshop kits and tours of sites; (5) preparation of simple systems and procedures based on this case, a final report synthesizing the results of the experience, and a final debriefing session to USAID, the League of Cities, and the consultant that has helped organize this program.

By the end of the first contract with the League of Cities, the contract with AID-Philippines specifies that: (1) a minimum of 30 cities should have participate in the program as trainees; (2) at least 10 areas in city government administration should have been observed and studied; (3) at least 10 case studies and manuals should have been written and properly disseminated; and (4) an overall report should have synthesized and integrated the results of all the experiences.

Such a program would no doubt require some modifications for Indonesia. The existing Association of Municipalities (BKSAKSI) would require external support to carry

it out. In Indonesia, such a program could usefully be focussed on urban environmental infrastructure (broadly defined to include management of agencies, cost recovery, and decentralization) because the environment threatens to become the major problem in Indonesia's urban development.

The ADIPURA program (see Section 2) would offer considerable initial material on which to base such an environmental city-sharing program. The ADIPURA application involves the submission of 50 pages describing cities' efforts in the environment and site visits to those that seem to qualify. Fifty-seven cities applied in 1992 and 24 got an award. This is a good universe from which to choose both city environmental "success" stories to profile and cities interested in the environment that could be invited to participate.

Attachment 3.5
SERVICE PROVISION AND COST RECOVERY EXPERIENCE
IN SELECTED INDONESIAN CITIES

CITY	DESCRIPTION OF WATER PROVISION	COST RECOVERY EXPERIENCE
Bandung	<p>Forty percent of population receives piped water. Bandung Urban Development Project projects an increase to 60-70% under investments in process--trunk lines are finished and a treatment plant operational that will add 1,400 liters/second. The remaining population uses groundwater, which has dropped, some say, 35 meters in the last ten years. Households sink shallow wells. Hotels and factories sink deep wells and pump more water volume (4,200 liters/second) than the current system provides to all users (2,500 liters/second). During 3-4 driest months of the year, shallow wells dry up, and most low-income residents loose access to their water supply. Although water coverage will temporarily increase with the new plant, population growth threatens to reduce it by 2000 unless US \$600-700 million more invested to pump water from more distant sources (the Saguling, Cirata, and Jatiluhur Rivers) than the current source (the Cisnagkuy River, from which PDAM already draws the maximum); in this medium-run, the city faces a serious water shortage that will constrict economic growth, including that of its 34 universities, textile and other industries (which are located mainly in fringe areas that PDAM water does not reach), and housing developments.</p>	<p>PDAM operates the piped water system and a sewer system (see below). Overall, it breaks even on operation and maintenance with about rp. 12 billion in revenues and expenditures. However, it has invested US \$100 million in expanding the water system and US \$60 million in sewers. Debt service to begin in next 1-2 years will make their cash flow highly negative. More exact projections unavailable. Charging more for piped water drives the big water users--commerce and industry--to tap more groundwater, so PDAM keeps rates low. The province meters deep wells and charges industries and commerce for groundwater, but has set rates too low to discourage use. The rationale is that industry--rather than PDAM--"builds deep wells itself", so should be charged little. During dry season, PDAM tries to supply those on shallow wells using water trucks at a "social tariff", rp. 200/cubic meter. Many buy from water vendors, also, at much higher rates.</p>

Jakarta	<p>Sixty percent of Jakarta's water supply comes from PDAM Jaya. Leakage from this system is 40%. The rest is extracted from groundwater. Water consumption is about 15-17 cubic meters per second and is projected to increase to 42 cubic meters in 2005 and 63 in 2025. Average freshwater abstraction from the Jatiluhur Reservoir exceeds 200 meters per second, yet 95% goes to irrigation, particularly for double crop rice. Thus, intense competition occurs for water in Jabotabek. DKI encourages Jakarta area farmers to switch from high water rice cultivation to fruit and vegetable farming. Southward expansion of the city threatens the recharge zone for the primary city aquifer, despite plans that emphasize east-west expansion. Groundwater suffers from seawater intrusion and its level is dropping. Salination makes groundwater an unreliable source for much of north Jakarta, where chloride content exceeds 500 mg/liter. All eight rivers crossing Jakarta are heavily polluted, with faecal coliform concentrations in the range of 104-106 per 100 ml. downstream. PROKASIH has decreased pollution loadings from large industry into some of these rivers, but the overwhelming share comes from household waste and many small industries, which represent the great bulk of the city's 4,000 industrial polluters.</p>	
Padang	<p>PDAM Padang succeeds in providing water to most of the population through 23,000 connections to 109,000 houses, 300 public taps, and 7 trucks for distribution of water from public taps. Very few water vendors exist because of this coverage. PDAM Padang is also joint venturing with a private company to produce Aqua.</p>	<p>PDAM Padang uses Bank Pembangunan Daerah, Bank Central Asia, and Posdan Giro offices as payment points for water bills. The banks cover their service collection costs with compensating balances from PDAM at low interest rather than charges. Collection efficiency is about 90%.</p>
Surabaya		<p>Private companies have collected all PDAM bills, beginning in 1969. Currently, the city awards an area to each of 15 companies and pays an increasing share of the actual amounts collected as collection efficiency rises--from 0.5% of the total (under 70% of billings) to a high of 3.7% in the highest increment (92.5-95% of billings). Efficiency has reached 94%--a high figure relative to other cities--from 70%.</p>

