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END-OF-CONTRACT FINAL REPORT

Volume I: Achieving the Project Purpose

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Prepared by:
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PREFACE

Two roads diverged in a wood, and I-
I took the one less traveled by
And that has made all the difference.
"The Road Not Taken"
Robert Frost, 1916

Summarizing and distilling the experiences of any development project to provide both insight and documentation is a daunting task. Insight requires interpretation, reflection, intuition, and imagination to find patterns in seemingly unconnected events and an underlying sense of purpose. Documentation demands objectively verifiable indicators that validate the adequacy of means and gauge the extent of achievement of clearly stated objectives.

Insights without documentation are easily dismissed as anecdotal, regardless of how profound or valid they may be. Documentation without insights is lifeless and ritualistic, the product of specialists without vision, yet the cornerstone of accountability and performance.

Attempting to provide both insight and documentation for a project of the scope, complexity, longevity, and size of the Local Development II Provincial Project (LD II-P) has been a formidable but enjoyable challenge. This project and its predecessor, the Basic Village Services Project (BVS), is AID's largest investment in broad-based, locally chosen infrastructure projects (over 13,000 of them) to improve access and delivery of essential services, and thus the quality of life of over 30 million people. This infrastructure is in place and rendering services. Perhaps, at times, not to the standards of the "developed" countries, but rendering useful service nonetheless. The smiles and gratitude of village dwellers greeting visitors identified with the Project are genuine, and a constant reminder of what LD II-P is all about.

But the infrastructure in place is only half the story. It is simply a means to work towards something more important but less tangible: a sustainable, participatory process of service provision. To work with counterparts on a daily basis to find better ways of doing things is "to take the road less-traveled". Honestly attempting to build in sustainability is likely to show the awkwardness of the learner and at times, perhaps, the ineptness of the teacher. This is an imperfect process but, as a Contractor, we would not have it any other way; we would not take the traveled road.

Frost's verses serve as a metaphor for how we approached this report. While Volume Two documents contractor's completion of "project outputs" as contracted for, Volume One set out to gauge achievement of the project purpose, our "insights".

What were the constraints of the project environment? What "tools" did we use, where, how, what was achieved, what did not work, how can it be done better in the future? Volume One of this report focuses on these broad questions. It aims for a wider readership. If development practitioners can find useful "tools" to adapt to other project environments and our insights and interpretations find their way in future project designs, we will feel that taking the road less traveled made all the difference. Whether we succeeded or not, we leave for the readers to judge...

FOREWORD

This report is the product of the collective efforts of many people. The accomplishments documented herein were the work of local and expatriate professionals, both short and long-term, supported by a competent staff. The success of this project would have been impossible without their individual contributions. Although this report cannot do justice to their individual work, we hope that they see enough of their work reflected here.

Similarly, the actual writing and production of this report was a collective enterprise. It was an iterative process of drafts, discussions, analyses, interpretations, and revisions. This intellectual journey, sifting through project activities and their meaning, was both stimulating and demanding; with extended discussions being frequently tempered by the realities of deadlines. In different ways, many persons helped with the report and not all can be thanked individually. Thus, the persons named below represent the efforts of many others.

MS, our editor, endured many changes in outlines and numerous revisions, always asking hard questions to clarify our thinking. RA later assumed this task. PH undertook major responsibilities for writing, guiding the analysis, and generating the data. He was assisted by SH, RG, and MH ("Mishmish"). MA, as usual, got his own work done and more, assisting with overall project management, while the rest of the team was in "the salt mines", writing sections of the report. TS, with his detailed knowledge of the inner workings of local government, provided the specificity on which to anchor our conclusions, besides doing a substantial part of the writing. WK, with his stateside experience in wastewater plants, provided useful and vivid insights to the local process of institutionalization. SR worked on the governorate profiles included in Volume II, as well as numerous iterations of the logframes for each section. TAH scrutinized final copy and managed the production of Volume II. SH and SW, in Publications, worked through and kept straight many versions of text and tables. USAID/LAD read the draft report and clarified the contractual terminology and dates of projects and agreements, especially for Section I.

In addition to the technical assistance team, the report largely reflects the work performed by our counterparts at the central level and in the provincial governorates. Their dedication, under generally difficult working conditions, made this project possible. Through our combined efforts we hope to have improved the life chances of residents of rural Egypt.

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Table of Contents

Executive Summary i

Section I: Introduction I.1
- Background I. 1
- USAID Investment in Provincial Infrastructure I. 6
- Purpose and Organization of the Report I. 9

Section II: Project Environment and Contractor Strategy II.1
- Overview II. 1
- Project Environment II. 1
- BAB III Planning/Process II. 8
- Contractor Strategy II. 13
- Summary II. 17

Section III: Planning III. 1
- Overview III. 1
- Background III. 3
- Constraints III. 6
- Objectives III. 7
- Strategy III. 7
- Support of LD II Block Grant Program III. 9
- Sector Strategic Planning III. 19
- Spatial Planning III. 25
- Planning Results III. 32
- Governorate Performance III. 34
- Planning Achievements III. 40
- Lessons Learned in Improving the Planning Process III. 41
- Recommendations for Future Technical Assistance III. 44
- Recommendations for Future Local Development Program Design III. 44

Section IV: Implementation IV. 1
- Overview IV. 1
- Background and Constraints IV. 3
- Implementation Strategy IV. 7
- Major Activities IV. 7
- Implementation IV. 34
- Results IV. 41
- Lessons Learned IV. 42

Section V: Improving Operations And Maintenance V. 1
- Overview V. 1
- Constraints V. 4
- Objectives and Strategy V. 5
- Activities V. 6
- Summary V. 32

Section VI: Project Monitoring, Management Information Systems and Finance VI. 1
Overview VI. 1
Monitoring, Management Information Systems VI. 3
Implementation Strategy
Major Activities
Results
Recommendations
Fund and Cash Management VI. 34
Background
Activities
Achievements and Lessons

Section VII: Conclusions and Recommendations VII. 1
Summary VII. 1
Conclusions VII. 4
Design Elements for Improving Local Governance Through Municipal Services Provision VII. 10
Epilogue VII. 14

Glossary G. 1

Tables

Table I. 1 BVS and LD II Sector Block Grant Distribution I. 11
Table I. 2 Geographic Distribution of LD II Infrastructure I. 12

Table III. 1 Bab III and Local Development Provincial Allocations III. 4
Table III. 2 Orientation Program Participants III.14
Table III. 3 Training Courses by Major Activity III. 17
Table III. 4 Subproject Portfolio Turn-over: Canceled, Added and Changed Subprojects III. 18
Table III. 5 Implementation Status of Strategic Sector Plans at III. 24
Table III. 6 Access to Public Services in Rural Areas of Beni Suef Governorate, by Markaz III. 30
Table III. 7 Plan Review Index Needs Assessment III. 36
Table III. 8 Plan Review Index Design and Costing III. 37
Table III. 9 Plan Review Index Implementation Planning III. 38
Table III. 10 Plan Review Overall Planning Capacity III. 39

Table IV. 1 BVS Block Grant Sector Distribution IV. 3
Table IV .2 Importance and Status of Constraints and Key Problems IV. 6
Table IV. 3 Publications Distributed to Governorates IV. 10
Table IV. 4 Training Courses by Major Activity IV. 11
Table IV. 5 Level of Effort by Governorate January 1990-June 1992 IV. 12
Table IV. 6 Good Examples Subproject Design IV. 18
Table IV. 7 Governorate Performance Index IV. 19
Table IV. 8 Technical Evaluation of Offers IV. 23
Table IV. 9 End of Project Status, Wastewater Projects IV. 41
Table IV. 9 End of Project Status, Wastewater Project (Continued) IV. 42
Table IV. 10 Principal Factors in Technology Choice IV. 43

Table V. 1	LD II-P Agreement O&M Funds for Provincial Governorates by Fiscal Year	V. 7
Table V. 2	Conventional and Agreement Bab II Funds	V. 8
Table V. 3	Agreement O&M Fund Expenditures	V. 9
Table V. 4	Impact of VCW Operational Assistance	V. 13
Table V. 5	Breakdowns & Service Delivery Indicators	V. 23
Table V. 6	Technical Assistance Visits	V. 25
Table V. 7	Wastewater Treatment Technology Ease of Operation	V. 26
Table VI. 1	Monitoring Systems And Procedures Training	VI. 8
Table VI. 2	Monitoring Procedures Publications	VI. 9
Table VI. 3	IS Planning And Management Publications	VI. 14
Table VI. 4	IS Progress 1988-92	VI. 20
Table VI. 5	IS System Governorate Performance and Status	VI. 22
Table VI. 6	IS Fourth-Cycle Subprojects Status	VI. 25
Table VII. 1	Rural Beneficiaries of LD II-P	VII. 17
Table VII. 2	Cumulative Training by Governorate and Section	VII. 18
Table VII. 3	Training Courses Developed by Sector	VII. 19
Table VII. 4	LD II-P Achievements	VII. 20
Table VII. 4	LD II-P Achievements (Continued)	VII. 21

Figures

Figure E. 1	The Enterprise Model Applied to Municapal Water Service Provision	xvi
Figure I. 1	Contractor's Logframe of Local Development II-P	I. 4
Figure I. 2	LD II-P Geographic Coverage	I.7
Figure II. 1	Levels of Provincial Local Administration	II. 2
Figure II. 2	Schematic Structure of Local Council	II. 2
Figure II. 3	Village Council Executive Council Structure	II. 4
Figure II. 4	Markaz/City Executive Council Structure	II. 5
Figure II. 5	Governorate Executive Council Structure	II. 6
Figure II. 6	Bab III Localities Program: Planning Process	II. 9
Figure III.1	Contractor's Logframe for Improvement of Local Planning Capacity	III. 2
Figure III. 2	LD II/Bab III Funds, by Governorate (1986-98)	III. 5
Figure III. 3	Roles of Government Units in the Planning Cycle	III. 10
Figure III. 4	Stages of the Planning Process	III. 12
Figure III. 5	Structure of the Planning Form	III. 14
Figure IV. 1	Contractor's Logframe of Infrastructure Project Implementation	IV. 2
Figure IV. 2	Phase 2 Implementation	IV. 8
Figure IV. 3	Training Effort and Field TA Breakdowns by Implementation Phase	IV. 14
Figure IV. 4	Sector Investment by Allocation and Size	IV. 31
Figure V. 1	Model of Operations and Maintenance System	V. 2
Figure V. 2	O&M Organization and Management Structure	V. 15

Figure V. 3	Distribution of 6,785 Participant Days in WWTP O&M Courses	V. 26
Figure VI. 1	Contractor's Logframe of Management Information System	VI. 2
Figure VI. 2	Development of Monitoring and Evaluation Functions in Governorates Major Activities	VI. 7
Figure VI. 3	Developing the QPR Subproject Monitoring Report	VI. 11
Figure VI. 4	Key Features of the QPR Software and Reporting System	VI. 12
Figure VI. 5	Development and Implementation Cycle for Local Revenue and Water Billing	VI. 17
Figure VII. 1	The Enterprise Model Applied to Municipal Water Service Provision	VII. 16

Executive Summary

This technical assistance contract supported the USAID/Cairo Mission's Local Development II Program (LD II) from February 1988 through December 1992. This End-of-Contract Report documents work done by the technical contractor on the design and delivery of systems of planning, implementation, operations and maintenance, monitoring, and management which local government units (LGUs) could use to improve local municipal service delivery. These systems helped achieve the LD II Program infrastructure outputs. Highlights of these infrastructure outputs are:

Infrastructure Outputs

- Over 13,000 locally planned, implemented, and managed local municipal services projects
- These projects are serving over 30 million rural -beneficiaries
- These beneficiaries reside in over 3,000 hamlets belonging to 976 village units, in twenty-two provincial governorates spread over a territory of more than one million square kilometers
- Benefits of this Project have reached over 95 percent of rural residents in provincial Egypt, or over 30 million people.
- The vast majority of these locally-chosen municipal projects *are* rendering service, as documented by a national stratified random sample of subprojects.

This was the largest, broadest-based rural infrastructure program ever undertaken by AID, with *direct* benefits actually reaching the often forgotten rural populations. *Indirect benefits*, yet unmeasured, include the employment generation (directly employed skilled and unskilled labor, the labor coefficients of construction materials, equipment, and supplies) and the multiplier effects in the local economies.

Contract Outputs

The technical support role provided to the Mission's efforts has made the system work and deliver benefits where they are most needed. Highlights of the contract outputs include:

- An average field level of effort of 15 *person/months, per month*, or 36 percent of total professional LOE delivered to the 22 provincial governorates
- An average of *74 field trips per month* organized and carried out to provide assistance to LGUs
- Publication of *103 Manuals, Handbooks, and Guidelines* (over 90% in Arabic) as scheduled deliverables. These

embodied the "tools" given to LGUs to support the Project

- Publication of *81 studies and reports* (English and Arabic) pertaining to assessments, policy discussions, findings, case studies, and project management support
- Some *42,300 copies of publications* delivered to LGUs
- Approximately *4,800 copies of project newsletters* delivered to governorates and marakez
- *Fifty-five Monthly Field Trip Reports* delivered to the Mission for appraisal of field activities
- Seven *Quarterly Progress Reports* summarizing significant project activities, status of project outputs, implementation of work plan activities, and assessments of governorate performance
- Over *87,000 person/days of training* delivered, leaving behind a critical mass of trained cadres in the provincial governorates. Table VII.2 documents this
- Almost *89,000 person/days of orientations* delivered to LGU officials in the governorates on the four LD II-P funding cycle requirements and guidelines. Table VII.3 presents the data

LD II-P Complexity

Yet, direct support of the Program infrastructure investment is only part of the story. Embedded in LD II-P were at least four "projects":

- a complex provincial wastewater program devoted to testing selected technologies to meet Law No. 48 requirements
- a national O&M planning, budgeting, and management system for infrastructure, rolling stock, and equipment
- a national human resources development and institutionalization program
- a national management information systems program

Each of these activities could stand on its own as a usual "project", national in scope. In addition, were one to add the key pilot interventions we successfully designed and implemented, the count of embedded projects would be even higher. These simple *activities*, in the parsimonious language of the contractor's work plan would become "projects" on their own. Among these, one could include the following:

- Sector strategic plans for roads, water, and wastewater
- Town master plan development (village physical planning)

- Geographic Information Systems (GIS) in North Sinai governorate
- Service access and coverage indicator system for Beni Suef governorate
- Integrated O&M systems in Minya and Gharbiya governorates
- Subproject monitoring systems in Kafr El-Sheikh governorate

Thus, LD II-P could be thought of as composed of four national projects and at least six additional local or sectorial "activities", for a total of ten distinct projects.

Given the project complexity, its broad-based delivery of benefits to needy populations, and the programmatic, logistical, and management challenges, Chemonics and its subcontractors are proud to have rendered support to this successful program.

Organization of End-of-Contract Report

This End-of-Contract Report is organized around three volumes:

- Volume One documents the technical contractor's activities towards achievement of the project purpose. It documents selected technical approaches, systems and procedures, the "tools" developed, tested and used in our technical work in LD II-P
- Volume Two documents the contract outputs in terms of training, technical assistance, and publications deliverables. The volume also includes a discussion of the infrastructure put in place by the Project and a profile of the provincial governorates.
- Volume Three presents an annotated bibliography of LD II-P publications.

Each of these volumes is self-contained and can be read separately. In addition to these three written volumes, this End-of-Contract Report includes the following machine-readable databases:

- The subproject monitoring database on the implementation status of the infrastructure (the *QPR* database)
- The training database, with course and participant data.
- The subproject field visitation database.

The machine-readable files contain both the applications software (code), and data files. Written system documentation is also included for reference.

Volume One Contents

The remainder of this executive summary describes the contents of Volume One pertaining to the achievement of the project purpose.

Section I of this volume presents an overview of the provincial local service infrastructure funded by USAID through the Basic Village Services Project (BVS) and the Local Development II Provincial Project. The section includes a discussion of major project themes on decentralization, popular participation, local revenue mobilization and retention, and sustainability pursued by USAID's investment in provincial infrastructure. The contractor's logframe for implementation of the project and the organization of the report are also presented.

Section II discusses the project environment, especially the local administration system in which LD II-P operated. The section also includes a discussion of the capital budgeting system in Egypt in terms of the centrally-controlled, *ministerial program*, and the localities or *municipalities program* of Bab III, as well as the contractor's strategy to implement the technical assistance contract.

Section III is organized around the contractor's rendition of a logframe to improve the planning capacity of local government units (LGUs). Contractor-designed and implemented inputs are subsumed in three broad types:

- Funding cycle inputs: guidelines, orientations, planning forms, plan reviews, and sector guidelines

- Sector strategig planning inputs: TORs, bid evaluation assistance, contract management, quality assurance, sector strategy statements, and operationalization of existing sector master plans in the governorates

- Design and implementation of pilots providing planning tools to the governorates: geographic information systems (GIS), and service access and delivery indicator systems

These contractor-designed inputs supported the following outputs: a *system* of subproject planning, a block grant allocation formula more reflective of actual needs, governorate sector strategic plans, spatial planning tools, publications (manuals, handbooks, gidelines, trainers' guides, etc.), and trained local government personnel.

The section also contains recommendations for technical assistance priorities and future project design considerations.

Section IV summarizes the background, strategy, and activities undertaken by the contractor to improve project implementation and to increase the capacity of local government to implement infrastructure projects from the design phase through construction. A contractor's logframe summarizes the inputs and outputs designed and implemented to improve local implementation capacity. Major implementation outputs were:

- Substantially enhanced technical capacity of governorate and marakez engineering staffs in all phases of implementation

- Improved tools for implementation ranging from materials and environmental test equipment to reference handbooks

- A working, low-cost, governorate designed and implemented project site visit implementation monitoring system which can be replicated

- A rural wastewater treatment program underway or operating in fourteen governorates

Section V summarizes the contractor's strategy, activities, and accomplishments in achieving the project purpose of improving local maintenance capacity. The discussion is organized around a logframe for summarizing our inputs and outputs in the operations and maintenance (O&M) area. Major outputs documented in the section include:

- An O&M planning and budgeting system operating nationally in all 22 provincial governorates

- A substantial increase in the number of village maintenance facilities performing O&M functions, the result of our operationalization efforts

- A spare parts management system working in 16 governorates

- An O&M national monitoring system in place for all 22 provincial governorates, providing quarterly reports to the MLA on maintenance activity, equipment utilization and availability, and O&M budget expenditures

- Working, successful, replicable, governorate integrated maintenance systems in two pilot governorates, Minya ands Gharbiya

The section also contains a discussion of contractor-designed activities to enhance financial sustainability through improved quality and efficiency of service delivery, and to improve service delivery by increasing the accountability of service delivery organizations. These activities are subsumed under a *"utility model"*, by which we mean the creation of relatively autonomous organizations of local municipal services provision. The incipient activities pioneered under this rubric are incorporated in our conclusions and recommendations into a broader conceptual framework of *enterprise* development for local municipal services.

Section VI discusses project monitoring, management information systems, and finance. The contractor's logframe for improving the capacity of LGUs in these areas is used to summarize our interventions and results. Among the key outputs in this area are:

- A fully automated MIS for recording and reporting information on project implementation operating in the 22 provincial governorates and at the MLA Amana. The sytem provides management information to local managers and monitoring information to central authorities

- Improved monitoring procedures and practices in all governorates and a low-cost, replicable, pilot site-visit monitoring system appropriate to governorate resources

- Development and installation of software improving the efficiency of local revenue collection in water-billing and local license fees

- Systems for fund and cash management installed and operating in all governorates

The section also provides recommendations for priorities in technical assistance and future design of interventions in this area.

Section VII summarizes our broad conclusions, distills the lessons that we have learned, and, most importantly, explores project design elements that the Mission may consider in future programs. These project design elements are clustered around a conceptual model that organizes local municipal services as ***enterprises*** that are held accountable at

the local level. When combined with the needed re-structuring of the ***environment*** in which these enterprises operate, the proposed conceptual model is shown to be responsive to the themes of decentralization, institutional accountability, and pluralism discussed in the Introduction (Section I).

CONCLUSIONS

Successful Completion of Project Purpose

The project has successfully achieved its designed project purpose. The approaches, systems, and procedures developed by LD II-P have been successful in improving the local capacity to plan, implement and maintain locally chosen basic infrastructure projects in the following ways:

- The codification and documentation of tools for sector and subproject planning, model terms of reference (TORs) and contracts, construction supervision, operations and maintenance (O&M), and management information systems (MIS) has been achieved
- The vast diffusion of these tools through training and technical assistance have promulgated them
- The actual use of these tools by LGUs, albeit uneven at times, is also documented in our results and analysis of governorate performance

The data presented in Volume Two support the first two claims. The periodic monitoring and extensive data analysis of governorate performance in our *Quarterly Progress Reports* and future external evaluations will validate the third claim.

Much progress has also been achieved in developing the overall management capacity of LGUs and a sense of ownership in the LD II-P project portfolio, as documented by the focus group interviews in Fayoum and Daqahliya governorates. Again, external evaluators will need to validate and elaborate on these statements.

The accomplishments (detailed in Table VII.4 of Section VII) are, overall, noteworthy. An exception is the improvement in local capacity to finance. Improving local capacity to finance local infrastructure has been fulfilled only in the sense that there is improved capacity in subproject cost estimation and budgeting. This, in itself, is not insignificant. Additionally, our work in providing tools to governorates to provide a framework for sector-wide program management and budgeting through the preparation of sector strategic plans can be viewed in this context. Likewise, the LD II-P cash management system is responsive to the project purpose of

improving local financial capacity. However, governorate strategic plans for the roads sector have been completed in three governorates and as many as eleven governorates will be issuing local tenders for strategic plans for the water/wastewater sectors by the time LD II-P closes. Thus, this mechanism to improve sector-wide program management and budgeting capability is not yet in place.

Likewise, the LD II-P cash management system through which LGUs could generate additional resources, and gain relevant financial management experience, will cease its usefulness once GOE Bab III budget procedures are used to channel funds from the central level to LGUs to finance local infrastructure.