Ujung Pandang	<p>PDAM piped water provides 650-1,000 cubic meters/second and covers 30% of the population. Leakage is 41%. The remaining 70% of the population gets water from water vendors (10-15%) and wells (55-60%), typically shallow for households and deep for commerce and industry. The ground water level is low and has sunk about 2 meters in the last 5 years. PDAM gets its supply for processing from the main river. This river's low level from August to November results in little or no running water to both households and business for much of this period, during which PDAM encourages water use only for drinking and delivers water by truck to households. Businesses typically use groundwater. Plans exist to build a new water-treatment plant and draw an additional 3,000 cubic meters/second by the year 2005. Until then, must deal with the severe limits of the existing system, and water shortages threaten to curb growth of universities, industries, and public housing.</p>	<p>PDAM charges rp. 120 per cubic meter--little relative to other Indonesian cities (PAM Jaya, for instance, charges about rp. 300). Water vendors charge their clients--mostly low-income people ten times this rate--rp. 1,250 per cubic meter. Despite the low price of PDAM water, collection efficiency is poor and revenue represents a low share of operating and maintenance costs, particularly for hotels and industry. The city council is discussing what organization should charge for water--KDAM, Dinas Kebersihan, or some other entity, although they have not considered privatization.</p>
---------------	--	--

CITY	DESCRIPTION OF SOLID WASTE COLLECTION	COST RECOVERY EXPERIENCE
Bandung	RW/RTs collect garbage from households. PDK (see "cost recovery") transports waste from LPA to LPS. Only city with a "sanitary landfill" in Indonesia. But this site, which opened in 1989, is about full. Most waste goes to a "controlled landfill"--a large valley with leachate ponds at the bottom. PDK also sweeps streets.	In 1985, responsibility shifted from Dinas Kebersihan to Perusahaan Daerah Kebersihan (PDK--a separate authority with the sole purpose of collecting solid waste and greater flexibility in collecting revenues and staffing). Before 1985 under DK, collection by RW/RTs covered only 10% of costs--rp. 15 million. Now, PDK revenues roughly cover its budget of rp. 3 billion. A DPK agent collects solid waste fees in the same office where electric bills are paid. This system and a campaign of the mayor have resulted in 90% efficiency, even solid-waste fee payment is voluntary. Households pay two garbage fees to both PDK and the RW/RT: PDK charges average of Rp. 1,000 per month; the RW/RTs collect from rp. 300-4,000 per month, averaging about rp. 1,250. Street sweeping remains subsidized by the city.

Jakarta	<p>In contrast to most cities, Jakarta packages solid waste, street sweeping, and transport to the disposal site. The Dinas Kebersihan and the RW/RTs handle roughly 90% of Jakarta--237 of a total 264 kelurahans: RW/RT collect waste from households; Dinas Kebersihan (DK) transports from the intermediate disposal sites (LPS) to landfills (LPA). Service varies from poor in many low-income areas (0-2 times per month) to fair in more affluent areas. Fourteen private companies provide these services in the remaining 27 kelurahans based on an order of the governor in 1990. Efficiency ranges from good for the largest--P.T. Sarana Organitama Resik (which services 14 kelurahans and also has private contracts with commercial establishments and neighborhoods dissatisfied with DK collection) to mediocre for many of the smaller companies. P.T. SOR uses plastic bags in areas with private contracts; all other collection by private companies and DK done without plastic bags. The distance of the main land fill in Bekasi from the city--25 kilometers--creates long a 3-hour round-trip commute. DK needs at least 2,000 trucks to handle the 20,000 cubic meters of garbage produced daily, but only 745 DK trucks work. Hence, DK transports only 60-80% of garbage to the landfill. Residents throw much of the rest thrown into ditches, rivers, and informal dumps.</p>	<p>RW/RTs collect roughly rp. 100 billion annually from households. Only about rp. 4.5 billion ends up in DK's annual budget, which totals roughly rp. 36 billion--hence, the DK budget receives about rp. 31.5 billion in subsidy. Hotels and commerce pay a small fraction (averaging about 20%) of cost and receive the greatest subsidies. Lack of funding contributes to DK's poor service, which, in turn, re-enforces poor payment.</p>
Padang	<p>Dinas Kebersihan and the RW/RTs split responsibilities for street sweeping and solid waste. DK sweeps major arterial and collector roads, employing 124 sweepers--mostly recent school drop-outs--on individual contracts. RW/RT sweeps 65km of 850 km of local roads daily and the balance on a less regular basis. DK collects solid waste from households in 91 of 193 kelurahans (mostly in the city center). RW/RTs serve the remaining 102, primarily the "surrounding" area. DK transports all household solid waste from LPS to the LPA. "controlled" open dump in Air Dingin, 17 kms from the city center. DK prohibits scavengers at LPS and licenses only 27 at the LPA.</p>	<p>Charge for solid waste collection and transport ranges from rp. 500/mo to rp. 150,000 for industrial sites. Supposedly, both DK and the RW/RTs use the same schedule of charges. DK has improved collection dramatically since 1987; revenues now covering 73% of costs, largely because of the technical competence of the city billing service (Dispenda). The Dispenda also began using the water bill collection system to charge for solid waste. However, PDAM covers only 21% of households.</p>