Larger issues of project design, however, relate to the slow rate of achievement in local financial capability, relative to progress in other functional areas of the project purpose. These issues are discussed in our next broad conclusion.

The current project design has outlived its useful purposes

The program has been successful in improving the basic infrastructure needed to provide service delivery and in developing the local capacity of units to plan, implement, and maintain these services. However, the linkages, assumed by the design, between decentralization and improved local capacity have not occurred. Decentralization, in the form of devolution of authorities to local governments, has not naturally followed improved local capacities in planning, implementing and maintaining basic infrastructure service projects.

Another implicit assumption of the original project design has been invalidated. Significant resource mobilization (LRM) to recover the O&M costs and, eventually, some capital costs has not followed improved local capacities in planning or implementation of locally-chosen subprojects.

Central control of tariff-setting authorities for user fees collected for the provision of local municipal services such as water and wastewater remains strong in Egypt and, it is frequently argued, is an impediment to cost-recovery and further local resource mobilization[1]. Larger issues of the organizational landscape of local municipal service

[1]We do not believe that "conditionality agreements" by which policy changes are induced (in this case, higher user fees) through tiered, *tranche disbursements*, is a useful policy instrument to effect cost-recovery in the provion of local municipal services provision. Uninformed policy dialogue inis area is likely to burden local governments with users' service accountabid performance requirements for which they are largely unprepared, as argued in our next general conclusion.

provision, gleaned from our perspective as contractors are, however, at stake. Based on what we have learned over the last decade we conclude that a different approach is required to further decentralization, LRM, and local governance in Egypt.

Thus, we support the Mission's decision to terminate the LD II Program. As the Mission re-structures its program portfolio around more focused strategic goals and objectives in response to accountability, staffing concerns, and performance management of results, the "fit" of LD II, as currently designed, comes into question. The many "themes" embedded in the current Program need to be more sharply focused around the Mission's strategic goals and objectives.

The provision of local municipal services is not organized properly

Among the lessons learned during implementation of LD II-P are that:

- **The planning, budgeting, monitoring, and management of the actual physical service delivery systems are fragmented.** The National Organization for Potable Water and Sanitary Drainage (NOPWASD) is heavily involved in the planning and implementation of water and wastewater treatment plants and mains all over Egypt. Governorates, on the other hand, must plan the local components of water and wastewater systems in virtual ignorance of NOPWASD design and implementation plans

Capital budgeting for infrastructure investment operates through multiple programs (Bab III ministerial, Bab III municipalities, a variety of local special funds, LD II, and other donors') in the absence of governorate structures capable of integrating these multiple sources of funding into coherent sector development strategies.

The monitoring of water meter readings and recording of connections, for example, is usually the responsibility of the councils. This is separated from the utility operations so that it is not unusual for the utility divisions not to know the number of connections, average consumption, or revenues connected to their operations. Therefore, there is no system performance monitoring.

Technical management responsibility may also be fragmented, either between sourcework and network managers or between segments of a supply system which contains more than one sourcework.

There is no unified planning and budgetary system for utilities, even at the governorate level. Existing accounting systems would not enable one to compare the efficiency of separate integral water supply systems, even if the data were available.

O&M finance is equally fragmented and primarily under central authority. Utility rates are controlled by the central government and thes revenues are largely transmitted to the central government where they are subject to inter-sectorial and inter-governorate transfers. Some of these consequences are that local councils have no incentive to collect revenues and that local utilities have no incentive to improve efficiencies.

- **There is no national standard set of geocodes, names of population settlements, administrative boundaries, and hierarchies.** We have documented in this report that the listings from the 1976 or 1986 census data from CAPMAS, the Central Agency for Popular Mobilization and Statistics (the "Census Bureau" of Egypt), did not match in many names or hierarchical jurisdictions the "common knowledge" in the governorates. The current system of geocodes and names (English and Arabic) developed by Chemonics for all twenty-two provincial governorates, available as a database and used for our work, is perhaps the most complete set available. But it is at best an approximation

Two experiences support this assertion, one in Beni Suef governorate, and the other in Damietta governorate. The former dealt with the development of service access and delivery indicators. The latter, in Damietta, dealt with the development of a wastewater sector strategic plan.

The common element of these experiences in LD II-P is that governorates do not have access to nor do they have the resources to invest in basic data acquisition that is normally a "given" in other project environments or countries. Without a nationally-supplied framework of consistent names and codes for jurisdictions and basic population data at a suitable level of aggregation, LGUs lack a fundamental tool to determine who has or does not have access to basic services and where the pockets of need are. Local municipal services need basic data on housing and population characteristics to identify users's profiles, plan services accordingly, and delineate approppriate boundaries for their "service districts". Currently, these data are unavailable to them.

Authority devolution for local municipal services provision is undesirable at this stage.

If one accepts the analysis that the organization of local municipal services provision is perversely, albeit unintentionally, organized against institutional accountability and performance, then devolution of authority to local governments for these services is undesirable at this point in time.

Decentralization driven from the top will find LGUs without adequate management structures in place to cope with municipal service delivery.
The lack of performing, locally accountable municipal services organizations over which users have a sense of ownership and control is a fairly pervasive feature of the organizational landscape in Egypt. So is the lack of transparency of decison-making in Bab III capital budget allocations. Under these conditions, consumer indifference, apathy, or withdrawal are induced as rational, adaptive, individual behaviors.

From the management point of view, central control of municipal service provision has inhibited the development of viable, accountable local service delivery organizations. Devolution of authorities cannot be accomplished until these organizational requirements are in place at the local level.

Financial sustainability for local municipal service provision cannot be accomplished under the current organizational structures

Under the current organizational framework for local municipal services provision, the profound realities of meeting service provision costs have not been confronted at the local level, nor are they likely to be. Current systems of accounting do not produce meaningful cost center data. Except for our work in provincial Egypt, O&M plans and budgets are generally not based on technical requirements. Neither are these O&M costs assigned to meaningful enterprise level centers.

Although it is highly unlikely that local resources will suffice to make basic service delivery locally sustainable in the financial sense, the current structures perpetuate a system of dependency on external funding without incentives for LRM.

One may also add that unrealistic national standards, such as those embedded in Law No. 48, restrict the range of

technologies for wastewater treatment and drive the cost towards unsustainability[2].

Independent professional associations do not articulate interests or foster professional development in local governance or management of municipal service delivery systems

In Egypt, unlike most of Central or South American countries, local mayors (markaz and city chiefs) are not organized in professional associations[3]. Thus, the organizational framework for exchanging experiences and solutions, debating problems, articulating common positions, etc., is missing[4].

Much the same analysis applies to water plant managers, O&M and HRD specialists, MIS personnel, and the whole array of professionals and technicians who could support local government. Although it is unrealistic to expect that the professional association landscape can change much in the short run, selected support of key such organizations can provide a more sustainable institutional anchor to the short-term nature of project interventions.

Fostering greater institutional pluralism through professional local government management associations remains a viable agenda for improving local governance in Egypt.

These broad conclusions of successful achievement of the project purpose as designed, the need for new project designs, the ineffective organization of local municipal services, the undesirability of authority devolution for local municipal services provision, financial unsustainability of the current system, and absence of independent profeesional associations

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[2]The estimated funding requirements derived from the LD II-P tested technologies for wastewater treatment to meet these standards are staggering, especially if one were to apply them to countries such as India or China. Clearly, while more approppriate technologies need to be tested, there is a need for the donor community to engage in a policy dialogue with the GOE on these standards. As contractors, we have delivered the numbers to make this dialogue more meaningful.

[3]The articulation of local government interests in the Central American countries has now gone trans-national in the region, as judged by the recent *Declaration of Tegucigalpa* issued during the last meeting of provincial mayors in the region in the early spring of 1992.

[4]Markaz chiefs, as all executive officials in local government in Egypt, are nelected. Although this fact inhibits their organization in independent profssional associations, approppriate means to "professionalize" their role are also missing. That there is a need for such organization was demonstrated accidentally during our fourth cycle orientations in Ismailia wfor the first time, provincial markaz chiefs were gathered together. Many of the issues raised and discussed dealt with problems other than LD II-P.

of local government managers lead us to recommend a deep re-structuring of local municipal services organizations.

DESIGN ELEMENTS FOR IMPROVING LOCAL GOVERNANCE THROUGH MUNICIPAL SERVICES PROVISION

The recent Mission decision to fund a GOE- managed block grant system to finance the provision of basic infrastructure services offers an opportunity to re-direct limited Mission management and staffing resources to the achievement of more strategic goals and objectives. These objectives, applied to local governance could be stated as follows:

- Improved local governance: effectiveness and efficiency of LGUs, local citizenry voice and choice over the quantity and quality of their municipal services
- Improved institutional accountability and performance of municipal organizations providing services to provincial populations
- Improved technical and financial sustainability of local municipal services through their reorganization as *enterprises*

Key features of local municipal services organized this way, are that these *enterprises*:

- provide local consumers with a voice and choice over the quality and quantity of their municipal services
- are identifiable entities for the provision of the service, with clear agreements on benefits and costs between the entities and their clients or consumers
- once organized and running properly, they could seek legal charters as local public utilities, consumer cooperatives, private, or mixed enterprises
- provide a more generic model than the "utility" model for public divisible goods such as water and wastewater. The model, with the necessary adaptations, applies equally well to the management of rolling stock fleets for public works and maintenance facilities

The *enterprise* model of organization of local municipal services also requires changes in the *operating environment.* Sector policy planning and budgeting and finance mechanisms, quality standards and mechanisms of enforcement, standardization and bulk procurement mechanisms, etc.

Some of the necessary components to effect this reorganization have been initiated, tested, or are in use in LD II-P. Many more will need to be designed, tested, and validated through use. In the remainder of this discussion, we examine the applicability of the model to water systems, linked to what LD II-P has accomplished[5].

Application to the Water Sector

By the end of the project, nineteen provincial governorates had completed the consolidation of their LD II-P funded water subprojects into "systems." The many isolated subprojects financed through the four funding cycles were, in reality components of larger water systems. The consolidation exercise was initially designed to document the LD II Program investment and beneficiaries reached. For the first time we had the USAID investment in these systems but new questions emerged. What were the rest of the components in each system? What was their condition? Could these data be used to generate O&M and capital budget plans? What were their sources of funding? What was the BVS investment, if any, in these systems?

The data on systems components, the fixed assets of the potential *enterprise* model were not available. This was a further manifestation that the concept of physical integrity of water systems as entities to be managed was not present. It was clearly beyond the scope of this contract and available level of effort, to undertake such a "system reconstitution" even at the inventory or asset level. Extensive database inventories, on the other hand, had been completed for all rolling stock in the provincial governorates. These inventories could become the fixed assets of markaz and governorate-level *enterprises* for this sector. And, in fact, there are incipient cases of this model in the Red Sea and Minya governorates.

Figure E. 1 provides a rough sketch of the conceptual components (shaded area of the graph) of the *enterprise* model and its operating environment.

As an *enterprise* organized for municipal water provision, the organization would require:

- A statement of mission, objectives, organization, etc
- A management structure: organizational chart, job descriptions, functions, lines of authority etc
- Personnel: recruitment, policies, pay schedules and training

[5]Our discussion is sketchy at best, given the nature of an end-of-contract report. Project Identification Documents (PIDs) and Project Papers (PPs) will need to refine, specify and document how these design considerations can be translated into well-defined projects.

- An accounting system: chart of accounts, general ledger, accounts payable and receivables, capital assets, payroll[6], etc
- Capital and operating budgets;
- Plan of operations.
- Some form of oversight: by the popular and executive councils and/or citizens boards.

The system inventories become the fixed assets of the enterprise. Expansion, replacement, and maintenance of these assets, linked to a plan of operations and maintenance, provide the basis for the estimates of capital and O&M budgets proposed by the enterprise management to a board of consumers or citizens, as shown in the graph of Figure E. 1. Also shown in the graph is the fact that user fees (the accounts receivable of the enterprise) relate to O&M and capital budgets. The extent to which the accounts receivable or user fees help meet the O&M budget requirements, or even the existence of such a relationship from user fees to capital budgets, are empirical questions likely to vary from system to system. For the first time, however, actual measures of self-reliance (LRM) in meeting these budgets could be gauged.

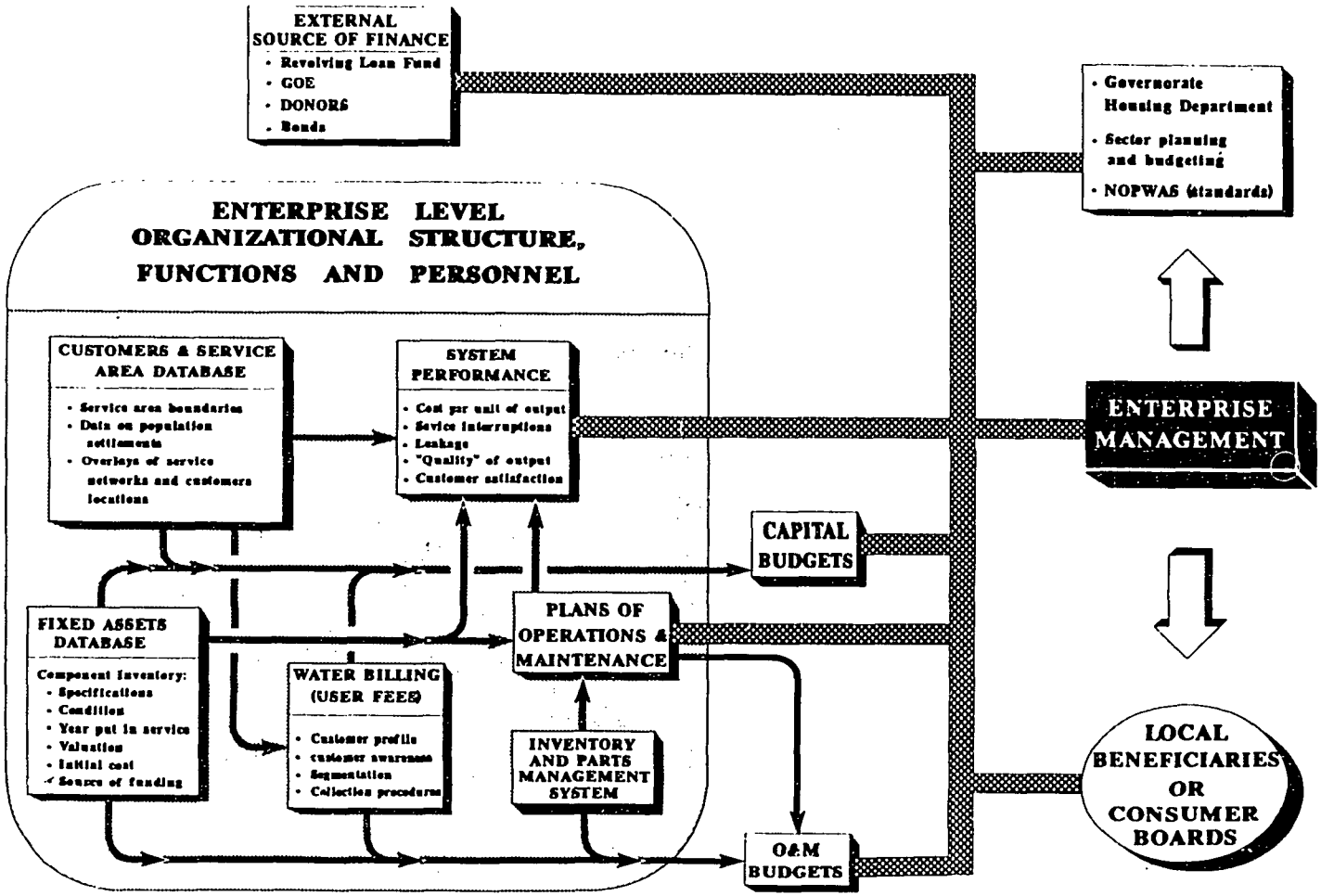
The *enterprise* model, as shown in Figure E. 1, addresses:

- the fragmentation of responsibilities for capital expenditures and O&M between central and local levels;
- the weak linkages between collected revenues and expenditures;
- the need for long-term planning and budgeting procedures at the local level

[6]Salaries come under the Bab I budget line item and are frequently treated as "subsidies" at the local level.

Figure E. 1

THE "ENTERPRISE" MODEL APPLIED TO MUNICIPAL WATER SERVICE PROVISION



The essence of the ***enterprise*** model is that performance becomes a concern. The enterprise must "meet its budget" and operate successfully within its environment: keep its consumers (users) satisfied, yet keep costs down. It is forced to operate efficiently and effectively. System performance in terms of system efficiencies (cost per unit of output, water leakage, service continuity and pressure, etc.), service coverage of potential beneficiaries, etc., can be gauged and linked to an identifiable organization for accountability purposes.

Much work has been done along these lines on the village wastewater utility model under the wastewater program of LD II-P, including a verifiable set of indicators for progress assessment. This methodology of objectively verifiable indicators relies on an institutional framework of pre-requisites that must be met, or components that must be in place for successful operation. The methodology emphasizes **results** rather than project outputs as the acid test of interventions. (*Quarterly Progress Report-Chemonics*, January 1991)

Similarly, the water-billing program currently being installed by LD II-P in many sites through the fourth-cycle of funding becomes the cornerstone of the accounts receivable accounting module for an enterprise model organization of the water and wastewater sector. Our work in Beheira and Kafr El Sheikh on organizational structures and measures of system performance, respectively, fit here.

In terms of the ***environment*** in which these enterprises would operate, the revolving loan fund mechanism proposed and designed by Chemonics, or similar mechanisms, will need to be tested and refined to help finance the capital budget needs of these enterprises[7]. GOE and foreign donor funds can be used to capitalize such a fund. The advantages of such a form of capital budget financing are well documented in our report, *Design of Revolving Fund for Local Capital Investments*. (December, 1991). In essence, the fund acts as a multiplier of financial resources and, through the interest rate setting for its loans, may choose different levels of "subsidy" to the enterprises. As enterprises have to pay back these loans, their financial management systems must be responsive and responsible.

In the long run, there is some hope for local financial sustainability under this system. We do not see such hope

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[7]There are many other alternative forms of asset ownership and capital fund raising that would need to be explored. Bonds, shares sold to consumers, employee stock ownership plans (ESOPs), single or in combination, may be utilized.

under the current system of dependency on the central government or direct foreign grants.

Future design work on improving local municipal services delivery systems will also need to address the roles of the governorate housing departments, governorate sector planning and budgeting mechanisms, and the role of NOPWASD. Functions such as quality assurance, enforcement of standards, standardization and coordination of procurements, etc. need to be explored as meaningful roles for these entities.

We have outlined some strategic mechanisms, processes, and institutions that need to be explicitly considered in future project design efforts to tighten the linkage between local capacities and decentralization. We have suggested that deep reorganization, "from the bottom up", is needed in the provision of local municipal services. We have also proposed that this reorganization should be carried out at the enterprise level and in the environment in which these enterprises would operate. We have also argued that this reorganization must precede decentralization, not the other way around.

The enterprise model also has the potential for institutional accountability at the local level. Viable enterprises have the potential of operating under market forces; a condition impossible to attain under the current system.

Furthermore, professional associations representing managers and technical specialists of these enterprises can form an important link in diffusing experiences, standards, professional upgrading, etc. At present, there are not enough suitable mechanisms to articulate these interests in Egypt. Careful nurturing of institutional pluralism in this area could be designed.

Finally, we have suggested that local municipal service provision can be used to anchor interventions aimed at improving local governance. After all, citizen debate over local services of direct personal impact is the stuff that local politics is made of.

Lest it be thought that these broad strokes are exceedingly optimistic, we must humbly state that as technical contractors with over a decade of assisting the Mission and the GOE in provincial infrastructure development and decentralization, we are all too aware of the many pitfalls of implementation. Much careful thought and detailed analyses are needed to design sustainable programs and projects in this area. Much judgment and savvy will be required during implementation. This is essentially a political process where all actors must perceive that they are "winning" something

in this process of institutional realignment of the sectors. And, undoubtedly some luck will be indispensable to capitalize on windows of opportunity during implementation. The rewards, however, are well worth the risks, considering the prevalent *malaise* of local municipal services provision in Egypt.

Section I

Introduction

BACKGROUND

Decentralization, popular participation, local revenue mobilization and retention, and sustainability are recurrent themes of the Local Development II Program (LD II). These appear in a variety of project background documents: the LD II project paper, RFPs, statements of work, contract documents, and the contractor's work plans.

Decentralization and popular participation were major themes of the Basic Village Services project (BVS) and LD II. The designers of BVS properly assessed that a massive investment was required in Egypt at that time to improve and rebuild the provincial infrastructure neglected because of the Middle East conflicts and overburdened by population growth. A key insight of the designers was to use this investment as a means to develop the capacities of local government units (LGUs) in the planning, implementation, and maintenance of this infrastructure. They reasoned that these local capacities needed to be in place before the central government would grant additional decision-making powers to local government. Furthermore, this investment would provide much needed experience to local councils in channeling popular participation through the needs assessment, project identification, selection, and planning of these small infrastructure projects.

As further experience was gained in these areas, concerns for the maintenance and operations and the requisite local resource mobilization (LRM) that would sustain these widely distributed small infrastructure projects were incorporated as themes of the project. The issue of LRM was also incorporated into the project purpose.

USAID's commitment to assist decentralization and the provision of basic services to needy populations in Egypt is embodied in the Decentralization Sector Support I (DSS-I)[1]

[1]DSS-I consolidated BVS, the Decentralization Support Fund (DSF), the Neighborhood Urban Services (NUS), the Sector Development and Support (SDS), and the Provincial Cities activity protocols under one umbrella project lasting from August 1982 to June 1987. The LD II Program, under which the provision of technical assistance to provincial governorates and the Ministry of Local Administration (MLA) was rendered, was initiated in September 1985 with an anticipated completion date of 30 September 1993. This report documents the technical assistance provided by Chemonics and its subcontractors, Camp, Dresser & McKee (CDM), Arabic Software Engineering (Arabsoft), and Integrated Development Consultants (IDC). Contracts for the provision of this technical assistance cover the periods February 1988 to July 1990 and from July 1990 to December 1992. The term

and the current agreement, the Local Development II Program. Through the DSS-I and LD II, USAID provided block grant funds, technical assistance, and commodities to LGUs to improve access to and delivery of basic infrastructure services.

These project inputs— block grant funds, technical assistance, and commodities—would assist in rebuilding and expanding basic infrastructure and improve service delivery. In addition, through the experience gained in the selection, planning, implementation, finance, operations, and maintenance of these locally chosen projects, LGUs would gain experience and improve their capacity. Improved local capacity would, in turn, lead to *decentralization* in the form of increased delegation of authority to local governments.

The original purpose of LD II—improving the capacity of local units to plan, organize, finance, implement, and maintain locally chosen basic service projects—was augmented in the technical assistance contract for LD II-P (1990) to include improvements in their capacity to mobilize local resources to sustain the provision of services, as shown in the contractor's rendition of the project log frame, Figure I. 1. An expanded physical infrastructure coupled with the improved capacities of local government units would provide greater access to basic services and, ultimately, lead to fulfilling the "project goal": improved quality of life of low-income residents in rural Egypt.

Achieving the project purposes and ultimately its goal is, in the logframe diagram, dependent on "project inputs" and "project outputs." Development resources, or "project inputs", such as matching block grants, commodities, and technical assistance provided to LGUs are transformed into "project outputs"; physical infrastructure being the most tangible. Inputs such as technical assistance, to which we have added an explicit contractor's strategy incorporated formally in the contractor's proposal of July 1990, are used to design systems and procedures. When these are codified in manuals, promulgated through training, and used, improved local capacity results. That is, the experience gained by LGUs in managing the infrastructure funded through LD II-P, gets converted into improved efficiency and effectiveness.

For LD II-P, "project outputs" refers to:

- Infrastructure delivered: the numbers, types, value, location, beneficiaries, and unit costs

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"technical contractor" refers in this report to Chemonics, CDM, Arabsoft, and IDC. The term "LD II-P" refers to the technical assistance provided under these contracts from February 1988 until December 1992.

- The publications deliverables: their number, type, distribution and scheduling
- Training delivered: by type, number of participants, duration, person/days, location, and geographic distribution[2]

Now, some fourteen years after the initial project design and with the benefit of hindsight, a broader conceptual framework is required to understand what LD II-P achieved and what, from the contractor's experience gained through implementation, needs to be addressed next.

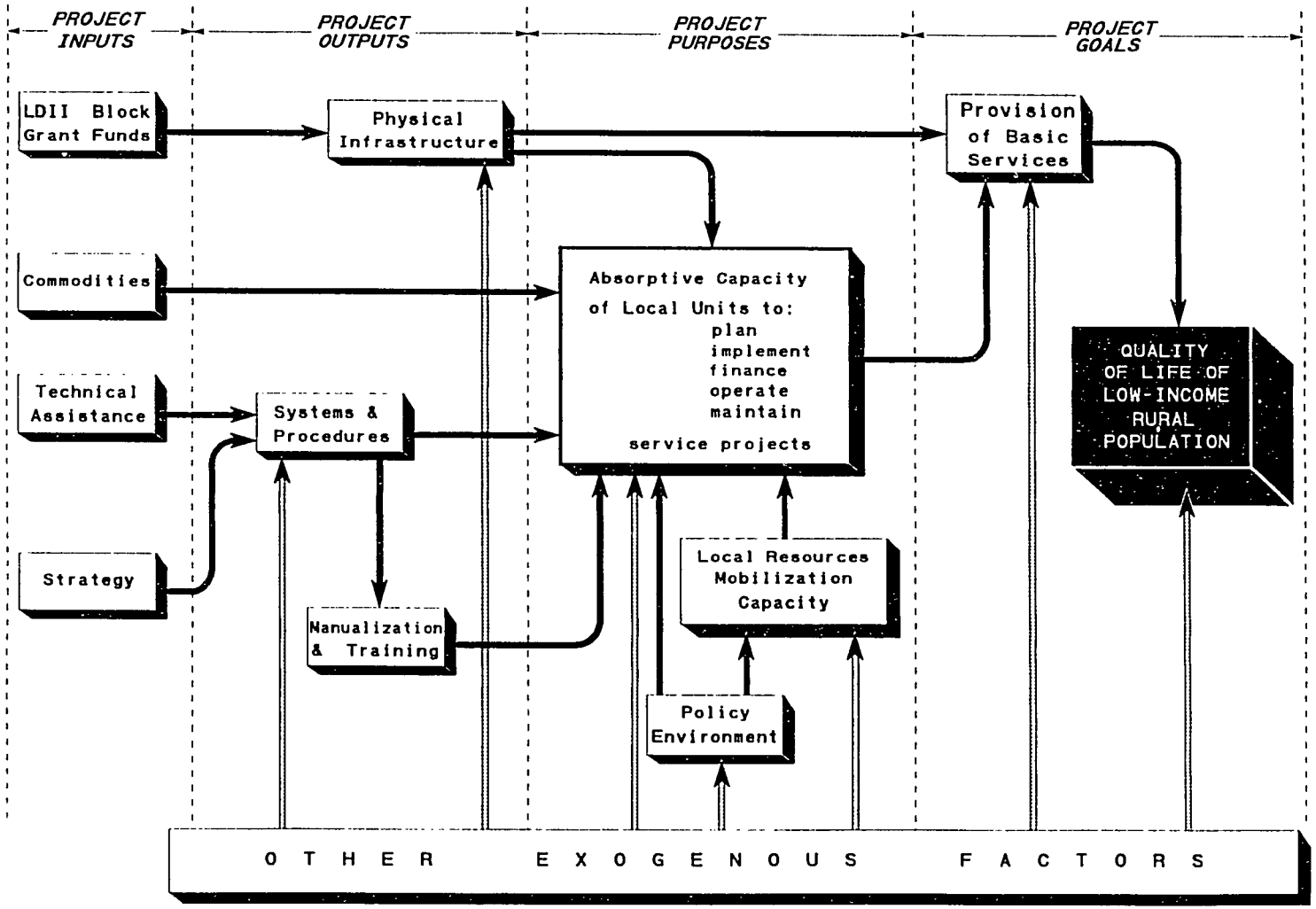
The framework recasts LD II-P as a subset of what contemporary social science calls "local governance," loosely defined as the formal and informal system, the art and science, of balancing competing claims for public domain resources. Three dimensions of local governance are relevant to this project:

- Efficiency and effectiveness of LGUs
- Popular representation and participation in mechanisms that bring accountability from LGUs
- Institutional pluralism

[2]Volume Two presents more detailed documentation of these three types of outputs.

3

Figure I. 1 Contractor's Rendition of Local Development II-P Logframe



Efficiency refers to "doing things right." That is, using the appropriate quantity and quality of means or inputs to achieve the ends or outputs at a minimum of waste or cost. Improving yield or production per unit of input is what efficiency stresses: doing things faster, better. Computerized transaction-processing applications such as parts control, water-billing, revenue collections, etc. implemented through LD II-P are examples of this. They improve efficiency of LGUs.

Effectiveness refers to "doing the right thing." Systems and procedures developed by LD II-P and the "tools" we developed as contractors, such as project planning forms, terms of reference for contracting, model contracts, construction supervision manuals, laboratory testing of materials, cash management system, design of a wastewater revolving fund model, development of viable "utility" models for water and wastewater, etc., improve effectiveness.

From this broader perspective of local governance, most LD II-P activities concentrated on improving the efficiency effectiveness of LGUs through building their capacities in planning, implementation, finance, operations, and maintenance of the infrastructure funded by the project. Our contractor's strategy, described in Section II, used the project life-cycle as the framework to analyze constraints, establish objectives, and design and implement interventions.

Project activities that encouraged popular representation and participation in mechanisms to induce *accountability* of LGUs, focused on needs assessment, project identification, and planning. Implementation, operations and maintenance, and management have traditionally been carried out by LGUs without mechanisms of accountability in Egypt. And this continues to be the case.

Substantial progress, documented in this report, was made in improving the efficiency and effectiveness of LGUs, especially in the O&M area. Significant new progress, from our perspective as contractors, cannot be achieved in the O&M, accountability and local resource mobilization until new strategies are designed, tested, and implemented. We discuss some of these strategies in our conclusions and recommendations.

Likewise, *pluralism*, defined here in terms of organized constituencies that coalesce and articulate common interests, still needs to be addressed. For local governance, efforts towards the professionalization of local government managers, local contractors' associations, and professional interest groups can be a mechanism to create, update and promulgate standards, and help oversee their use and application in a more cost-effective and efficient manner.

5

This is discussed in more detail in our conclusions and recommendations.

Decentralization, viewed as a mode of relationship between the central government and LGUs, was outside the scope of work of the contractor. It was a project design "assumption" that has not yet been supported by the facts.[3]

Sustainability, in the limited sense of attempting to institutionalize LD II-P systems and procedures, has been addressed by our strategy and activities. In the broader sense of achieving self-sustaining local systems capable of generating, retaining, budgeting, and managing resources, this has not yet occurred. The project design assumptions have not come true. Potential future strategies to be considered in the next generation of project designs are presented in our conclusions and recommendations.

USAID INVESTMENT IN PROVINCIAL INFRASTRUCTURE

Understanding the complexity and scope of LD II-P requires a summary overview of a core project output: the physical infrastructure put in place by the project.[4]

The project covered 22 of 26 governorates of Egypt. Only four governorates, defined as urban, were excluded from LD II-P: Cairo, Alexandria, Port Said, and Suez. The city of Luxor, however, was added to LD II-P beginning with the preparations for the fourth cycle of block grant funding, in late 1990.

Four cycles of block grant funding were implemented during LD II-P. The total investment in infrastructure and the sectorial composition for both LD II-P and its predecessor project, BVS, are presented in Table I. 1. Pie charts under the table provide a graphic view of the sectorial shares of investment for each project. Figure I. 2 shows the geographic coverage of LD II-P. (Map is not drawn to scale.)

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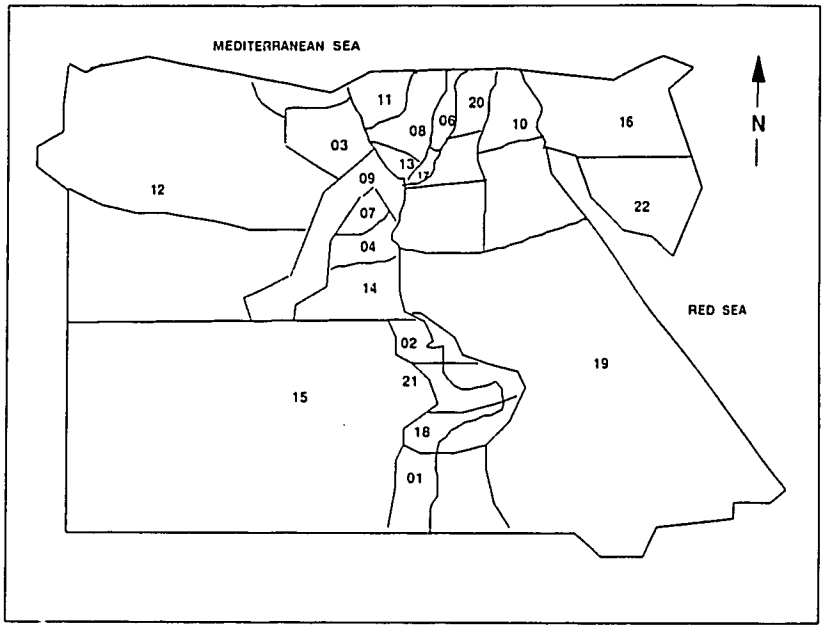
[3]Most observers of Egyptian local government agree that little devolution of authorities from the central government to LGUs has taken place in the last decade.

[4]Volume Two of this report presents a more extended discussion of physical infrastructure.

Figure I. 2 LD II-P Geographic Coverage



KEY TO PROVINCIAL GOVERNORATES

01 ASSWAN	08 GHARBIYA	15 NEW VALLEY	22 SOUTH SINAI
02 ASSYOUT	09 GIZA	16 NORTH SINAI	
03 BEHIERA	10 ISMAILIA	17 QALUBIYA	
04 BENI SUEF	11 KAFR EL SHEIKH	18 QENA	
05 DAMIETTA	12 MATROUH	19 RED SEA	
06 DAQAHLIYA	13 MENUFIYA	20 SHARQIYA	
07 FAYOUM	14 MINYA	21 SOHAG	

Through BVS and LD II-P, USAID's investment in provincial infrastructure is over 811 million Egyptian pounds (LE). This figure excludes funds from the central government of Egypt (GOE), governorates, local units, and cash contributions. The LD II-P investment accounts for over LE 577 million of this total.[5] This investment has resulted in over 18,000 locally chosen provincial infrastructure subprojects. LD II-P has funded over 13,000 of them; BVS, the remainder.

The composition of the investment shows that water projects took the largest share of the investment: 48 percent during BVS and 36 percent during LD II-P. Provincial roads (farm-to-market, inter-village, village-to-main road, etc.) were the second largest relative investment: 36 percent during BVS and 28 percent during LD II-P. Village wastewater projects, village small buildings (classrooms, maintenance workshops, markets, etc.) and other projects account for the rest of the investment.

As the pie charts show, the share of investment in small village water systems has declined over time. Because of this, villagers are less likely now to select water projects and choose, instead, other projects. As a consequence, the trend towards a more diversified portfolio of subprojects is apparent.

The geographic distribution of the LD II-P investment is presented in Table I. 2. For each provincial governorate, the table includes data on population, total project allocations over the four cycles of funding, and a computed average per capita allocation. The bar chart under the table ranks the governorates according to their per capita allocations, showing which governorates are above or below the average.[6]

Because of their small population relative to that of the delta governorates, the desert governorates of Matrouh, New Valley, North Sinai, Red Sea, and South Sinai show high per capita allocations. This occurs in spite of their significantly lower funds allocation relative to the other provincial governorates in the delta region.
As Table I.2 shows, the estimated total number of beneficiaries, as of 1990 is over 43 million, with an average overall per capita allocation of over LE 15. These

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[5]During the 1981-1991 decade covered by BVS and LD II-P, there were wide changes in the exchange rate: from 1 US$=LE 0.71 in 1981 to the current rate of 1 US$=LE3.32. When adjusted for inflation, the purchasing power of the LEs disbursed during LD II-P was actually lower than the BVS investment, as shown in an earlier analysis (See Quarterly Progress Report-Chemonics, March 1992).
[6]Volume Two of this report contains a detailed technical discussion of the methodology to produce these estimates.

8

beneficiaries are being served by over 13,000 locally chosen, planned and implemented infrastructure subprojects located over the vast geographic area covered by Egypt.[7]

The requisite infrastructure to improve basic service delivery throughout provincial Egypt is, therefore, in place. In the overall design and intent of LD II-P, however, this tangible project output is necessary but not sufficient to achieve the project purposes of improving overall capacities of LGUs in the planning, implementation, finance, operations, maintenance, and management of these subprojects. We examine the wider institutional themes of the project in the following section.

PURPOSE AND ORGANIZATION OF THE REPORT

This report is in two volumes. The first volume is organized around the achievement of the project purpose: improving the capacity of local units in the planning, implementation, operation, maintenance, management and finance of service projects. The second volume is organized around documentation of the project outputs and contract performance.

Documenting the quantity, quality, distribution, type and scheduling of these "contractor deliverables" is necessary, but not sufficient in our view. Insights gained by the contractor during project implementation: what worked, what did not, why, how can it be done better next time, how well did the project design work, what 'tools' or approaches can be used by other projects, should be made available to others. This is a much more difficult task.

This task requires reflection and interpretation of what was done, selecting the most meaningful and evaluating results within the local context of the project so that these experiences can help evaluate the project and inform future project design in Egypt and elsewhere.

Volume One of this report addresses this challenge. It is organized around the achievement of the project purpose and improving local capacities, rather than contractor's outputs or deliverables. The volume keeps the documentation of contractor's activities to the minimum required to understand what was achieved.

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[7]Each provincial governorate maintains a database with detailed information on its subprojects, and reports quarterly to the Ministry of Local Administration (MLA) on their implementation status. Additional discussion on the characteristics of these subprojects, based on the aggregated national database maintained at the MLA, is presented in Volume Two.

9

Section II of this volume presents salient features of the project environment and the overall contractor's strategy. The former is important to understand the local context of the project. The latter is necessary to evaluate contractor's implementation of the project within its environment.

Sections III through VI are each organized around the improvement of local capacities in planning, implementation, service delivery (O&M), and management. These four sections focus on the achievement of the project purpose. Each of these sections follows a common format. After discussion of background and constraints, common objectives, and implementation strategy, we present the major activities implemented in fulfillment of these objectives. Then, the results, achievements, and performance issues are discussed.

Finally, Section VII presents a summary, conclusions and recommendations.

Table I. 1 BVS and LD II-P Sector Distribution of USAID Funds

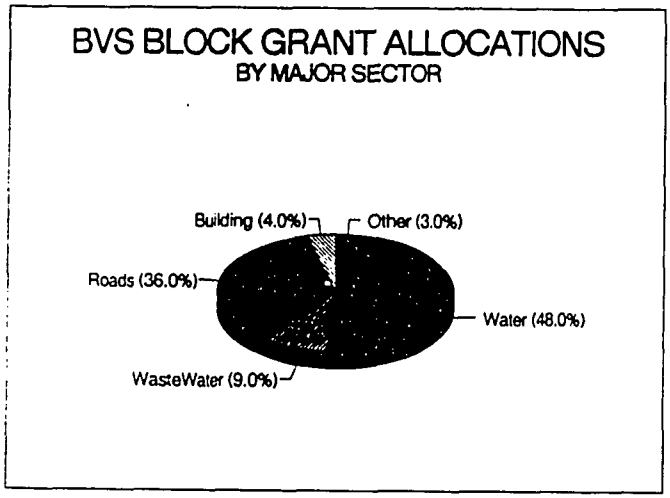
Sector	BVS (1981 - 1987)			LD II P (I - IV)			TOTAL (1981 - 1991)		
	No	LE Alloc.	%	No	LE Alloc.	%	No	LE Alloc.	%
Water	2270	112,298,748	48%	4429	207,082,173	36%	6699	319,380,921	39%
WasteWater	394	21,056,015	9%	198	34,581,049	6%	592	55,637,064	7%
Roads	1471	84,224,061	36%	2063	161,070,327	28%	3534	245,294,388	30%
Building	610	9,358,229	4%	5019	103,858,609	18%	5629	113,216,838	14%
Equipment	0	0	0%	646	36,948,032	6%	646	36,948,032	5%
Environment	269	3,462,545	1%	406	11,257,604	2%	675	14,720,148	2%
Electricity	24	514,703	0%	492	18,012,166	3%	516	18,526,868	2%
Other	80	3,041,424	1%	106	4,503,041	1%	186	7,544,466	1%
TOTAL	5118	233,955,724	100%	13359	577,313,000	100%	18477	811,268,724	100%

NOTES:

BVS and LD II amounts are USAID funds allocated and do not include GOE, government or local cash contributions.

Information system equipment is placed in the 'other' catagory; Rolling stock heavy equipment is under 'equipment'; other equipment is under the sector.

The numbers of projects are those approved by the IAC or PLDC and do not reflect cancelled or added projects.



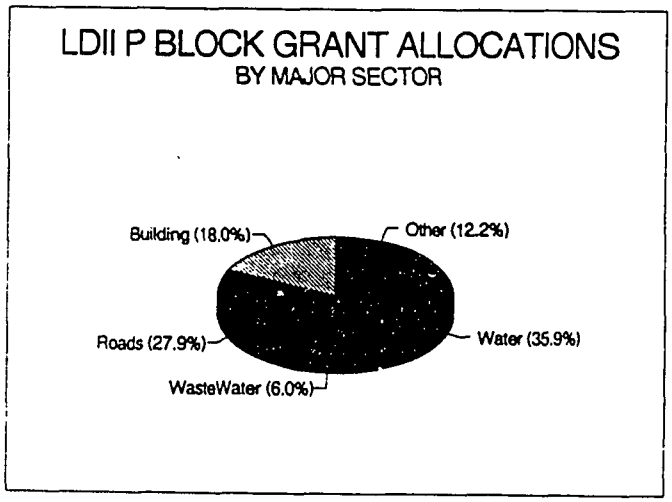
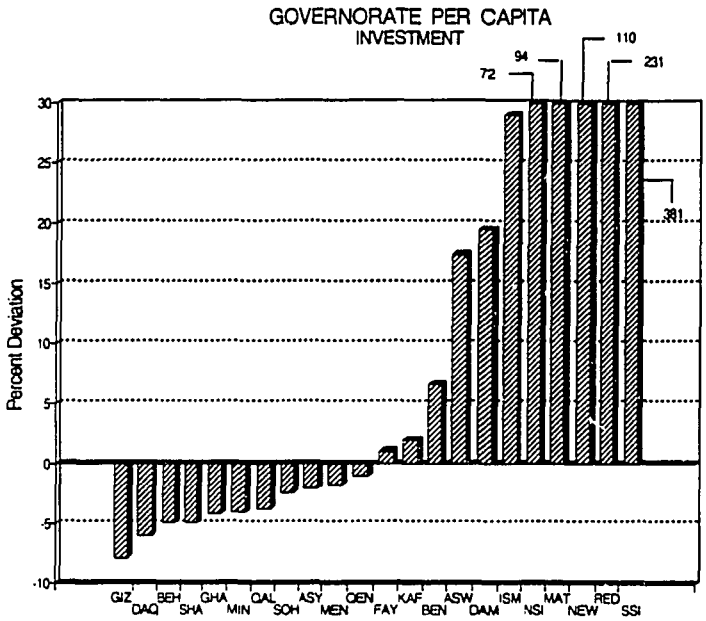


Table I. 2 Geographic Distribution of LD II-P Block Grant Infrastructure Investment

(includes GOE, local contributions and interest earnings)

GOVERNORATE	Estimated Population 1990	Total LDII-P Investment	Per Capita Investment
Giza	4,148,300	32,697,512	7.88
Daqahliya	3,924,500	38,130,796	9.72
Beheira	3,651,700	39,188,544	10.73
Sharqiya	3,834,500	41,474,037	10.82
Gharbiya	3,218,700	37,009,569	11.50
Minya	2,968,800	34,729,180	11.70
Qalubiya	2,818,800	33,676,225	11.95
Sohag	2,752,600	36,425,048	13.23
Assyout	2,492,300	33,991,088	13.64
Menouflya	2,496,900	34,625,748	13.87
Qena	2,525,200	36,849,427	14.59
Fayoum	1,731,000	28,904,759	16.70
Kafr El Sheikh	2,018,200	35,587,860	17.63
Beni Suef	1,617,700	36,138,228	22.34
Aswan	898,500	29,767,947	33.13
Damietta	831,000	29,240,870	35.19
Ismailia	610,300	27,224,885	44.61
North Sinai	192,300	16,863,725	87.69
Matrouh	180,000	19,808,541	110.05
New Valley	127,700	15,903,888	124.54
Red Sea	101,500	25,022,200	246.52
South Sinai	32,500	12,887,893	396.55
TOTALS AND AVERAGE	43,173,000	676,147,970	15.66



Notes: the population estimates are based on 1986 census figures for areas served by the project. Figures were projected using an average annual rate of 2.6 and then aggregated for each governorate.