Surabaya	<p>RW/RTs collect solid waste from all households and small-scale commerce. Dinas Keperasian transports all solid waste from the LPS to the LPA--three controlled land fills. Five years ago, private firms transported 60% of this waste. The World Bank financed DK to purchase container trucks. Hence, DK has now reduced the private share to 15% and intends to eliminate it as future World Bank loans permit. The city requires large industrial and commercial enterprises to transport their waste directly to the LPAs. The city contracts street sweeping for specific lengths of roads to 24 companies. Both solid waste and street sweeping contracts last for 3 months. Although renewed regularly, this short term stops solid-waste transport companies from using these agreements as collateral for loans.</p>	<p>RW/RTs collect rp. 500-2,000 per household or commercial site. In addition, DK levies rp. 500-1,000 per household and varying charges for business, PDAM collects these charges jointly with the water bill with 94% efficiency and charges DK a 1% fee for this service. DK uses the RW/RTs to collect charges from households unconnected to PDAM water, and pays them a 2% fee. Against much expert advice, DK has purchased an incinerator plant for a total of rp. 35 billion--about 15 times its annual budget--with a capacity of about 50,000/tons per year, and now operates it.</p>
Ujung Pandang	<p>Until this year, DK attempted to collect and charge for garbage from households. These attempts failed. As of February 1992, Dinas Keperasian has agreed that RW/RTs perform all primary collection. DK transports from roughly 100 LPS to a landfill about 7 kilometers from the city center in Tanjung Bunga. The construction of a resort near this site will displace the landfill to Antong, which lies 12 kilometers from the city. DK's fleet of 92 trucks is old and in disrepair--only about 50 trucks operate. Hence, DK fails to transport much garbage from the LPSs to the LPA. Residents throw much of the uncollected trash into the ocean and rivers. The ethnic groups composing most of Ujung Pandang have, it is said, poor health habits including littering. The Ministry of Population and the Environment has named Ujung Pandang the dirtiest city in Indonesia for the last two years, causing considerable local anger and stimulating a desire to do better.</p>	<p>Under the new arrangement, the RW/RTs collect fees for solid waste from households and businesses, keep 40%, and transfer 60% to DK. Although the new system is untested, the DK received only about 20% of its total budget of rp. 1.2 billion in revenue last year, largely from markets and local taxes, rather than from fees for garbage collection.</p>

CITY	DESCRIPTION OF WASTE WATER DISPOSAL	COST RECOVERY EXPERIENCE
Bandung	<p>In 1980s, PDAM extended an old Dutch sewer system in the western area of the city to the east to cover a total of 40% of the city's population--the highest coverage of any Indonesian city. A sewage treatment plant with a capacity to treat 25% of the population of 2 million is nearing completion. Much of the remaining 60% of households use individual or collective facilities that drain into septic tanks. Some do not and discharge directly into the river. The very high population density of Bandung--averaging 132 people/hectar (relative to 110 people/hectar in Jakarta) and as high as 500 people/hectar--forces kampung dwellers to locate their septic tanks less than 10 meters from shallow wells, causing the city's greatest health problem and polluting rivers. Bandung's kampungs experience periodic outbreaks of intestinal diseases, while roughly half of the entire population drinks heavily polluted groundwater (see "Water Provision--Bandung"). Many residents have little awareness of the connection between water pollution and disease. Industrial pollution--90% from local textile plants--further decreases river water quality--BOD measurements indicate that the river is more heavily polluted than the raw sewage that PDAM dumps into the river. Much new housing development on the urban fringe occurs outside the reach of trunk sewer lines. Even new housing developments within reach and large existing properties in the central city neglect to connect to sewers because of the expense, while no regulations require it. Although sewer coverage and treatment is good relative to other Indonesian cities, population growth threatens it.</p> <p>erode erode reduce</p>	<p>PDAM places a 30% surcharge on water bills as a sewer fee. Some of the biggest users--large hotels and commercial establishments--avoid paying their share of both water and sewer by using deep wells for much of their water supply. Currently, PDAM breaks even on operation and maintenance costs for sewer and water with a budget of rp. 12 billion (see Bandung--water provision). However, debt service--partly from a US \$60 million loan for the new sewer treatment plant--starts in the next year and will make its cash flow negative.</p>