12

Section II

Project Environment and Contractor Strategy

OVERVIEW

This section describes the project environment of LD II-P and the contractor strategy to achieve the project purpose. The description of the project environment contains a brief discussion of the structure and functions of local administration in which the project operated. The contractor strategy contains our operational objectives for the project and the means of implementation, including our workplan and technical assistance organization.

PROJECT ENVIRONMENT

Our discussion of the local administration system of Egypt has three main objectives:

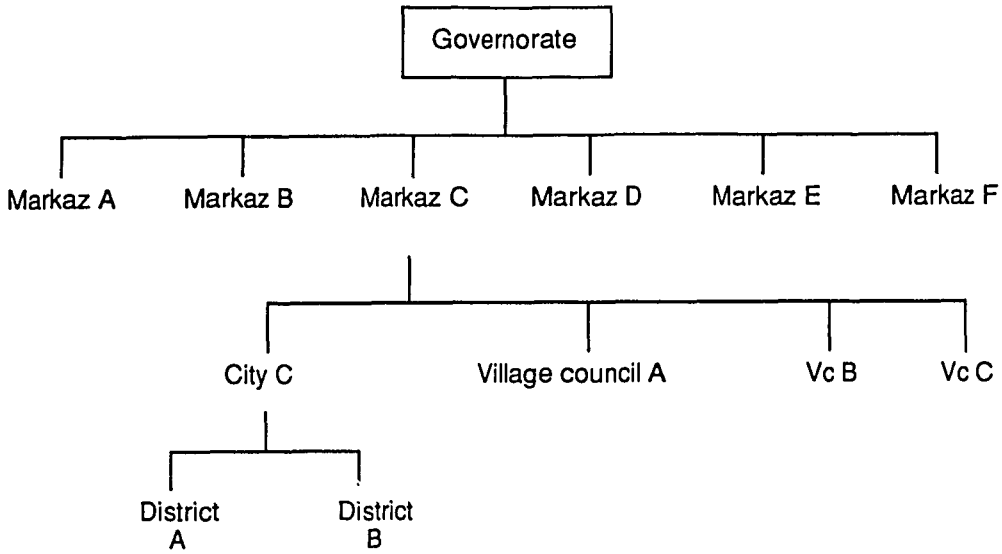
- To introduce the reader to the local administration organizational units referred to throughout the report
- To describe the features of the system into which the DSS and LD II programs were implanted
- To sketch out impacts and lessons of the DSS BVS Project relevant to the formulation of the LDII-P technical assistance strategy

The governorate is the fundamental management unit of the local administration system. Egypt is divided into 26 governorates. Four of these are defined as "urban" governorates, meaning that the governorate administration is coterminous with the city administration. The 22 provincial governorates — the target of LD II-P — include both city and village council areas.[1] While some cities in the provincial governorates have no attached village council areas, most act as administrative centers (marakez) for anywhere from three to ten village council areas within the markaz boundary. (Eight of the larger provincial cities, with populations of 250,000 or more, are divided into urban district council areas as well). The formal hierarchy of local units can be represented as follows:

[1]Giza and Qalubiya governorates received technical assistance from both the provincial and urban components of LD II.

Figure II.1

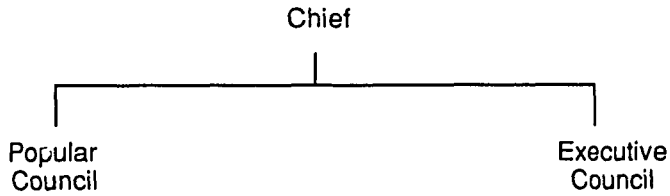
LEVELS OF PROVINCIAL LOCAL ADMINISTRATION



Each level of the hierarchy is governed by a council. The basic council structure can be represented as follows:

Figure II.2

SCHEMATIC STRUCTURE OF LOCAL COUNCIL



Popular Councils

While popular council functions cover nearly the entire scope of local administration, their specific role in these processes as set out in the local administration law is best described as advisory. Councils can "suggest" plans, projects, studies, and procedures. They can also "approve" plans and

- 14

budgets although it is not clear whether they have the right not to approve. In the 1975 Local Administration Law, popular council authority was made to include the right to challenge decisions of the chief or the executive council, and even to question an official's fitness for office, but this right was retracted in the 1979 law.

Popular councils have a low level of authority in relationship to the chief and the executive council; moreover, the popular councils have virtually no budgets or staff under their direct control. It is worth noting that the popular councils are large in size. The markaz popular council membership formula, for example, is that each city should have 10 seats on the council/(if there are districts, each district has 10 seats) and that each village council area should have 8 seats. Hence, a markaz with one city and five VCs will have 50 seats on its markaz popular council. While the process of decision making with such large numbers is typically facilitated by the formation of specialized committees, the large size of the popular councils strongly suggests that they were developed primarily to serve the central needs for control and "mobilization". This intention was quite clear in the pre 1975 system when elected members were drawn from and elected by Arab Socialist Union cadres in the governorates. We may also note that unlike the executive councils, the popular council structure does not ramify throughout the levels of the governorate. The markaz popular council is elected separately from city and village councils. Each popular council, therefore, appears as an appendage to its executive council; there is no governorate-wide popular council organization.

Executive Council

The structure of the executive councils contains a dualism that becomes more pronounced as one moves up the levels of the system. The dualism is between offices that are fully under the management control of the unit chief and those that are "administratively" under his control but "technically" under the control of a central ministry[2]. The dualism is typically expressed as a difference between "headquarters departments" and "service departments." The types of function performed may be illustrated by the following schematic representation of the village executive council structure:

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[2]There is even a third type of office operating within the governorates which has no accountability to the local administration. These are field offices of various central agencies, such as the Central Agency for Population Mobilization and Statistics, the Central Agency for Organization and Management, the National Authorities for Roads and Bridges, Telecommunications, etc., and to a certain degree, the Financial and Organization and Management Directorates of the governorate.)

Figure II.3

VILLAGE EXECUTIVE COUNCIL STRUCTURE

Chief

Service Departments

- Educational Affairs
- Health Affairs
- Social Affairs
- Agriculture and Veterinary Affairs

Headquarter Departments

- Planning and Monitoring
- Development
- Supply
- Youth and Sports
- Engineering Affairs
  - Buildings
  - Utilities
  - Roads

Departments

Secretary

- Administrative Affairs
  - Personnel
  - Internal Services
- Financial Affairs
  - Accounts
  - Budget
  - Revenues
  - Purchasing and Stores
- Council and Committee Affairs

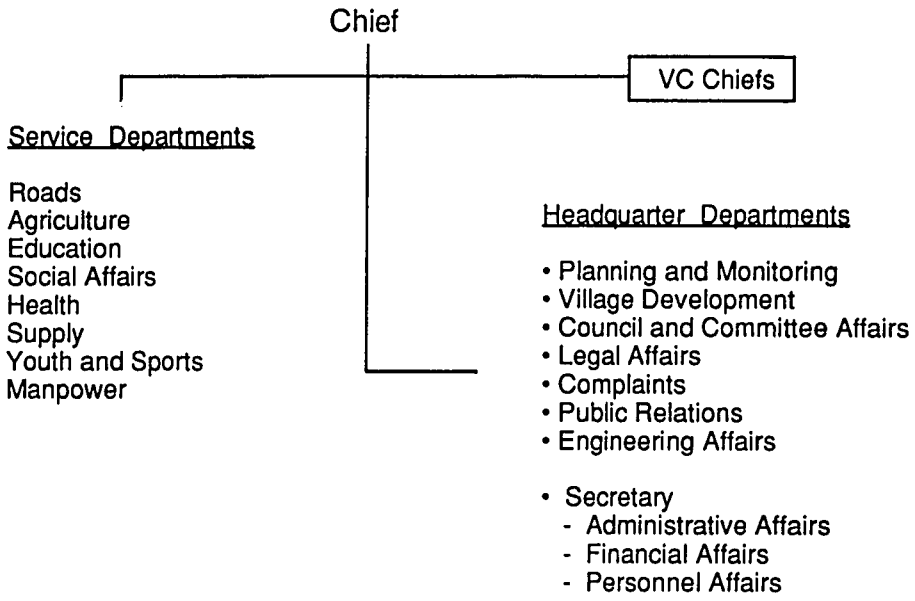
At the district level, the structure expands to include the offices[3], as shown in Figure II. 4.

[3]It should be noted that the markaz executive council is also the executive council of the city in which the markaz seat is located.

16

Figure II.4

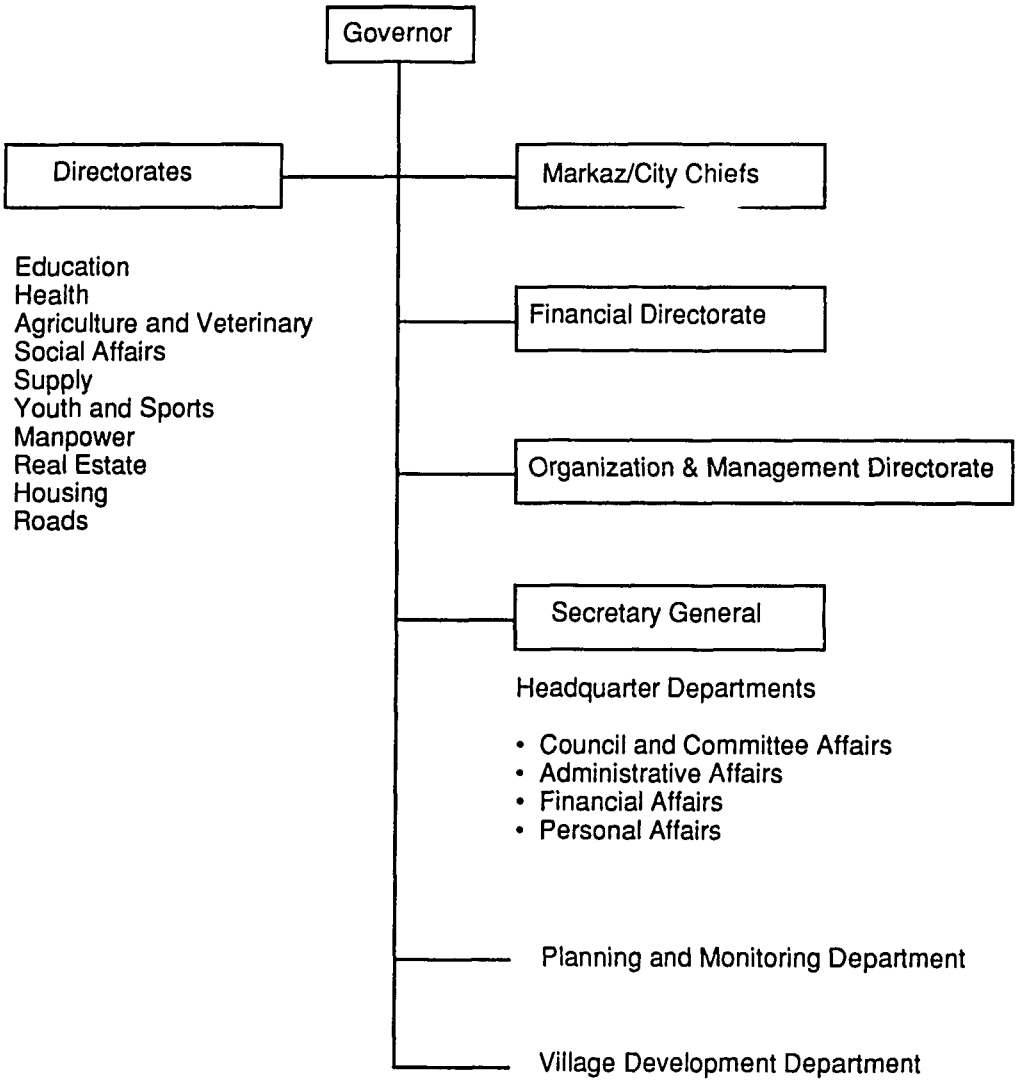
MARKAZ/CITY EXECUTIVE COUNCIL STRUCTURE



As may be seen, the number of offices increases from the village to the markaz level and there is also some shift of functions out of the headquarters area into the service department area (Supply, Youth and Sports, etc.). This shift becomes even more pronounced at the governorate level. A simplified representation of the governorate executive council shows it to be made up of five divisions.

Figure II.5

GOVERNORATE EXECUTIVE COUNCIL STRUCTURE



A more detailed chart would show that the Engineering Affairs Department has disappeared completely at this level: all service sectors are represented by a service directorate affiliated with its parent ministry in Cairo. The Finance Directorate and Organization and Management Directorate also have strong ties with their parent central agencies and

operate independently of the governor in many respects. The basic structural features of the system are not easily made out from the welter of office designations and organization charts. Moreover, there are significant differences between sectors. Agriculture, education, health, and social affairs, for example, can be seen to be highly centralized and hardly reliant on the structure of local councils at any level. To a large extent, they have their own local administrative geography based on the locations of cooperatives, schools, etc.

Because the focus of service provision by local councils is on "establishing and managing public utilities of a local character" (Local Administration Law, Article 2), we will restrict our discussion of council structure and functions to the basic service sectors (water, wastewater, roads, etc.). The basic structural feature that governs these sectors is the dualism of the directorate structure and the headquarters structure. At the markaz, city, and village levels, technical functions are managed by the engineering affairs departments, which are part of the local council headquarters. But at the governorate level, they are managed by service directorates, which receive substantial procedural and technical directions from their parent ministries. Their relative autonomy from the headquarters structure is expressed in the following ways:

- Their offices are located outside the main governorate building, which contains the headquarters offices
- Their budget allocations for capital, O&M, and salaries are listed individually and separately from the headquarters budget, although the headquarters capital and O&M budgets include funds for local council water/wastewater projects, roads, schools, etc.
- They have their own contracting and procurement departments

Although, the dualism in the basic service sectors is most pronounced in formal terms at the governorate level, it extends to lower levels as well through the practice of "secondments." For example, a technician in the Housing Department will be assigned to a local council to provide "supervisory" support to (e.g.) water system operations.

There is, of course, a general principle which distinguishes the competences of the service directorates from those of the local councils. Local councils have responsibilities for "utilities of a local character", for those public works and services within the boundaries of the council area. The service directorates, on the other hand, are responsible for works which cross over markaz boundaries. However, this principle, like the principle that distinguishes technical responsibility from administrative responsibility, cannot be

applied easily in specific situations, since infrastructure systems have a physical and technical integrity that is indifferent to the local administrative geography. Moreover, the principle stands in potential conflict with another important principle of local administrative structure, namely, that a council is always responsible for providing technical assistance required by councils at lower levels. The structural failings of the system, which were the basis for the sectorial approach to technical assistance under LDII-P, will become clearer when we discuss the way BVS was received in the governorates.

Functions of Local Administration

Restricting the discussion to the processes of planning, implementation, operations, and maintenance of basic services under the local administration system[4], Figure II. 6 depicts the formal process of local administration capital planning and budgeting.

BAB III PLANNING/PROCESS

Several important features of the process should be noted.

Politicized Process

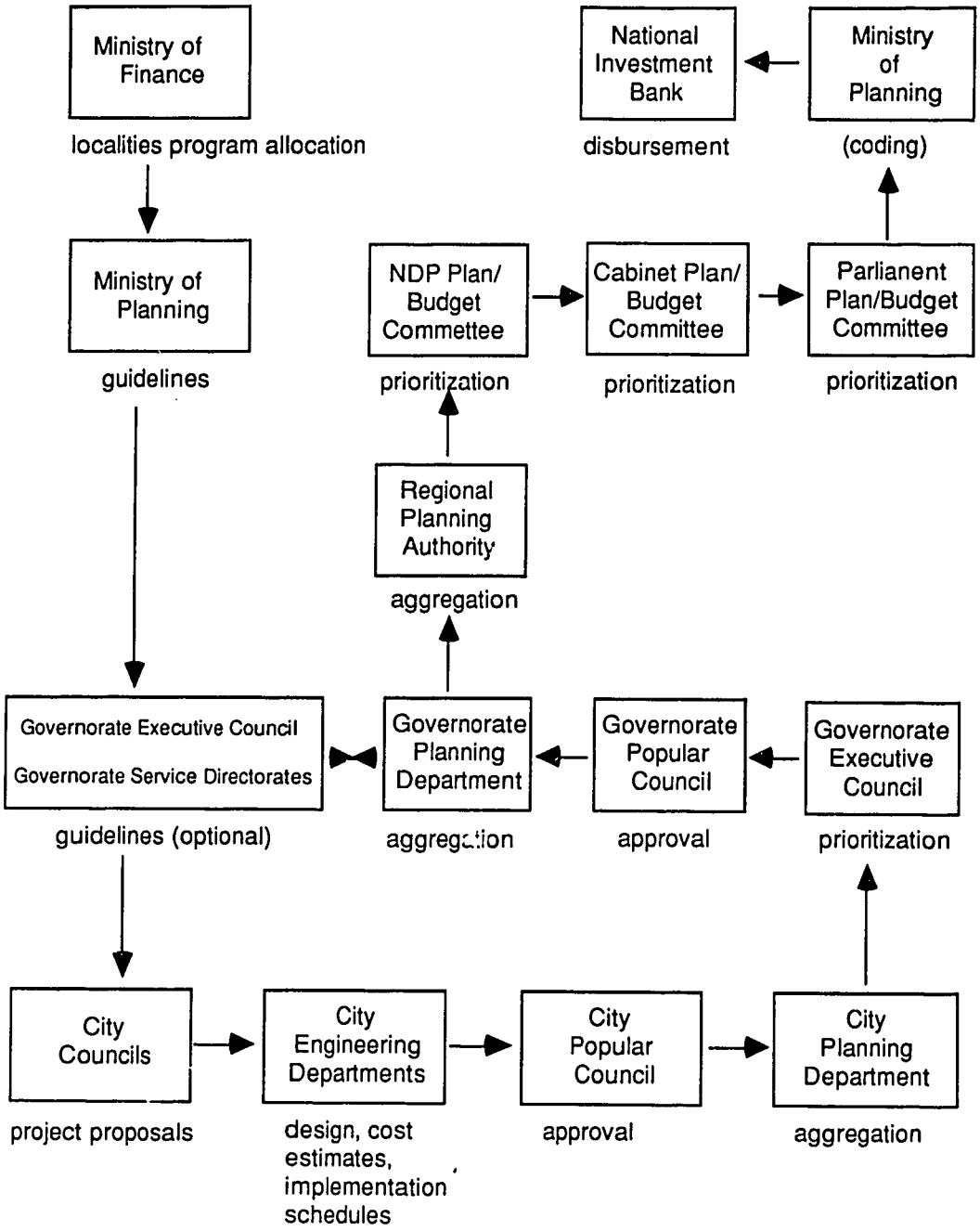
The entire process is highly politicized. All units are in competition for resources with all other units at the same level (even at the subvillage level) but specific criteria for funds allocation and project selection are practically non-existent. Chiefs therefore have little incentive to discipline their subunits, so plans and budgets submitted to the central level planning and budgeting committees of the Party, the Cabinet, and the People's Assembly are invariably excessive. Final decisions are made by these subcommittees, leaving ample room for the politics of patronage and "connection" *(wasta)* in these decisions.

[4]Beyond basic service provision, local administrations have other functions such as security and the management of the state-run agricultural sector. Some observers have commented that these responsibilities often leave chief executive officers with little time for basic services issues.

20

Figure II.6

Bab III Localities Program: Planning



City Allocation Priority

The increasingly bleak macroeconomic situation of Egypt from the mid-sixties onwards, combined with population growth and migration to large urban centers, meant that by the 1970s nearly all Bab III funding was allocated to the cities. This was particularly the case in predominantly agricultural governorates at low levels of urban and commercial development.

Low Technical Capability

In such governorates in particular and in provincial Egypt in general, technical capabilities at the markaz level were either low to begin with or else progressively diminished due to neglect and lack of funding and training. Technical capability at the village council level was never high, except perhaps in one or two well-off governorates such as Gharbiya and Daqahliya, which have engineers in some village councils.

The effects of rapidly expanding need, static resources, patronage-ridden planning, and overall low levels of technical capability were also felt in the areas of project implementation, operations, and maintenance. Within a general environment of popular mistrust of government, performance standards of design, contracting, construction supervision, commissioning, and O&M were either not developed or not applied. The environment of local administration deteriorated further as local administration wages and salaries steadily slipped in relation to both the cost of living and wages in the private sector.

This was the situation at the onset of the BVS Project. The BVS/Project was a mixed blessing for local administrations. With its requirement that funds be allocated specifically to village councils, it represented a turning point in the history of the villages. On the other hand, it greatly increased the workload of the city councils.

BVS Impact

It was during the rapid expansion of infrastructure under the BVS Project that awareness dawned of the fundamental capacity constraints of the local administration system with respect to providing basic services. The prevailing systems of project planning and budgeting had not provided space for the emergence of a political community at any level of the system. The lack of *polis* was reflected in two alternative politics of project selection:

- In relatively urbanized and developed governorates (e.g., Menufiya), project selection decisions were dominated by local elites, working inside and outside of the popular council structure. Project benefits were narrowly localized, usually in the larger villages of a council area
- In underdeveloped governorates (e.g., Asswan, Fayoum, Sharqiya), village popular councils and BVS

22

in general were ignored by the governorate level once the funds had been allocated (either on a population or council-parity basis). The political community was defined as the subvillage; BVS plans in such governorates show that each subvillage took its turn to receive the same small projects (buildings or water network extensions) as the rest

There was a close convergence of political, administrative, and technical constraints in each type of governorate. Technical capability, as well as budget, tended in the underdeveloped governorates to be concentrated in the capital city. Under the principle of technical assistance of higher to lower levels mentioned above, the service directorates should have moved to assist the city councils in BVS project planning and implementation for the villages. In most (though not all) cases however, the service directorates were neither politically nor administratively pressured to help. Because the city engineering departments did not provide the villages with much planning and implementation assistance, village project planning was restricted to simple, small projects.

While the city councils in the relatively more developed governorates were able to present a wider range of project options to their village councils, they too faced technical constraints. Apart from the chronic problem of under budgeting for implementation and O&M, so as to make limited resources stretch further, the expansion of the workload under BVS was an incentive to over-rely on standard designs and to neglect the site or system-specific requirements of service delivery systems. One of the most common findings in the 1987 WASH study of 36 village water systems was that system components were poorly matched. Moreover, it is through the experience of these governorates that it can be observed that "capacity" is not a fixed quantum; rather, adequate capacity must be understood as relative to the evolving technical complexity of expanding infrastructure systems. A governorate such as Menufiya managed its BVS projects quite successfully at the markaz level, drilling wells, installing pumps, and expanding water networks, but eventually reached the point where further water system development required concentration on elevated storage, which the marakez were unable to plan and implement.

It is important to note here that it was the very success of BVS in expanding access to basic services that created a demand for increasingly sophisticated project planning, implementation, and operations and maintenance systems.

Consequently, at the conclusion of the BVS Project, the need for upgrading governorate-wide basic services program planning and management capability through the governorate level itself had become apparent. The LDII-P technical assistance contract strategy would have to address the following constraints:

- **Lack of a governorate-wide basic services development policy** to guide the councils in project planning and budgeting in a manner which distributed benefits fairly, widely, and effectively
- **Lack of informational and procedural supports** for a participatory, yet technically informed, procedure for policy, program, and project formulation
- **Low levels of technical capability** for project planning, implementation, and O&M. These weaknesses could be either absolute (as in the underdeveloped governorates) or relative to the demands of increasingly complex infrastructure system development
- **The reluctance in many governorates of service directorates to play technical assistance roles** in relation to local councils, leading to problems of limited project options offered to village councils, or increasing levels of technical system disequilibrium between components planned and financed through service directorate budgets and those financed through local council budgets
- **Confusion in other governorates about the appropriate roles** of the various levels of the local administration system in planning, implementation, and O&M
- **Lack of performance standards** with respect to projects and /or offices, reflecting an organizational culture imbued with low motivation, inadequate resources, and cynicism, and organizational structures that did not reflect the cost centers of basic service provision

In summary, the technical, administrative and financial organization of basic services provision in provincial Egypt appear to have been perversely, albeit unintentionally, designed against performance, accountability, and local control. There is no sense of local "ownership" of municipal services, and local municipal service delivery systems are not meaningfully organized in a way that their performance can be gauged. Neither are the criteria for capital budgeting and allocations for these services "transparent" to potential beneficiaries. For consumers, this organizational environment fosters consumer withdrawal or "free-loading." For those charged with supervision of the services, the

environment, the lack of rewards for performance, and meager resources induce apathy and unresponsiveness.

LD II-P was not designed to address these constraints. It operated and achieved its purpose within these. However, with gradual improvements in technical capacity, these constraints have now become increasingly prominent. They need to be explicitly addressed in the next generation of project designs for local municipal services.[5]

CONTRACTOR STRATEGY

Operational Objectives

The objectives pursued by the contractor's strategy, as stipulated in the 1990 technical proposal, were to:

- Improve *project quality*, including designs, contract management, construction supervision of locally selected infrastructure, and service delivery. Service delivery refers to local capacity to operate and maintain existing capital investments and to provide acceptable levels of services to beneficiaries
- Increase *absorptive capacity*, i.e., the ability of governorates to estimate resource needs for service provision using a program/budgeting framework, resolve competing claims for allocations using transparent criteria, and implement and manage these services
- Support the dialogue on *policy issues* regarding decentralization, local revenue generation and management, local pricing for services, and the size and predictability of central budget allocations

The technical assistance efforts of LD II-P were organized to address directly the issues of *project quality* and *absorptive capacity* above. Indirectly, these efforts would support the *policy dialogue* between USAID and the GOE, by providing case studies and the empirical evidence necessary to negotiate increased local fiscal autonomy and decentralization.

Role of Private Sector

The work plan activities envisaged an important role for the private sector in the support of basic service delivery. A basic assumption behind the sectional activities pertaining to sector master planning, design and feasibility studies, construction supervision, and service delivery was that the private sector would be called upon to assist in providing these services and in supporting local operation and maintenance activities. Thus, the Chemonics' team assisted local government units in contracting private sector A&E

[5]Major features of future designs to rebuild municipal service organizations are addressed in our conclusions and recommendations, in Section VII.

firms for their sector strategic plan development and helped develop the necessary terms of reference.

The advisory team also assisted the governorates in identifying engineering consulting firms that could provide design services, construction supervision, and materials and performance testing, particularly for large infrastructure projects. O&M/Equipment advisors assisted governorates to obtain repair, maintenance, and training services from equipment suppliers.

Although not explicitly addressed in the project purpose, the role of the massive LD II-P investment in rural employment generation should be underscored. LD II-P was a national "public works" program, a feature noticed by the recently established Social Fund whose public works program has been patterned after LD II-P. We would suggest that this overlooked feature of the project be explored further by an evaluation team.

Means of Implementation: The "Sector" Approach

Our analysis of local project-type selection patterns during BVS, indicated that localities tended to focus on three main sectors: water, roads, and sewage. However, most local capital investments took place without any sector assessment or sector-wide plans, even in locations where master plans existed. This fact, combined with the magnitude of investments and weak local technical capabilities, led us to a technical assistance strategy and organization of the advisory team around "sectors."

The term *sector* identifies a functional area of activity concerned with or supporting the provision of infrastructure services and facilities. A *sector*, as used in this context, may refer to a specific counterpart agency, (e.g. roads); it may refer to functions within a given governorate department, (e.g. water, within the housing department); or it may refer to functions dispersed among several departments (e.g. rolling stock). In the latter case, a *sector* was considered necessary to anchor technical assistance activities in which the project has a considerable stake.

The sectorial classification was developed to respond to several perceived requirements of technical assistance activity and organization.

Common Sequence of Development

First, there was a perception that each technical sector shared a common sequence for project development, i.e. a project cycle moving from sector and project planning, through design, contracting, and construction supervision, to operations, maintenance, and service management. Second,

26

the sectorial approach was consistent with the strategy of integrating capital investment and continuous operation of the project cycle. Finally, the *sector* approach organized TA resources in a way that was responsive to differences in the technical requirements of the various types of public works.

Work with Counterpart Agencies

For Potable Water Supply, Environmental Engineering, and Roads, the sectorial organization of TA facilitated close working relationships with counterpart agencies at the governorate level, such as the directorates of housing and roads, and organizational integration between these directorates and the city council engineering departments.

Technical Integrity

Building Development and Rolling Stock do not have a single counterpart agency at the governorate level, but several. The definition of these two sectors responded to a consideration for their technical integrity (as above) and their size in the LD II-P subproject portfolios in the governorates. The work plans of both of these sectors contained significant elements of coordination with the service sectors in which their subprojects were involved.

Organizational Channels

The sectors for Human Resource Development, Information Systems, Local Government, and Monitoring and Evaluation were the organizational means by which TA was extended to the governance system itself, i.e., the popular and executive councils and the *diwan el-aam*, or headquarters departments, such as village development, planning, follow up, statistics, and financial and administrative affairs.

The objective of technical assistance was to develop capacity in these sectors at the governorate and markaz levels by providing direct TA to departments where a sector is housed, or a group of departments where sector functions are located, or by inducing the development of appropriate mechanisms and/or units to support and carry out these sector functions.

Methodology of TA Activity

Within the sectorial approach described above, Chemonics' methodology for delivering technical assistance used the project life-cycle as an organizational tool. The design included:

- Sector planning
- Project planning (including feasibility studies)
- Project design
- Contracting
- Construction supervision

- Service delivery (which includes operation, maintenance and provision of quality services)
- Program support, including monitoring and evaluation.

Activity 1, *Sector Planning*, served as the institutional focus of our technical assistance at the sector level. The expected output of this activity was a strategic plan for each sector, defining its mission, goals and operational objectives; measuring current and projected demand for sector services; establishing service delivery standards and coverage; setting priorities for planning, design, implementation, maintenance and operations of project portfolios; and estimating resource requirements.

The basic objective of Chemonics' technical assistance strategy was to replace the short-term efforts of LD II-P capital investment planning and annual preparations of recurrent cost budgets with mechanisms and processes based on multi-year sector development plans.

Activities 2 through 6 essentially followed the project life-cycle: project planning, design, contracting, construction supervision, and service delivery. The geographic coverage of these activities generally included all governorates.

Activity 7 (*Program Support*) had two major components: special studies to support the other activities, and monitoring and evaluation to measure the impact of project interventions by sector.

Monitoring and Evaluation

Monitoring and evaluation (M&E) activities were designed to gauge performance at the project contract and local government levels. These M&E subsystems are based on the diverse needs of the three main types of users: USAID, the advisory team, and local government officials. Each subsystem is discussed briefly below.

LD II Project

At the project level, the objectives of our monitoring strategy were to assist the GOE (MLA and ORDEV) in designing and implementing a monitoring system to track progress in the implementation of subprojects and the achievement of project outputs. The reports from this system satisfied the requirements for GOE reporting to USAID.

Contractor's Sections

Second, within the proposed organization of our technical assistance effort, each sector carried out its own monitoring and evaluation function. Examples of these were systems developed by the wastewater, equipment, and information

sectors. These monitoring and evaluation activities of the sectors were summarized in Quarterly Monitoring Progress Reports.

Local Government Units

The third M&E subsystem included the enhancement of the capacity of LGUs to perform monitoring functions in the implementation of their own subprojects, the development of indicators of service access and delivery, cash management, and O&M planning, budgeting, availability and utilization of equipment.

Subproject Monitoring in the Field

Given the number of subprojects (over 13,000), and their geographic dispersion, regular section monitoring of its sector projects was not enough. Two key elements of our strategy, discussed later in this report, included the development of a governorate-based field visitation system to provide tools to LGUs to perform their own field subproject monitoring and the development and implementation of a stratified random national sample of subprojects.

The objective of the national sample was to accumulate a large enough number of observations from which reliable inferences could be made concerning the service delivery status of subprojects.

SUMMARY

This section has presented a brief discussion of the LD II-P Project environment, delineating the structure and functions of the local administration system within which the project operated. The discussion of the local administration system was confined to its role in the provision of basic services.

The section also summarized the contractor's strategy relevant to the implementation of the project including operational objectives, sector approach to the organization of the workplan and technical assistance activity, the field monitoring of subprojects, and the overall monitoring strategy.

Section III focuses on the contractor's strategy, activities and accomplishments in operationalizing the project purpose in the area of improving local planning capacity.

29

Section III

Planning

OVERVIEW

Planning has been a key activity in LD II, affecting not only the types and quality of infrastructure projects developed in Egypt but also the capacity of local administration, from governorates to village councils, to establish and manage basic services. Planning capacity improvement activities were designed to support LGUs in the delivery of quality projects rendering service to beneficiaries. Beginning in 1990, the technical contractor strategy was also directed toward the creation of an integrated development planning capability in the governorates. This was necessary, in order to coordinate LD II-P capital investment budgets, project implementation, and maintenance with investments and projects from other sources, such as the Bab III programs. The contractor's sector strategic planning, geographic information systems, and service delivery indicators were aimed at achieving this goal.

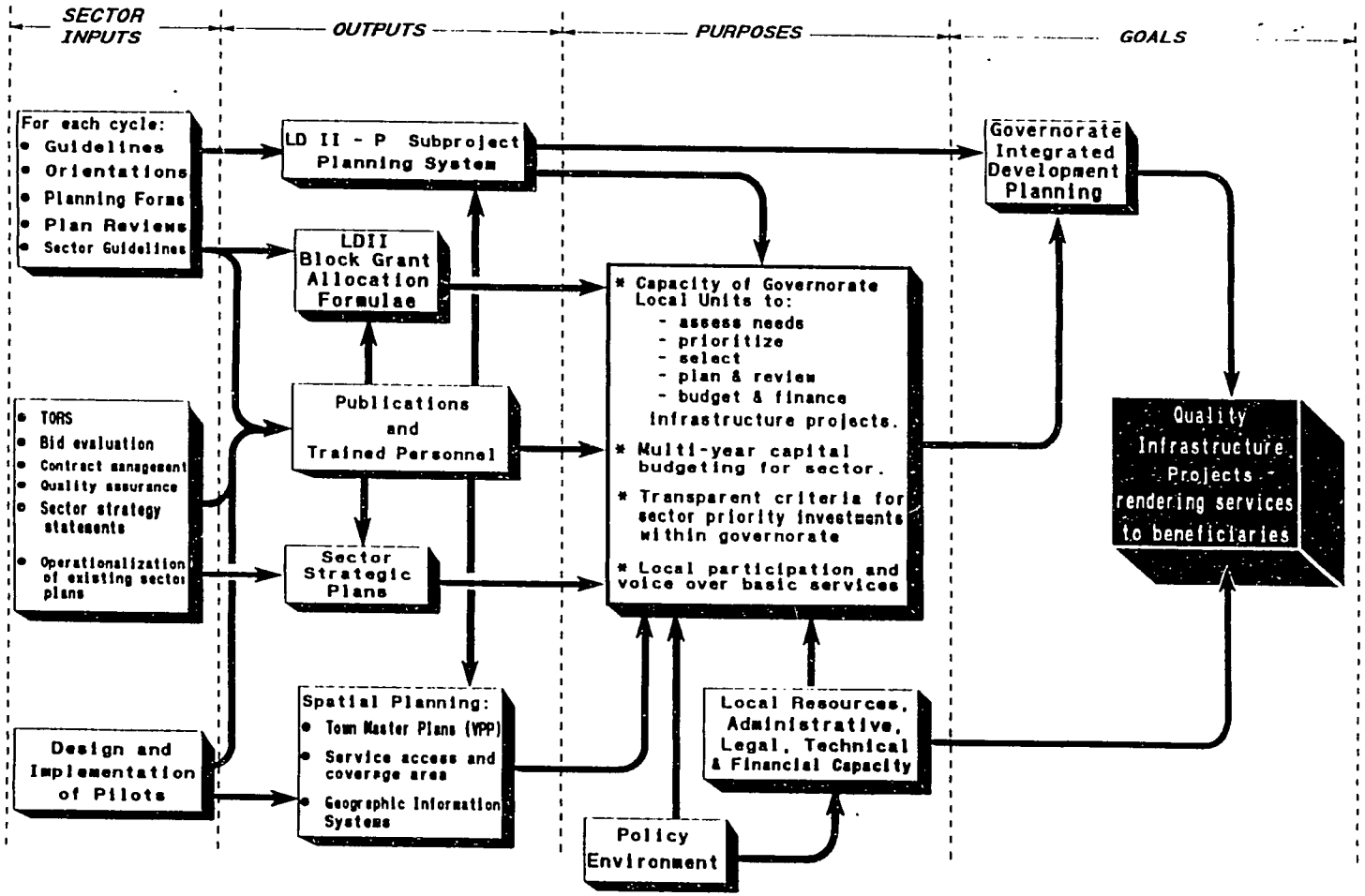
The logframe for improvement of local planning capacity, presented in Figure III. 1, provides the conceptual framework for the contractor's approach and summarizes the work in this area.

The logframe for infrastructure project planning includes contractor-designed and implemented inputs. These inputs are subsumed in three broad types:

- Funding cycle inputs: guidelines, orientations, planning forms, plan reviews and sector guidelines
- Sector strategic planning inputs: TORs, bid evaluation assistance, contract management, quality assurance, sector strategy statements, and operationalization of existing sector master plans in the governorates
- Design and implementation of pilots providing planning tools to the governorates: geographic information systems (GIS), and service access and delivery indicator systems

These contractor-designed inputs supported the following outputs: a *system* of subproject planning, a block grant allocation formula more reflective of actual needs, governorate sector strategic plans, spatial planning tools, publications (manuals, handbooks, guidelines, trainers' guides, etc.), and trained local government personnel.

Figure III. 1 Contractor's Logframe for Improvement of Local Planning Capacity



The contractor's role in supporting the LD II-P Block Grant system and rendering this infrastructure operational represents, by itself, an indication of successful achievement of the project purpose in the area of improved planning capacities at the local level. Additionally, in keeping with the themes of decentralization of the project, the contractor designed and implemented tools for LGUs to achieve better sectorial and spatial planning of their infrastructure services.

BACKGROUND

Bab III Programs

The environment for planning is the capital budgeting process of the government of Egypt (GOE). Capital budgeting and planning for basic services in Egypt operates through two national-level programs and a variety of local "collection-boxes" (*sanadiq*). During the 1980s, there were two national-level programs funded through Bab III (the capital budget).

- **The central ministries program** using Bab III grants for large projects planned and implemented by the central service ministries (Housing, Roads, Social Affairs, Education, Health) and their associated technical authorities (NOPWASD, NARB, etc.)
- **The localities or municipal program** using Bab III grants for locally selected and implemented projects providing the same types of services but on the physical scale of a locality or municipality.

Each of these programs receives foreign financial and technical assistance in addition to regular GOE Bab III allocations.[1] Localities or municipal projects received major foreign assistance in the 1980s through the USAID/MLA DDS-I and LD II programs. DDS-I/LD II provided block grants to the governorates through an account and a procedure different from those of the GOE Bab III localities program. LD II block grants were a significant addition to the localities Bab III program, as shown in Table III. 1 and Figure III. 2.

[1]For example, during the 80s, Denmark, FRG, Holland, Japan, Sweden, Czechoslovakia, and the World Bank provided NOPWASD with funds and TA for twenty-year water/wastewater sector plans for thirteen governorates.

32

Table III. 1 Bab III and Local Development Provincial Allocations

(In LE '000)

GOVERNORATE	LD II-P Allocation 86-87	LD II-P Allocation 87-88	LD II-P Allocation 88-89	LD II-P Allocation TOTAL	Bab III Closing 86-87 (1)	Bab III Closing 87-88 (2)	Bab III Closing 88-89 (3)	Bab III Closing TOTAL	LD II-P/ BAB III Ratios
ASSWAN	0	6,050	7,529	13,579	0	13,499	12,346	25,845	52.5%
ASSYOUT	0	6,050	8,525	14,575	0	22,638	21,672	44,309	32.9%
BEHEIRA	3,302	0	12,243	15,545	19,311	0	21,208	40,519	38.4%
BENI SUEF	0	6,050	7,579	13,629	0	14,668	27,829	42,497	32.1%
DAMIETTA	0	6,061	7,524	13,585	0	12,641	17,711	30,352	44.8%
DAQAHLIYA	0	6,050	9,086	15,136	0	31,554	40,339	71,893	21.1%
FAYOUM	3,303	0	9,889	13,192	12,285	0	20,367	32,652	40.4%
GHARBIYA	0	6,050	8,107	14,157	0	18,538	26,439	44,977	31.5%
GIZA	3,283	0	10,574	13,857	34,795	0	28,020	62,815	22.1%
ISMAILIA	0	6,050	7,290	13,340	0	16,003	23,191	39,194	34.0%
KAFR EL SHEIKH	0	6,050	8,272	14,322	0	19,048	22,879	41,927	34.2%
MATROUH	0	3,299	3,743	7,042	0	9,792	11,519	21,311	33.0%
MENUFIYA	3,303	0	11,132	14,435	18,367	0	20,851	39,218	36.8%
MINYA	3,302	0	10,868	14,170	20,020	0	28,498	48,518	29.2%
NEW VALLEY	0	3,302	3,416	6,718	0	10,774	13,394	24,168	27.8%
NORTH SINAI	0	3,302	3,751	7,053	0	15,857	17,980	33,838	20.8%
QALUBIYA	3,302	0	10,802	14,104	21,300	0	34,425	55,725	25.3%
QENA	3,302	0	11,424	14,726	17,639	0	11,875	29,514	49.9%
RED SEA	0	3,302	3,630	6,932	0	10,749	12,956	23,705	29.2%
SHARQIYA	3,302	0	12,045	15,347	22,986	0	30,787	53,773	28.5%
SOHAG	3,302	0	11,495	14,797	15,105	0	18,750	33,854	43.7%
SOUTH SINAI	0	0	3,302	3,302	0	0	14,983	14,983	22.0%
TOTALS	*29,703*	*61,616*	*182,226*	*273,545*	*181,808*	*195,762*	*478,017*	*855,587*	*32.0%*

NOTES: The table excludes BAB III data for governorates without LD II-P allocations in the 1986-87 and 1987-88 years.