Jakarta	<p>Public sewers exist for only a small portion of central Jakarta. Typically, households discharge kitchen, bathroom, and laundry grey water into ditches. 68% of the population use individual toilets connected to septic tanks; 17 percent use latrines that discharge to nearby ditches; 6 percent use public toilets, usually connected to septic tanks; and 9 percent have no facilities. High population density forces location of septic tanks near shallow wells increasing contamination of wells and secondary aquifers, especially when pit latrines overflow during floods. All 5% of public housing is located on low lying fringe areas subject to such floods. Despite investments in public toilets and other community infrastructure under KIP--which has benefitted 3 million Jakartans--worm infestation, typhoid and paratyphoid, diarrhea, and skin diseases are common in kampungs. Although PROKASIH has reduced pollution loadings into Jabotabek rivers from large industry, unchecked discharges from 4,000 small industries and households continue to make these rivers biologically dead downstream and represent the great bulk of their pollutants.</p>	
Padang	<p>Of the 109,000 households in Kotamadya Padang, 71,000 (65%) have WCs with septic tanks, 25,000 (23%) have WCs emptying directly to rivers, and 13,000 (12%) have WCs with drainage canals. No off-site treatment facilities exist. DK owns two septic tank de-sludging trucks and leases them to the private sector for operation. Operating at full capacity, these trucks could service only 3,600 houses--5% of the city--per year. Hence, the overwhelming share manually de-sludge dispose into the river.</p>	<p>DK has leased the two de-sludging trucks to a private company at rp. 15 million per year. The private company pays for O & M and charges customers rp. 15,000/house. Most customers are located in residential estates and the central city area. The companies dump the sludge in an open area near the LPA. The city gives high priority to construction of a treatment plant for septic tank sludge in the IUIDP-PJM. DK has dramatically increased revenues in its main activity--solid waste collection--to cover 73% of its costs (see "Solid waste--Padang.")</p>

Surabaya	<p>Currently, Surabaya has no public sewage treatment-CHECK. Households channel the great bulk of sewage into septic tanks and manually empty the sludge into rivers. Ten private companies de-sludge only about 8% of total Surabaya human waste and carry an average of 2,500 m³/month to the DK 200 m³/day treatment plant at LPA Keputih, East Surabaya. The city requires a light industrial estate with 248 companies and 38,000 workers to treat its effluent. The plant's operates at a capacity of 6,000 m³/day. Pre-treatment at individual industrial sites is often required before effluent is accepted to the common system. The Surabaya IUIDP Project includes a human waste treatment pilot project involving rehabilitation of an existing collection network and development of a 200 m³/day sewage treatment plant in West Surabaya.</p>	<p>Private septic tank desludging companies rates average about rp. 25,000 per trip (carrying about 2.3 m³ of septage). Their small market share--only 8% of household waste--indicates that their fees far exceed the willingness of most households to pay. DK charges private septic tankers 1,000/m³ for treatment and the Dispenda charges them a licensing fee of rp. 15,000/year/truck. The processing of human waste represents a small part of DK's costs, which are covered mainly by fees for solid waste collection.</p>
Ujung Pandang	<p>The city has no wastewater treatment. A drainage system consisting of canals, main ditches, and small ditches bordering houses covers 53% of the population. Dinas Kepersian maintains it minimally. Household and businesses with access to drainage discharge waste water directly without treatment. The remaining 47% of the population--including the entire eastern area of the city--has no drainage system and discharges largely into septic tanks. The city is contemplating building a drainage system for this uncovered portion at a cost of rp. \$16 billion, but has yet to arrange financing. Dinas Kepersian charges rp. 15,000 to de-sludge septic tanks, transports the sludge to three ponds, and treats them with lyme and aeration. This charge exceeds the willingness of the great bulk of households to pay, which manually clean and drain septic tanks into ditches, if available. Diarrhea and skin disease are endemic in many kampung areas and infant mortality high. Pollution of rivers and the ocean threatens plans for construction of resorts.</p>	<p>The drainage system and de-sludging represent a small fraction of DK's costs. Nonetheless, DK has no means of charging for maintenance of the drainage system. Its rp. 15,000 charge for de-sludging of septic tanks prices most households out of this service. DK recovers a small fraction--about 20%--of its operation and maintenance costs from its main activity--solid waste collection.</p>