Sources: Ministry of Finance - Central Administration

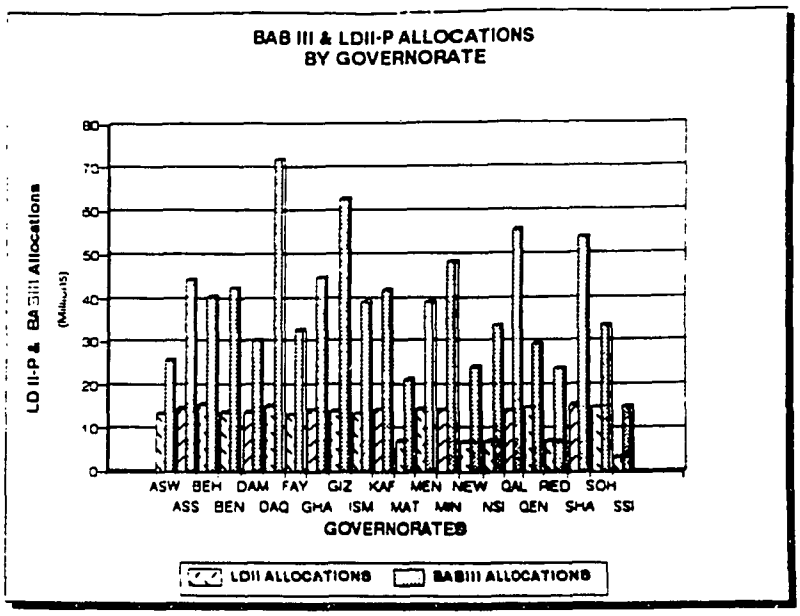
Closing Accounts for Local Governments - Part I - Summary Schedules.

(1) Fiscal Year 1986-87, pp. 54-55

(2) Fiscal Year 1987-88, p. 68.

(3) Fiscal Year 1988-89, p. 91

Figure III. 2 LD II/Bab III Funds, by Governorate (1986-89)



For most village councils, BVS and LD II-P were the first local investment funds since the fifties, when most of the pre-DDS-I village infrastructure was built.[2]

Differences Among Programs

The ministerial and localities programs differed in the scale of the systems they built (regional versus municipal) and in their planning process (technocratic versus participatory).

The Bab III and USAID localities programs shared the same infrastructure scale (municipal), but their funds were administered separately. The DDS-I and LD II agreements specified that funds were to be allocated to the village councils and spent by village councils as well. Special project accounts had to be kept, and under LD II-P, these were interest-bearing accounts. Unlike regular Bab III funds, each governorate received its entire grant as soon as its plans were approved, and unspent balances did not revert to the central government.

[2]The provincial cities have traditionally received the bulk of Bab III localities program funds. Only four provincial cities (Ismailia, Fayoum, Beni Suef, and Minya) received USAID funding (through NOPWASD) prior to the 1988-1989 LDII-P planning cycle, when all provincial cities (except these four) were made eligible for LDII-P funding.

34

Furthermore, DDS-I/LD II programs insisted on local participation and systematic needs assessment in the planning process. In Bab III planning each local council competed with all others at the same level in the larger unit, criteria for allocations were not clear and the decisive battles of the annual local administration budgetary process were fought at the central level. In emphasizing the local voice in needs assessment, project selection, and providing funds (and TA), BVS and LD II-P vitalized the local scene by giving political life to the villages at the markaz and governorate levels.

Thus, there were three basic service infrastructure programs in Egypt during the 1980s, with quite distinct planning and budgeting systems. Although many of the actors were playing roles in more than one system, differences in the programs generated uncertainties about scopes of authority, coordination, accountability, and overall integration of municipal service delivery systems.

Extent of Local Participation

While neither the *ministerial* nor the *localities* program can address fundamental issues of institutional accountability to service recipients, more local participation is theoretically feasible in the *localities* program. LD II-P and its predecessor project, BVS, allowed participation from both village units and marakez, providing increased local involvement in implementation, operations, and maintenance of service infrastructure projects.

CONSTRAINTS

Constraints that LD II-P had to address to improve local planning capacity were:

- Little local experience in needs assessment, project formulation, prioritization, and appraisal techniques at the governorate and markaz service directorates.
- Not enough local experience or capacity in systematic methodologies of project planning that consider cost, implementation schedules, sources of funding, and O&M considerations.
- Low governorate capability for dealing with geographic coverage, delivery standards, sector strategies, multi-year planning and budgeting, and coordination of the ministerial, localities and donor-funded programs, such as LD II-P.
- No explicit spatial framework, such as town planning or physical planning, to coordinate and inform capital

infrastructure budgeting and investment. On a regional basis, governorates in provincial Egypt have no tools to integrate the multi-funded capital infrastructure investment in a coherent regional development strategy.

- No transparent set of service delivery indicators available for public scrutiny and against which progress in service delivery access and provision may be gauged. Pockets of unserved, or poorly served, beneficiaries cannot be readily identified.

OBJECTIVES

These planning constraints were addressed by the operational objectives of the contractor's general strategy described in Section II. The project life-cycle metaphor and the sector approach were used to identify specific interventions necessary at the planning stage to achieve overall project quality improvements. Likewise, improvements in absorptive capacity and support for policy dialogue were general operational objectives pursued through contractor-designed planning systems and procedures.

In addition to these general operational objectives for the project, specific objectives pursued by the contractor to impact local planning capacity can be summarized as follows:

- Design of a support system for the LD II Block Grant Program project planning process
- Design of the LD II-P planning system as a *standard* that could be applied to the Bab III *localities* program
- Increased local participation by village councils and marakez in needs assessment, project prioritization and identification
- Design and pilot test additional systems and tools to foster participatory, spatial, and sectorial local voice and control of municipal service delivery systems.

STRATEGY

The sectorial approach to LD II-P technical assistance was part of a larger strategy of strengthening governorates' capability to manage programs for providing basic services. LD II-P's concentration on the governorate as the political community of service provision and on integrated technical administration of the service sectors was the single biggest difference between the BVS and LD II-P programs.

By defining the governorate as the entity through which public resources for basic services were to be allocated and needs prioritized, the LD II-P program was situated at the same level as the Bab III localities program. At the governorate level, the two financial streams could be pooled for planning and budgeting purposes within an integrated multi-year, multi-source investment program formulated to address clearly defined and consensually derived objectives for improving basic services.

The governorate as the level of sector program management, addressed the need for integrated planning at the project level, since individual projects are typically parts of larger integral infrastructure systems. Under this strategy, the service directorates were to provide technical assistance to the markaz councils, and it was hoped that the service directors might use their ministerial affiliation to achieve some integration between governorate and central level project plans.

The strategy for improving planning capability was composed of the following elements:

- **Support of the LD II-P Block Grant Program.** The contractor designed and implemented a seven-step process to assist in the preparation of infrastructure subprojects to be financed by the LD II-P Block Grant funds.
- **Sector strategic planning.** Model Terms of Reference (TORs) and contracts were designed by the contractor to assist governorates in securing the services of competent local firms to prepare strategic sector-based governorate plans. These sector plans were to:
    - Provide an impartial assessment of relative need to guide the formulation of development objectives and program priorities
    - Facilitate program/project planning on a multi-year, multi-sourced, multi-council, and eventually multi-sectoral level
- **Program management development.** Apart from the extensive technical assistance given to the governorates over the four planning cycles, a specific program, the Advanced Seminars[3], was designed to address issues of program management and coordination. The program was delivered in 17 governorates.
- **Spatial Planning.** Participation was, and is, almost entirely absent in provincial Egypt. The contractor

[3]The Advanced Seminar program is discussed,in more detail later in this report.

developed and pilot-tested participatory, replicable models of local town-planning through its village physical planning pilot in Batra Village (Daqahliya Governorate). The contractor also developed and pilot tested an overall framework for coordinating transportation, agriculture, manufacturing, primary products extraction, services, and trade in the context of regional development in North Sinai governorate, using a geographic information system (GIS) approach. The pilots were planned, implemented, followed up, and documented to leave experience-tested models for a later stage of local development.

- **Service Delivery Indicator Development.** The technical contractor designed and implemented a pilot service delivery indicator system. Meaningful information on current states of service coverage and service levels was viewed as a necessary condition for democratic and informed decisions about service provision.

SUPPORT OF LD II BLOCK GRANT PROGRAM

The LD II-P Block Grant disbursed LE 577.3 million to twenty-two provincial governorates during four planning cycles.[4] The GOE contributed an additional ten percent, or LE 57.7 million of funds for local infrastructure investment. The technical contractor designed and implemented a planning system in support of the LD II-P Block Grant capital investment.

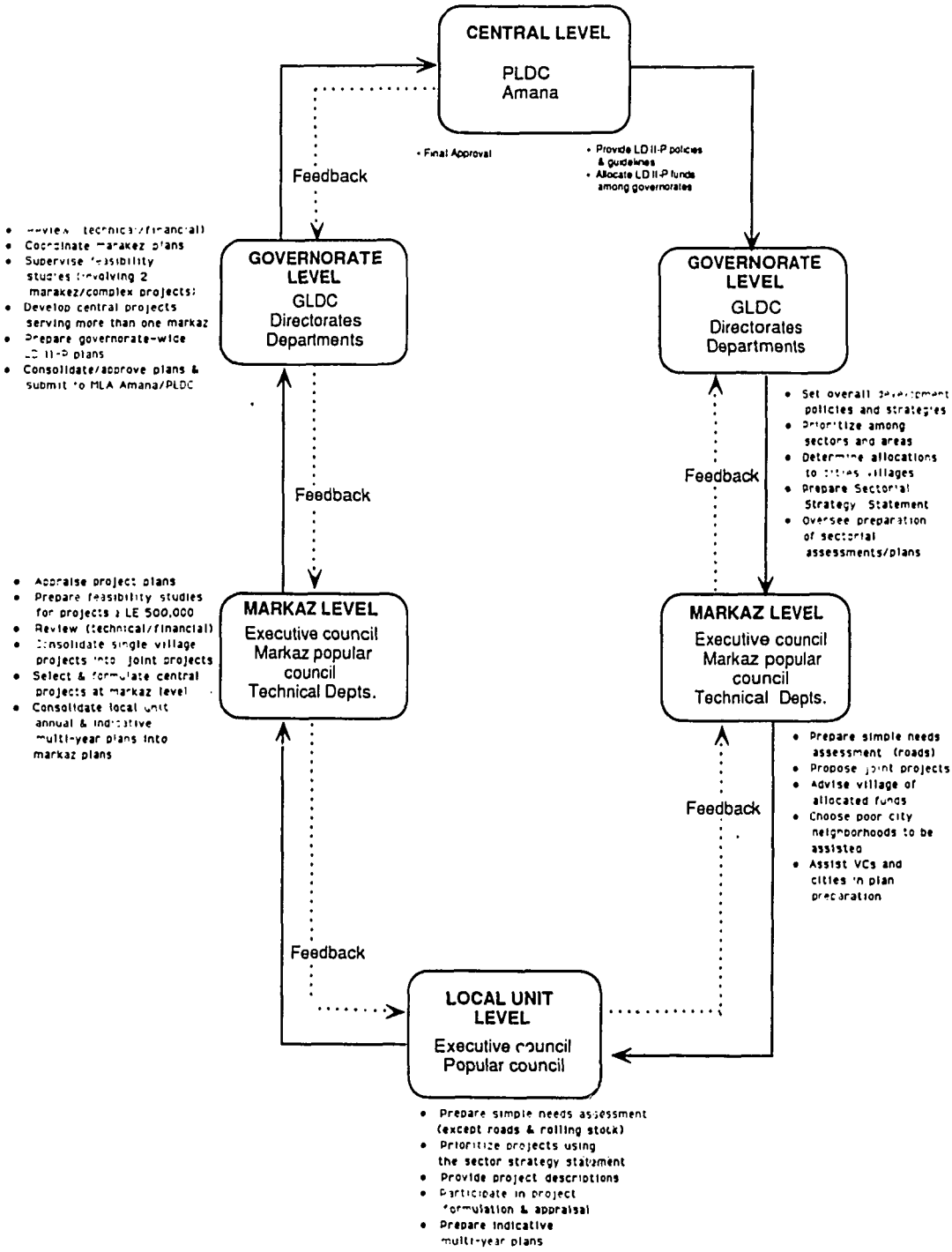
Roles of Local Government Levels

The first element in the contractor-designed support system for the LD II-P Block Grant Program was defining the program of roles of each level of local government. This is graphically illustrated in Figure III. 3. At the central GOE level, the Provincial Local Development Committee (PLDC) was the policy-making body; at the governorate level, the Governorate Local Development Committee (GLDC) set additional guidelines, approved and coordinated local plans and amendments. Marakez and village levels are also shown in Figure III. 3 with a delineation of their responsibilities.

[4]The city of Luxor was treated as a twenty-third governorate during the fourth cycle of funding.

38

Figure III. 3 Roles of Government Units in the Planning Cycle



29

The LD II-P Planning Cycle

The LD II-P planning cycle proceeded through the seven stages shown in Figure III. 4:

- Preparation of Guidelines that, when approved by the PLDC, specified general program criteria and policies to be followed by the governorates
- Inclusion of additional Guidelines by the governorate-based GLDCs to orient investment within the governorate
- Orientations conducted by the technical assistance contractor to acquaint LGUs with these guidelines and introduction to the planning forms required for project preparation and approval
- Preparation of planning forms by local councils
  - Project objectives
  - Project description
  - Bill of quantities and cost estimate
  - Implementation schedule
  - Approvals
  - Drawings, designs, studies (as required)
- Review of plans by governorate technical committees, with assistance from the technical contractor
- Review and approval by the GLDC
- Review and approval by the PLDC

40

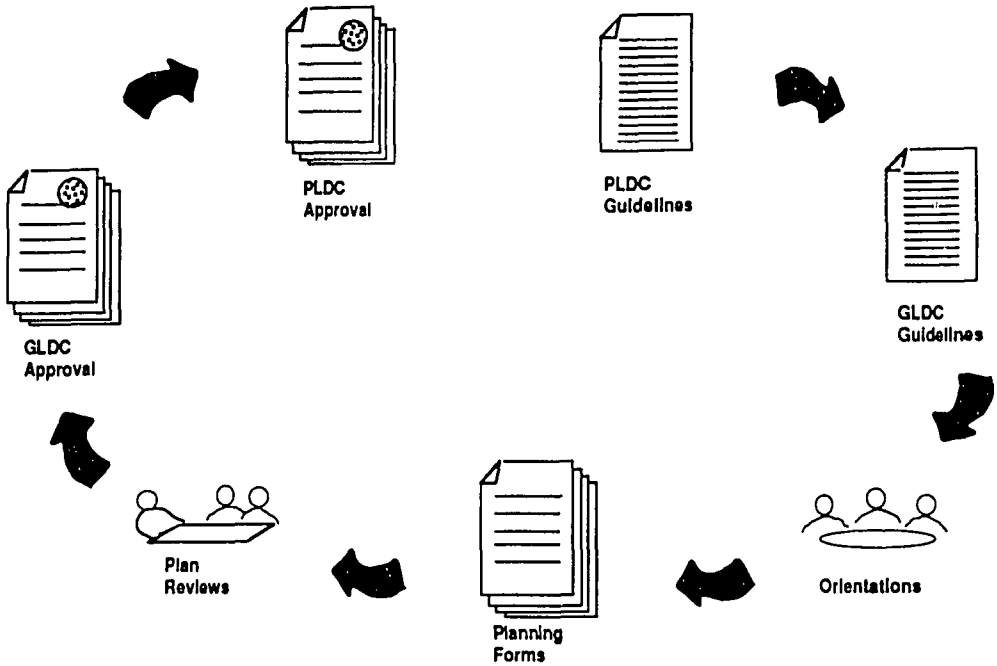


Figure III. 4 Stages of the Planning Process

Each of these stages is described briefly below.

Guidelines

The Guidelines for each cycle were reviewed and updated by the MLA/ORDEV, USAID, Chemonics, and the PLDC, based on the lessons of the previous cycle. Comparison of the four guidelines is a means of seeing the evolution of the scope of LD II-P planning requirements through the four cycles. The main lines of evolution were in the following areas:

- **Allocations.** Progress was made during the four cycles of LD II-P in the formulae used for governorate allocations: from equal shares by type of governorate (delta versus desert) to shares more indicative of needs. Measures of governorate performance were also developed by the contractor. However, their discussion with the MLA and the governorates, as well as their use, remain as an agenda item for future implementation toward developing performance criteria for block grant allocations.
- **Project planning requirements.** The guidelines have increasingly encouraged the governorates to select larger projects, supported by feasibility studies, and project appraisals. In the fourth cycle, construction supervision contracts were also required for these large projects. For projects estimated to cost LE 200,000 or

41

more, a site visit and project appraisal were required, and the appraisal form was reviewed by Chemonics engineers.

- **Operations and maintenance considerations.** The construction of markaz and village maintenance facilities was a requirement of the first-cycle, followed by preparation of annual plans and budgets for Agreement O&M grants as a precondition for governorate plan submission to the PLDC.
- **Enlargement of the planning horizon.** The third-cycle guidelines required each council to develop a three-year indicative plan to focus council and governorate discussions of investment priorities. The fourth-cycle guidelines required each governorate to develop sector development strategy statements, and either to derive all its water, wastewater, and roads projects from existing governorate-wide sector plans or to allocate fourth-cycle funds for governorate-wide sector planning studies.

The LD II Grant Agreement allowed governorates to allocate up to 25 percent of their block grants for central projects. This category funded construction of markaz maintenance facilities and core components of regional-scale infrastructure systems, such as large water-treatment plants, materials testing laboratories, and information systems development. The central projects category gave the governorates the opportunity to engage in large-scale public works planning and thus to interface with public works agencies such as NOPWASD at the ministerial level. Furthermore, the central projects of LD II-P attracted the governorates whose service directorates had remained aloof from BVS to the project.

In view of the complexity of the fourth-cycle's planning requirements, the *Interim Planning Process Handbook* was developed and distributed to 2200 local officials.

Governorate-level Guidelines

GLDC supplemented the general annual LD II-P guidelines with their own guidelines. In particular, the GLDCs were responsible for setting out, within the framework of the general guidelines, local criteria for allocating funds and for prioritizing projects.

Orientations

The contractor prepared orientation programs for governorate, markaz, and village council officials to promulgate the policy directions, investment priorities, and funding requirements specified in the guidelines. Table III. 2 gives the number of participants in each cycle's orientation program.

Table III. 2 Orientation Program Participants

Cycle	Participants
1	3373
2	2880
3	4498
4	4074

Planning Forms

Sectorial planning forms, initiated with LD II-P fourth-cycle funding, provided "programmed learning" for local planners and facilitated the review responsibilities of higher-level officials.

The basic structure of the project planning form is represented in Figure III. 5:

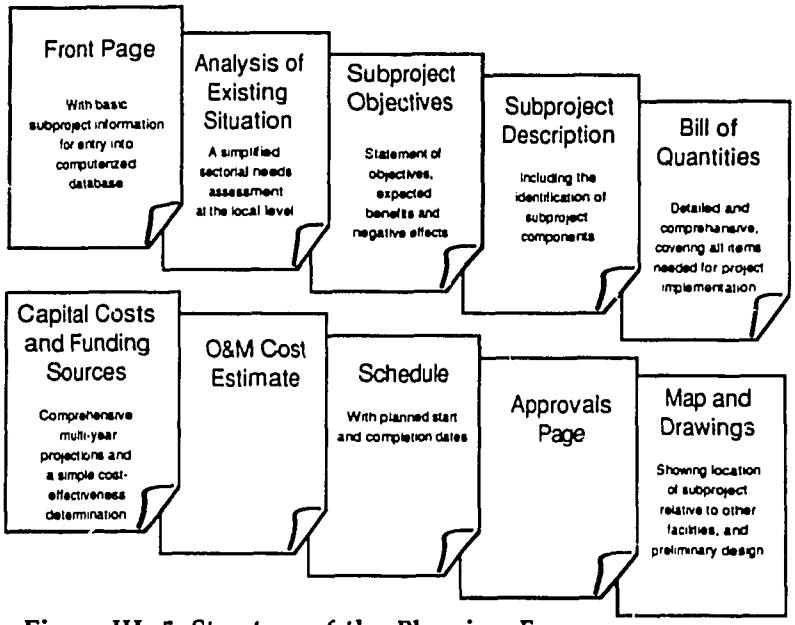


Figure III. 5 Structure of the Planning Form

Revised annually, the planning form required increased precision in the specification of objectives, statement of the problem, description of proposed project, implementation plan, and O&M plan and budget. Beginning with the fourth cycle of LD II-P funding, sector-specific planning forms for water, wastewater, roads, buildings, equipment and rolling stock, and information systems projects were added.
The sectorial planning forms were accompanied by sectorial project planning guidelines prepared by the contractor to assist local officials in completing the forms and to provide standard design reference material. Sectorial project plan review checklists were also developed to facilitate the work of the local plan review committees.

Project Planning and Review

In each planning cycle, Chemonics advisors provided technical assistance in plan review. In earlier cycles, nearly every markaz in each governorate was visited. In later cycles, the span of TA narrowed to the governorate level, selected "weak" marakez, and site visits to councils proposing large projects. In the final cycle, the emphasis shifted to review of each governorate's draft final plan by the technical assistance advisors.

GLDC Review and Approval

Although GLDC commitment varied from governorate to governorate, committed GLDCs, such as Beheira's, reviewed plans not once but several times during the cycle in an iterative process for heightened feedback through all levels of the governorate, progressing towards increasing refinement of development strategies that addressed equity and efficiency criteria.

PLDC Review and Approval

The PLDC meetings held to review governorate plans intensified the identification of the secretary general with his governorate's LD II-P program. A comprehensive cover report on the plans was prepared for the meeting by Chemonics, showing the breakdown of each plan by type of project, level of project (central/city/village), and relation of projects to previous investments (completion rehabilitation, upgrading, extension, new project). In several cycles, the PLDC withheld funding for projects deemed un-feasible.

The PLDC meetings also provided a forum for the articulation of policy issues for follow-up by the MLA. PLDC policy concerns have included :

- Ministry of Finance reluctance to approve regulations for management of maintenance facilities on a partial cost recovery basis
- MOF reluctance to allow deposit of LD II-P funds in commercial banks

Accomplishments in support of the LD II-P Block Grant Program

The accomplishments in this area can be summarized as follows:

- A field-proven seven-step process to support the cycles of USAID disbursement of LD II program funds has been developed and implemented.
- LD II-P subproject planning forms and guidelines have given local officials a *standard* for project planning.

- The contractor leaves over 3,500 officials and technicians at the governorate, markaz and village council level who have participated in each of the four cycles of orientation for the funding cycles of LD II-P. The contractor delivered almost 90,000 person/days of orientation workshops for the governorates.
- The orientations have fostered a local constituency exposed to the participatory planning methodologies of LD II-P. To what extent this formative constituency will carry over and exercise similar expectations from the municipalities or ministerial Bab III programs remains to be seen.

45

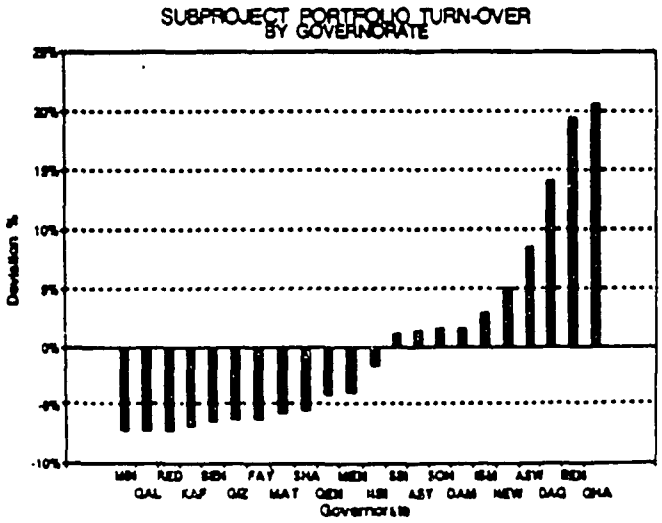
Table III. 3 Training Courses by Major Activity

COURSE TITLE	ACTIVITY P	ACTIVITY S	TIMES OFFERED	DURATION	No of Participant by Governorate: ASW	ASY	BEH	BEN	DAM	DAQ	FAY	GHA	GIZ	ISM	KAF	MAT	MEN	MIN	NEW	NSI	QAL	QEN	RED	SHA	SOH	SSI	LUX	TOTAL No Part	TOTAL P/Days
SECTION : ROLLING STOCK																													
[illegible] PLANNING & BUDGETING	2	6	1	3	16	42	80	48	45	88	32	54	36	28	50	8	51	53	14	30	46	60	13	74	62	66	0	862	2586
[illegible] PREPARATION	2	8	1	2	63	80	89	66	67	100	70	72	65	39	84	30	80	86	25	47	56	94	30	110	87	63	10	1513	3026
[illegible] ASSMENT WORKSHOP	1	2	8	4	4	14	18	10	12	16	7	23	9	8	15	6	14	60	7	8	9	16	8	17	13	6	2	291	1164
SUB TOTAL					83	136	187	124	114	182	109	149	110	75	149	44	145	198	46	85	111	170	51	201	162	113	12	2666	7076
SECTION : LOCAL GOVERNMENT																													
[illegible] PLAN UTILIZATION	1		6	3	0	0	0	0	107	94	0	0	0	0	0	0	0	0	0	0	0	133	0	0	0	0	0	334	1002
SUB TOTAL					0	0	0	0	107	94	0	0	0	0	0	0	0	0	0	0	0	133	0	0	0	0	0	334	1002
SECTION : WASTE WATER																													
[illegible] ENERGY FOR TOILS	1		1	2																								80	160
SUB TOTAL					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	160
SECTION : BUILDINGS																													
VILLAGE PHYSICAL PLANNING	2		3	1	3	5	5	4	5	18	5	5	5	14	5	20	5	5	3	19	4	5	5	5	6	4	6	180	180
[illegible] PROJECTS	2		3	3	6	4	3	5	5	6	5	5	5	4	1	5	4	5	5	6	4	4	3	5	6	6	4	104	312
SUB TOTAL					9	9	8	9	10	24	10	10	10	18	6	25	9	10	8	24	8	9	8	10	11	9	10	284	472
SECTION : WATER																													
[illegible] & STRAT WORKSHOP	1	2	3	1	0	5	7	6	0	0	0	9	4	7	8	0	6	0	5	6	8	0	0	0	0	0	0	70	70
SUB TOTAL					0	5	7	6	0	0	0	9	4	7	8	0	6	0	5	6	8	0	0	0	0	0	0	70	70
SECTION : IS - MAE																													
SERVICE DELIVERY INDICATOR	6		2	4	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	380
[illegible] SERV. PLAN MGMT. STRATEGY	2		5	4	3	3	3	4	4		5	3		86				8	4	18		8			8	2	6	156	624
[illegible] PLANNING WORKSHOP	2		10	4	28	56	43	0	0	41	0	0	34	23	0	19	0	0	22	40	0	0		50	0	0	0	363	1412
[illegible] PLANS PREPARATION	1		1	5																	0	0	20	0	0	0		20	100
[illegible] TOOLS	1		6	5	0	0	0	0	8	8	0	0	0	0	0	0	0	0	0	56		0	0	0	8	8	0	87	460
SUB TOTAL					29	59	46	84	13	50	5	3	34	108	0	19	0	8	26	114	0	8	20	50	14	10	6	711	2956
SECTION : ADVANCE SEMINARS																													
ADVANCE SEMINAR MOD 1	1	6	28	6		113	102	71	52	128	56	88		38		61		110	28	45		158	37	170	135	48	7	1444	8664
ADVANCE SEMINAR MOD 2	2	6	28	6		117	108	72	54	170	70	87		108		73		123	33	81		123	44	183	128	49	7	1630	9780
ADVANCE SEMINAR MOD 3	2	3	28	6		151	113	78	58	69	73	85		54		88		88	41	80		129	38	138	152	68	7	1508	9054
SUB TOTAL					0	381	321	221	164	366	198	260	0	200	0	220	0	321	102	206	0	412	120	491	415	165	21	4583	27498
ORIENTATION																													
[illegible] ORIENTATION PROGRAM			21	6	115	191	186	159	111	222	149	149	144	67	219	89	233	231	89	103	152	215	85	243	221			3373	20238
[illegible] ORIENTATION PROGRAM			21	6	97	163	147	137	94	191	134	145	123	53	174	89	200	197	80	85	127	187	78	202	187			2880	17280
[illegible] ORIENTATION PROGRAM			22	6	152	294	324	147	113	342	157	234	211	90	295	114	244	330	82	109	194	286	110	234	290	149		4698	28188
[illegible] ORIENTATION PROGRAM			22	6	164	189	270	161	177	318	166	206	156	123	209	102	234	200	140	154	183	233	80	247	248	124		4074	24444
SUB TOTAL					528	837	927	604	490	1071	606	734	633	333	897	374	911	958	391	451	666	921	353	926	864	270	0	14625	88650
TOTAL					649	1426	1506	1058	898	1786	928	1166	791	741	1060	652	1071	1493	578	895	783	1661	562	1878	1568	567	49	22630	128184

Table III. 4 Subproject Portfolio Turn-over: Cancelled, Added and Changed Subprojects

GOVNAME	4 th CYCLE % CHANGE SEP - MAR	DEVIATION FROM MEAN
MIN	0.0%	-7%
QAL	0.0%	-7%
RED	0.0%	-7%
KAF	0.5%	-7%
BEH	0.8%	-6%
GIZ	1.0%	-6%
FAY	1.0%	-6%
MAT	1.6%	-6%
SHA	1.7%	-6%
QEN	3.2%	-4%
MEN	3.3%	-4%
NSI	5.7%	-2%
SSI	8.3%	1%
ASY	8.5%	1%
SOH	8.8%	2%
DAM	8.8%	2%
ISM	10.0%	3%
NEW	12.1%	5%
ASW	15.7%	8%
DAQ	21.2%	14%
BEN	26.6%	19%
GHA	27.7%	20%

MEAN:	7%
St. Dev.:	8%



41

SECTOR STRATEGIC PLANNING

While small local projects in BVS gave village councils a sense of ownership of their local infrastructure projects, they did not address the need for full development of the service sectors across the governorate. In addition, they tended to be awarded to the more powerful and influential communities rather than to meet transparent criteria of need. Small local projects were often poorly integrated into the larger infrastructure systems of which they were components.

Sector strategic planning activities sought to enable governorates to improve their overall project prioritization and capital budgeting. The sector strategic planning process was designed to build better criteria for service infrastructure investment decisions and to coordinate sector investment, regardless of funding source. Local officials were to be involved in the preparation of the sector strategic plans, and local citizens to participate with discussion, feedback, and acceptance of the plan. To the extent that governorates developed these capacities, over the long-run they would be in a better position to negotiate with the central government about the location, timing, and priorities of service infrastructure investment.

The strategic sector planning activities therefore addressed a number of constraints:

- Lack of governorate-wide sectorial investment priorities to guide infrastructure investment.
- Lack of coordination among infrastructure planning bodies within the same sector, such as the central public works agencies, the governorate service directorates, the city councils, and the village councils.
- Lack of a multi-year planning horizon.
- Lack of technical capability in the governorates to prepare or use existing sector master plans.

Strategy of Implementation

LD II-P Guidelines

The contractor assisted in the preparation of LD II-P Guidelines which, when approved by the PLDC, became policy directions to be followed. Multi-year plans, regional projects ("central" projects, in the terminology of the subproject coding structure of the QPR), preparation of governorate sector policy statements, and allocations for the conduct of sector strategic studies as "projects" were issued as policy directions to the governorates.

Local Participation

The sector strategic planning activities were designed to involve local officials in preparing sector strategy statements

and sector strategic plans, and to enable local residents to participate through their popular councils in the criteria, priorities, location, service targets and funding mechanisms being proposed in the plans. When consensually accepted, the transparency of decision-making in the planning of local municipal services would be improved.

Private Sector Involvement

Chemonics pursued an implementation strategy that would link local private sector consulting firms capable of providing services to local governments. The sector strategic planning activities involved assisting governorates with the preparation of TO contracting process, and quality control of the conduct of the sector strategic study.

Major Activities

Sector Development Strategy Statements

Preparation of the sector development strategy statement— an exercise in multi-year, governorate-wide sectorial needs prioritization and capital budgeting— started with the fourth planning cycle of LD II-P. The process consisted of the following steps:

1. Identify sector development priorities over a five- year horizon
2. Identify projects to achieve priorities
3. Explain how these projects address sector development priorities
4. Estimate required funding
5. Estimate expected funding. (Iteration would be expected at this point, since expected funding was likely to be inadequate to achieve the service targets to which the priority projects were oriented.)
6. Set out implementation schedule
7. Identify constraints
8. Identify solutions to constraints

The quality of the statements submitted with the fourth-cycle plans varied from governorate to governorate and from sector to sector within a governorate. Major substantive problems that surfaced from this exercise were:

- A general lack of governorate data on service access and delivery standards such as beneficiaries per water or wastewater system, unserved populations, quality and continuity of service, etc.
- The number of officials in each governorate who participated in formulation of the policy was generally small.

54

- Uncertainty about future funding sources and reluctance to confront financial constraints on level-of-service targets. The iterative process of adjusting ideal funding requirements with what could actually be available based on prior funding levels did not take place, and local resource mobilization through user fees, was not really considered by officials participating in this exercise.

Use of Existing Sector Plans in Fourth-Cycle Project Planning

At the outset of the fourth cycle, thirteen governorates had water and/or wastewater plans conducted by professional consulting firms contracted by NOPWASD during the 1980s. But with the exception of Beheira, few governorates made use of these plans in their fourth-cycle project planning. Some of the reasons became clear during the planning cycle; others were understood during the subsequent sector plan utilization workshops undertaken in three governorates with existing water sector plans (Damietta, Daqahliya, and Qena):

- Most of the plans had been written in English and never translated into Arabic.
- The plans dealt mostly with the higher-order levels of the infrastructure system; council-level projects could not be easily "derived" from them without additional planning studies.
- NOPWASD, which "owns" the plans, typically deviated from them, so that they were poor guides to the actual investment plans under implementation.
- NOPWASD did not share the details of its plans or implementation schedules with the governorates, not even with the housing departments.
- The NOPWASD plans had been developed without input from the local councils.
- Ten years of BVS/LD II-P investments had in most cases decisively altered the features of the "existing situation" upon which plan calculations and technical strategies were based.

Thus, operationalization of existing master sector plans, a workplan task proposed by the contractor, was not a useful means to address sector development needs. Other venues need to be explored.

Governorate Sector Strategic Plans

The fourth-cycle LD II-P guidelines asked governorates without water, wastewater, and roads sector plans prepared by professional engineering firms to allocate fourth-cycle LD II-P funds for sectorial planning studies. The sector strategic plans were to address the problem of how to allocate capital

funds among local units in a way that responded to differences in level of need when the local councils did not have the technical capacity to assess and prioritize needs impartially.

The process designed by the contractor had the following stages:

1. Preparation of TORs for governorates to use to contract for such studies in the private sector
2. Provision of bid evaluation criteria and assistance in the bid evaluation process
3. Provision of quality control during the preparation of the plan by a local engineering firm
4. Assistance to the governorates in evaluating the draft plan submitted by the local firm by organizing a workshop for its discussion
5. A revised draft plan to be publicly discussed in the relevant popular councils
6. A final plan, incorporating this feedback to be consensually adopted and serve as guide for prioritizing investment in the sector
7. Annual updating of the plan by repeating steps 5 and 6.

Vignette: Road Sector Strategic Plans

These plans provide:

Each RD sector strategic plan seeks to provide:

•A complete road network inventory with:

- •Evaluation of surface conditions and road type
- •Evaluation of traffic conditions, volumes, and network traffic projections for the plan period
- •Evaluation of existing rolling stock, material resources, financial resources, laboratories, and recommendations for the future

•Training (both practical and theoretical) in all road surface evaluation procedures, traffic counting, prioritizing methods and update of database

•Development of network priorities for the plan period using

•Recommended future maintenance and new/rehabilitation projects, with projected costs for all activities. Identification of special engineering problems and suggested solutions

•Recommendations on organizational restructuring
•Development of a complete roads information system database

•Assessment information on each road link throughout the network system

•Governorate annual roads capital budget requests supported by known criteria

The TORs prepared by Chemonics emphasized the use of easy-to-understand, quantifiable, and reasonably objective methods to compare and rank the level-of-service situation of settlements. In the case of water and wastewater sector plans, the TORs required the professional consultant to use local council staff in the data collection stage to bestow further legitimacy on the resulting prioritization of villages. Notable technical features of the TORs are the requirement for preliminary costing of the priority projects, the clustering analysis, and a common machine-readable database.

Table III. 5 shows the implementation status of sector strategic plans for roads and water wastewater at the end of the technical assistance contract.

Table III. 5 Implementation Status of Strategic Sector Plans as of November 1992

Governorate	Sector	
	Water/Wastewater	Roads
Assyout	T	
Beheira	C	P
Beni Suef	T	
Fayoum		P
Gharbiya	C	
Ismailia	T	
Kafr El-Sheikh	T	
Minya	T	
New Valley	C	
North Sinai		P
Qalubiya	T	

Note: Codes for current status are as follows:
T = Tendered; C = Contracted; D = Draft plan submitted; P = Public discussions of draft plan in progress.
Assyout and Beni Suef have identified contractors for their water/wastewater sector strategic plans and are in final negotiations over price. Kafr El Sheikh had allocated funds for a roads study but after two tender evaluations, using bid evaluation criteria supplied by Chemonics, failed to identify technically qualified contractors, the governorate reprogrammed these funds. This was a good decision by the governorate and it was supported by Chemonics.

Results of Sector Strategic Plans and Future Actions

The needs assessment methodologies developed for the water/wastewater and roads sector TORs represent two of the most important contributions of the contract. They will provide original and useful planning information on the level of basic services in the three sectors that rank highest in local government priorities.

It is important that the contracting and implementation supervision of these studies be carefully monitored, to assure the quality and credibility of the final product. Additional efforts should be made to orient popular council members to the needs assessment indicators and prioritization criteria so that the final product will not be alien to them. Public scrutiny of these plans should lead to a negotiated consensus on investment priorities.

More importantly, public debate of the sector plans should lead to a realization of the magnitude of resources required to complete but a handful of priority projects each year. Neither

the resources from the central government nor those of the donor community will suffice to fund capital budget needs for local service delivery in the current system. Properly channeled, these public debates should be used to initiate local debate on how to meet these budgets. Alternative ways of organizing municipal service delivery systems with a view toward improving accountability, decentralization, and cost-recovery should be explored. The contractor's proposal, discussed briefly in Section VII, calls for redesigning and building local municipal services organizations from the bottom up as *enterprises*, supplemented by mechanisms of sector finance, coordination, and compliance with standards. Much of the current debate on decentralization, sustainability, local cost-recovery, and policy reform is meaningless under the current circumstances. Unless local citizens have a voice and sense of control and ownership over the organizations rendering their municipal services, the pervasive current malaise of basic service delivery in Egypt will persist.

SPATIAL PLANNING

The relationship between sectorial and spatial planning is a delicate one. When balanced, the two are complementary. When development is approached through technocratic central planning by ministries and public enterprises, the sectorial approach predominates. LGUs lack the tools to integrate sectorially and centrally driven investment at the local level. Local planning tools, such as town physical planning and geographic information systems (GIS), were pilot tested by the contractor to support this integration.

Village Physical Planning

The pilot VPP activity in Batra, a village of 15,000 in Daqahliya, was oriented to LD II-P objectives of effectiveness and participation in planning. The effectiveness improvement strategy of VPP is its comprehensive inter-sectorial approach to area development planning. VPP involved villagers in:

- Identification of problems of their existing situation and of expected local development trajectory to the year 2007.
- Discussion of alternative futures and the village physical scenarios they imply
- Selection of the preferred alternative and mapping of the year 2007 scenario of population area boundary, land-use, housing characteristics, economic activity, and infrastructure services

This physical plan would provide a blueprint for local governance (zoning regulations, rights-of-way, economic development policies, etc.) and for project planning which is sectorially balanced and spatially efficient.

The VPP process in Batra is well described in the final report on the activity, *Physical Planning Pilot Project for an Egyptian Village* (August 1992). The activity generated intense enthusiasm in the local council, in the community at large, and in the offices of the governorate. It also posed the question of how to generate resources for local development.

The LD II-P Project also funded three projects in physical planning. Abu Sweir (Ismailia) and Kharga City (New Valley) allocated fourth-cycle funds for studies. Chemonics provided technical assistance in developing the TORs for contracting these studies. Luxor City requested USAID special funds for technical assistance to prepare a physical plan for a new settlement, New Tarif, to be built to resettle 4,000 households of two villages of the Gourna local unit whose drainage threatens the preservation of the tombs in the Valleys of the Kings, Queens, and Nobles. Chemonics developed the TOR, which was tendered locally and internationally. Bids will be opened on 15 December 1992.

Geographic Information Systems

Recent advances in microcomputer technology have brought geographic information systems (GIS) within easy reach of local government. The system transferred to North Sinai, PC ARC/INFO, runs on a compatible microcomputer.

The major advantage of a GIS in this case is its ability to provide an integrated view, usually through maps, of the distribution of services, facilities, land use, and population settlements in a defined geographic area. Information on road networks, water wells, irrigated areas, and cities can be plotted individually or "overlaid" on a map to help plan or maintain infrastructure. Additionally, detailed attribute data on each infrastructure feature can be maintained.

North Sinai governorate finished the basic overlays for the road network, population settlements, water wells, and agricultural lands for markaz El Arish. Staff of the governorate Information Center prepared the data and base maps as part of their hands-on training on the PC ARC/INFO GIS. Six training sessions of an average 5-day duration were held by the contractor. The Governor presented these initial results during the National Conference on Local Development and Information Systems held in the International Conference Hall in Cairo February 11-13, 1992.

North Sinai is now on its way to developing its capacity to track the location, access and quality of its current service delivery infrastructure and to plan future sector and regional development interventions. By the end of LD II-P, North Sinai had finished entering the base map data along the Mediterranean coast and had began to incorporate ERDAS satellite imagery data, supplied by GTZ, the German technical assistance agency. Chemonics has coordinated with GTZ for a continuation of technical support to North Sinai on their GIS implementation beyond the end of LD II-P.

Service Access and Coverage Indicator System

Background and Constraints

The central Agency for Popular Mobilization and Statistics (CAPMAS) does not supply a reliable and valid set of national standard geographic codes (geocodes) to be used in Egypt. Problems in arriving at a national coding system indicative of the hierarchies of administrative jurisdictions (which satellite villages and *ezbas* belong to which village units), are introduced because the MLA is separately charged with this task. Little coordination appears to take place between these two central agencies. Boundaries of administrative jurisdictions, on the other hand, are frequently nebulous.

The consequences of this state of affairs for LGUs are obvious. LGUs cannot afford to invest their meager resources in tackling what should be a centrally provided function. Without a nationally supplied, reasonably reliable and valid system of names of population settlements, standard geocodes, administrative hierarchies and boundaries, and basic data attributes such as population size, potable water connections per household, etc., governorates cannot plan service delivery targets properly.

Governorates, therefore, cannot reliably and easily identify who is served or not served by a particular service within a given jurisdiction.

Given the enormity of the task, LD II-P sought to pilot test an activity to address this gap in one governorate, Beni Suef. Specific constraints that needed to be addressed were:

- The magnitude of the data collection effort because the data needed to be at the lowest possible level of aggregation the *ezba*, or hamlet level to be useful for service delivery planning
- The lack of communication between service directorates, which collect data for their parent ministries

- The lack of consensus, even at the village council level, about the proper council affiliation of small settlements
- The usual conceptual and methodological difficulties in developing valid and reliable indicators, with strict operational definitions

Objectives

The objectives were:

- To provide a simple set of service access and delivery indicators whose change could be tracked over time by the governorate to gauge progress.
- To arrive at a unified, standard list of names and geocodes for jurisdictions for use by all service directorates in the governorate.
- To develop a machine readable database, with Arabic capability, and simple, intuitive graphics to display the data to decision-makers and to council members.
- To assist the governorate staff in the maintenance of this database, so that it could be updated regularly.

Strategies

Major elements of the implementation strategy were:

- Involvement of key service directorates from the beginning of the activity, including definition of the indicators, updating and sharing their own data files, collecting, and displaying data
- A highly iterative process, with frequent assignments and workshops
- Use of regular, off-the-shelf software packages, including those for Arabic language support, familiar to the Information Center staff (although the contractor used the Statistical Package for the Social Sciences - SPSS/PC+, which is unavailable in Arabic, for reporting).

While the emphasis on local involvement kept costs low, it was even more important as a means of publicizing the effort and to establish a constituency that would press the governorate to use the database in planning.

Results of the Beni Suef Service-Access Study

A quality-of-life index, based upon nine indicators that describe access to public water supply, electricity, paved roads, education, and public health care at the settlement and/or household level, was developed and applied to all 731 rural and urban settlements in Beni Suef Governorate.

Table III. 6 shows the indicators and the results for the 724 rural settlements, aggregated at the markaz level.

Notable features of this highly labor-intensive activity included:

- A data collection effort conducted by the local councils, which is feasible in other governorates as well, given committed leadership
- Active involvement by governorate service directorates and the information center in assembling and critically reviewing all existing indicators and data on service access

Table III. 6 Access to Public Services in Rural Areas of Beni Suef Governorate, by Markaz

Markaz Code	Markaz Name	Rural Pop 92	Water			Electricity		Roads	Education		Health
			W1	W2	W3	E11	E12	RD1	ED1	ED3	HL1
0401	Ahnasia	176642	52.3	18.4	17.1	42.5	91.0	75.0	37.3	28.5	11040
0402	Beba	187862	69.6	21.4	19.1	68.7	93.8	54.2	35.4	33.0	12524
0403	Beni Suef	235017	76.1	24.4	23.4	76.6	97.3	66.1	38.9	37.0	14689
0404	El Fashen	231916	53.8	11.8	6.4	28.1	49.9	55.5	35.8	24.7	11596
0405	El Wasta	252684	31.7	15.6	12.8	49.0	84.3	52.1	41.6	31.5	19437
0406	Naser	161235	49.5	22.2	18.8	56.3	96.6	70.1	33.7	32.8	11517
0407	Somasta	126760	69.7	15.5	14.2	65.2	95.4	42.9	36.4	29.3	11524

W1 : % Settlements with piped water
W2 : % Residential buildings served in served settlements
W3 : % All residential buildings served
E11 : % All settlements served
E12 : % Population in settlements provided with electricity
RD1 : % Rural road length paved
ED1 : Pupils per class
ED3 : Female enrollement as % of total
HL1 : Rural population per health facility

- Active involvement of these departments and local council leaders in deciding upon a final set of indicators that would be valid, parsimonious, and relevant
- A definitive assignment of each settlement to a particular local council

The tools developed for the study are among the major achievements of the project in the areas of needs assessment and accountability, providing a set of indicators that can be used by the governorate to plan and measure progress in service access and delivery at suitable levels of aggregation.

Accountability. The large-scale involvement of the local councils in the design and implementation of the study greatly increased the pressure on decision-makers to incorporate the study's results into their basic services policy, investment prioritization, and allocation decisions.

Beni Suef Governorate now has a database of basic service indicators that will allow it to map locations of unserved populations in each jurisdiction indicating the missing services. It has the basic building blocks to establish *service districts* which may or may not be coterminous with the administrative jurisdictions.

The following next steps must be taken to capitalize on this effort:

- Promulgate through the markaz and village popular and executive councils the current status of these indicators of service access. This should be a true "baseline of services" in easy-to-use, understandable Arabic graphics displays. This should be done by discussing with and involving service directorates and key local decision-makers in the design and production of these graphics. Only through public knowledge of current service status and debate over future allocation decisions will the *transparency* of decision-making processes increase.
- Concurrent with this activity, additional data on each water system should be collected, as a pilot run, using the LD II-P subproject database for the governorate, which now has all the LD II-P components, but not GOE or other donor-supplied components. Careful design of this relational database of system components will constitute the *fixed assets* of future *enterprises* in this sector.

- Draw service district boundaries which these *enterprises* would serve, using population data and users data.

Beni Suef Governorate is a potential pilot area to redesign and rebuild local municipal services organizations whose performance can be gauged and thus held accountable at the local level. Local citizens voice and debate over issues such as their own municipal services will then become in Egypt, as elsewhere in the world, a major focus of local politics and participation. Debate about cost-recovery, local resource mobilization, and devolution of authority will then cease to be abstractions used by project designers or implementors and become the realities of everyday life of common citizens.

PLANNING RESULTS

A total of 13,346 projects were planned and approved for funding under the LD II-P Project. Field assessments of a stratified random sample of 500 LD II-P projects, conducted in the first half of 1992, found 85 percent of the completed projects to be delivering satisfactory service. Ninety-seven percent of the projects funded under the first three cycles were completed.

Sector-specific project planning manuals (guidelines, planning forms, technical instructions and considerations) are available for water, wastewater, roads, building, and rolling stock projects. They were distributed and discussed in working groups during the fourth-cycle orientations, and used in the planning and review of all fourth-cycle projects.

Copies of a manual on multi-level, multi-sourced capital planning procedures, the *Interim Planning Process Handbook*, were distributed to LD II-P executives at the governorate and markaz levels in all governorates. *A Village Chief's Handbook*, providing further clarification and instruction on the VC role in planning, implementation, and finance, was also distributed.

Five-year sector development strategy papers were developed by the governorates during the fourth planning cycle for the three basic sectors of water, wastewater, and roads. While many of these papers were prepared by governorate service directors in relative isolation, they were extensively reworked in a team setting by 13 governorates which participated in the Advanced Seminars program after the fourth planning cycle.

Comprehensive needs assessments and strategic capital plans for the roads sector have been completed in Beheira and North Sinai governorates and are underway in Fayoum.

61

Comprehensive water/wastewater needs assessments and planning studies have been contracted in two governorates (Beheira, New Valley) and tendered in eight others (Assyout, Beni Suef, Gharbiya, Ismailia, Kafr El-Sheikh, Minya, North Sinai, Qalubiya). The TORs for strategic needs assessment and planning studies for these sectors are available to all governorates and have been distributed widely among the local engineering consulting community. Governorate and markaz officials in Damietta, Daqahliya, and Qena have been familiarized with the logic and content of their NOPWASD-commissioned 20-year water sector development plans.

A participatory approach to village land use and planning using spatial techniques was designed and implemented in Batra Village. This experience provided the basis for a general TOR for village physical planning, communicated to four governorates interested in physical planning (Daqahliya, Ismailia, New Valley, and Luxor City). TORs were also developed for zone development planning and for the planning of new settlements.

Indicators have been developed to assess sector needs. Water/wastewater demand indicators, situated alongside more general demand indicators of physical and social development, were developed first in the *Rural Wastewater Planning Manual* and later incorporated into the TOR for water/wastewater planning. Road supply/improvement criteria, which incorporated measures of the economic centrality of settlements and several other criteria, were developed for roads strategic planning; inventories of existing roads were developed at the markaz level during the course of the planning cycles. Rolling stock inventories were also done at the markaz level, and detailed needs assessment guidelines were developed to assist the marakez and governorates to estimate their requirements for wastewater collection vehicles, solid waste collection vehicles, and road maintenance equipment.

A multi-sectoral service-access indicators system was developed. Covering access to piped water, electricity, roads, schools, and health units, it was developed and applied to every settlement (and in the sectors of water and electricity, to every household) in Beni Suef Governorate. The resultant data permit a comparative assessment of the distribution of services and the quality of life at all levels above the individual settlement. The indicators, data collection procedure, and data processing software are all extensively documented.

The Advanced Seminars program was delivered to 1630 officials in 17 governorates. Three of the four modules dealt with planning. The program communicated a common planning methodology to the participants and

assisted them to develop improved organization and management styles for integrated development policy, program, and project planning. The Advanced Seminar materials (lectures, discussion agendas, exercises, etc.) have been collected in eight volumes and made available to the governorates and the MLA/ORDEV for horizontal and vertical extension, as well as to eight local training institutions.

GOVERNORATE PERFORMANCE

A factor analysis of the data items showed three main factors: needs assessment, technical and financial planning, and implementation planning. These factors and their composite index is shown in tables III. 5-8 for the provincial governorates.

A 47 percent sample of fourth-cycle planning forms (prior to technical revision) were evaluated by TA engineering sections from the standpoint to assess how well governorates planned their subprojects The following summarizes the standing of governorates on these factors.

Above the Norm for			Below for All
3 Factors	2 Factors	1 Factor	3 Factors
SSI, ASW	SOH, MAT	GHA, SHA	QAL, FAY
DAM, KAF	GIZ, BEH	BEN, NSI	MEN, ISM
MIN, NEW	ASY, DAQ		QEN

63

A second source of evaluative data is the views of senior Chemonics planning and engineering advisors. While each knows some governorates better than others, there is general agreement that ten governorates have successfully developed a local program framework for planning:

Assyout	Ismailia
Beheira	Minya
Beni Suef	New Valley
Daqahliya	North Sinai
Gharbiya	Sohag

By this we mean that an integrated planning system for basic services, comprised of shared standards and shared role definitions, is in place in these governorates. It reaches through all the levels of the local government. Sectorial planning and management structures appropriate to the governorate's local conditions -- geography, skill levels in the local public and private sectors, political history, etc. -- are in place. They cover both localities programs (Bab III and USAID); these governorates use LD II-P planning systems and processes for all project planning. Of course, they are still excluded from central level sector planning and implementation agency processes.

While the high level of agreement between the "quantitative" and the "qualitative" views of local planning capacity is noteworthy, neither evaluation can be taken as definitive. We cannot determine whether these governorates are performing better because of TA or that the TA worked better there because it responded well to needs at a particular stage of local development.

64

Table III. 7 Plan Review Index Needs Assessment

GOVNAME	MEAN SCORES	MEAN DEVIATIONS
NSI	2.77	-0.52
OAL	2.83	-0.46
FAY	2.86	-0.43
MEN	3.04	-0.25
SM	3.09	-0.20
BEN	3.12	-0.17
OEN	3.22	-0.07
SSI	3.34	0.05
SOH	3.34	0.05
GHA	3.34	0.05
MAT	3.35	0.06
ASW	3.37	0.08
GIZ	3.44	0.15
DAM	3.53	0.24
KAF	3.56	0.27
SHA	3.58	0.29
MIN	3.63	0.34
NEW	3.75	0.46
BEH	4.06	0.77
RED	4.07	0.78
ASY	4.11	0.82
DAQ	4.17	0.88
MEAN :		*3.29*
St. Dev. :		*0.40*

FACTOR 1 : NEEDS ASSESSMENT CAPACITY

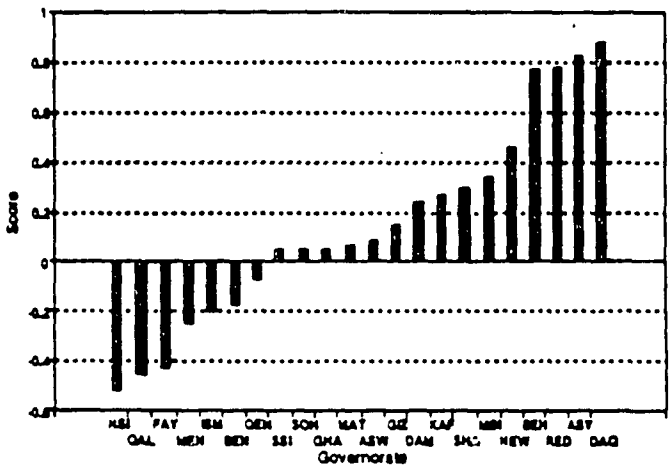


Table III. 8 Plan Review Index
Technical and Financial

GOVNAME	MEAN SCORES	MEAN DEVIATIONS
NSI	2.63	-0.75
FAY	2.83	-0.55
SHA	3.01	-0.37
SM	3.02	-0.36
CAL	3.04	-0.34
MEN	3.04	-0.34
GHA	3.18	-0.20
OEN	3.25	-0.13
SOH	3.29	-0.09
MAT	3.29	-0.09
GIZ	3.30	-0.08
SSI	3.37	-0.01
KAF	3.46	0.08
ASW	3.46	0.08
BEN	3.48	0.10
BEH	3.48	0.10
ASY	3.63	0.25
DAM	3.67	0.29
MIN	3.80	0.42
DAQ	3.81	0.43
RED	4.00	0.62
NEW	4.25	0.87
MEAN :		*3.38*
St. Dev. :		*0.38*

FACTOR 2 : TECHNICAL & FINANCIAL CAPACITY

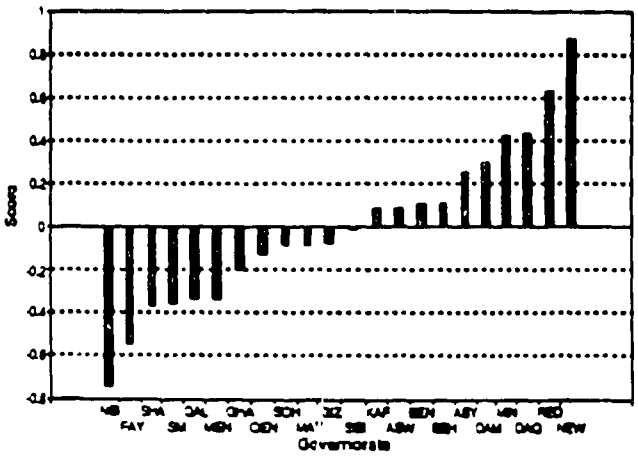


Table III. 9 Plan Review Index Implementation Planning

GOVNAME	MEAN SCORES	MEAN DEVIATIONS
BEN	2.51	-0.78
BEH	2.57	-0.72
CAL	2.64	-0.65
ASY	2.70	-0.59
FAY	2.80	-0.49
MEN	2.89	-0.40
ISM	3.13	-0.16
DAQ	3.13	-0.16
QEN	3.21	-0.08
GHA	3.23	-0.06
SHA	3.28	-0.01
KAF	3.32	0.03
SSI	3.43	0.14
GIZ	3.48	0.19
MAT	3.53	0.24
DAM	3.55	0.26
NSI	3.61	0.32
SOH	3.71	0.42
MIN	3.74	0.45
NEW	3.76	0.47
ASW	3.97	0.68
RED	4.22	0.93

MEAN :	*3.29*
St. DEV. :	*0.46*

FACTOR 3: IMPLEMENTATION PLANNING

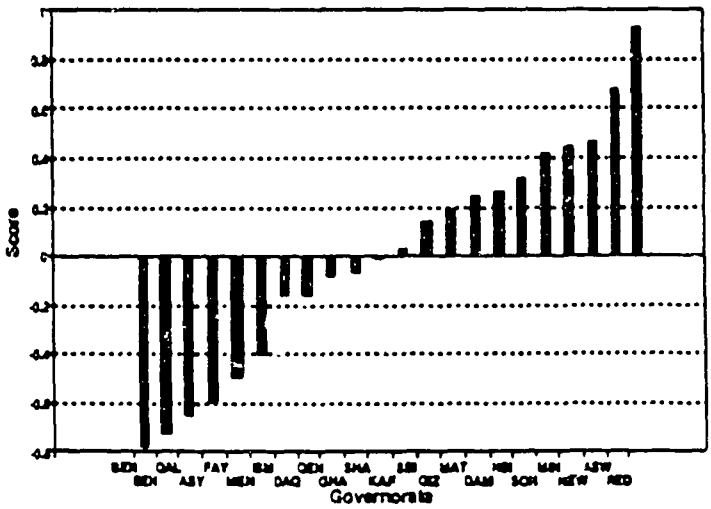
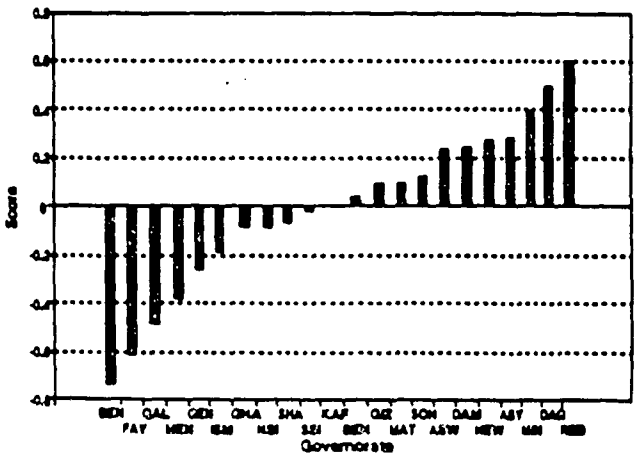


Table III. 10 Plan Review Overall Planning Capacity

GOVNAME	MEAN SCORES	MEAN DEVIATIONS
BEN	2.74	-0.74
FAY	2.86	-0.62
QAL	2.99	-0.49
MEN	3.10	-0.38
QEN	3.22	-0.26
ISM	3.29	-0.19
GHA	3.40	-0.08
NSI	3.40	-0.08
SHA	3.41	-0.07
SSI	3.46	-0.02
KAF	3.48	0.00
BEH	3.52	0.04
GIZ	3.57	0.09
MAT	3.57	0.09
SOH	3.60	0.12
ASW	3.71	0.23
DAM	3.72	0.24
NEW	3.75	0.27
ASY	3.76	0.28
MIN	3.87	0.39
DAQ	3.97	0.49
RED	4.08	0.60

MEAN:	*3.48*
St. Dev.:	*0.34*

OVERALL PLANNING CAPACITY



PLANNING ACHIEVEMENTS

The achievement of the LD II-P Project can only be appreciated when it is noted that prior to BVS, all rural infrastructure to date had been planned and implemented by national and governorate level agencies. BVS/LD II-P funds were the first funds ever put under the planning and budgetary authority of local village councils in Egypt. The previous subsection noted that it is rarely possible to attribute project success or failure in a governorate to technical assistance factors only. Here we view the LD II-P achievement from a different perspective: BVS/LD II-P funds and technical assistance, applied in varied geographical, organizational, and human resource endowment situations, were the catalyst for rural basic services improvement and management development occurring in provincial Egypt in the 1980s.

Achievement of the objectives described in the introduction to this section in the ten or twelve governorates which scored high on planning capability as a whole, can be related to two types of capability: policy making and project technical planning, both of which are indicated by active GLDCs. GLDCs have only been effectively activated in governorates which either never suffered from organizational divisions between their service directorates and their city councils (and between city and village councils) or else overcame these divisions in the course of the BVS/LD II-P Projects. Such governorates have adopted and implemented systematic practices of needs assessment and project prioritization, even where quantitative data on service access have not been available, and by and large they have embraced strategic planning approaches. They have shown a willingness and an ability to integrate their local Bab III and USAID-funded basic services programs, and have generalized the BVS/LD II-P approach to project formulation prioritization and planning to their Bab III processes.

These successes of governorate-wide organizational development do not adhere to a single model. Where marakez are relatively capable (e.g., Gharbiya) , the basic services program may be managed primarily at this level, with the governorate level responsible only for broad policy formulation and for technical assistance in the design and contracting of large works or specific multi-year programs and for TA to one or more weak marakez. In other governorates (e.g. Beheira) the governorate level may predominate in the organization, formulating and managing sector-wide multi-year programs for the marakez to implement. Neither of these models is innately superior to the other; each emerged in response to unique local endowments and constraints.

These governorates have also achieved considerable success in improving their sectorial planning and management systems within the constraints imposed by still-high levels of central planning, budgeting, and implementation authority. This achievement has taken the form of an often informal restructuring of sectors within the governorate. The particular form of this organization varies from governorate to governorate, and from sector to sector within a governorate. To take the example of the water sector only, restructuring in Daqahliya and Asswan is taking the form of a delegation of planning and management authority away from the housing department and the city councils to the regional utility offices, while in Qena, where groundwater sources are more preponderant in water supply, restructuring is taking the form of a transfer of management responsibility for rural water supply away from the housing department and to the municipal utilities in the marakez. In all three cases, the sectorial TA approach has played a significant role in these developments. It gave political, organizational, and technical support to new structures which were only awaiting the encouragement to replace the ineffective structures from which they emerged. The project created a sense of organizational identity and mission in the basic service sectors of these governorates, although the old structures may still have formal and even actual powers. In the cases of Daqahliya and Qena, the transition is still underway and could be reversed if the balance of power were to be tipped by any of a number of unfavorable conditions.

LESSONS LEARNED IN IMPROVING THE PLANNING PROCESS

Planning Cycles

The tools supplied through technical assistance, such as the planning forms and guidelines, have given local officials a standard of project planning. An 85 percent rate of satisfactory service delivery is indirect evidence that the standard is widely in place. Other, anecdotal but perhaps more direct evidence that a standard has been implanted are the remarks of senior Ministry of Planning officials that they have observed an improvement in the quality of Bab III project plans, the informal adoption by Planning Departments in many governorates of LD II-P planning forms for Bab III projects, and the formal adoption of LD II-P planning forms by the Public Works Program of the Social Fund for Development. The LD II-P Project upgraded the capacity of local governments to plan locally selected infrastructure projects.

Abiding weaknesses in block grant programming are mostly in the area of basic services policy formulation. This area is primarily the responsibility of the central and governorate

levels. At the central level, the inter-governorate allocations formula is still a sensitive issue. Even the introduction of the number of councils and population met strong resistance of the outset. More valid indicators of need would sharpen the debate; the constraint here is that there is little reliable nationwide data to apply such indicators to, and at present this is all too convenient an excuse to let the matter of needs-based criteria drop. Another constraint is the Ministry of Planning's tendency to adjust the Bab III allocations of the governorates in light of the LD II-P allocations so that in the end each governorate's total basic services allocation is still determined by criteria which are unknown except to an inner circle or too particularistic to warrant the term "criteria". The same set of problems-- lack of information on the distribution of services and nonexistent or opaque policy formulation processes-- inherent at the governorate level and lower levels.

The mid-term assessment of the LD II Program correctly assessed the shortcomings of the central management levels of the Program— ILDC and ULDC/PLDC— as one of two major weaknesses of the Program, the other being the limited achievement in the area of local resource mobilization. The ILDC met once. The PLDC met more often (a total of 22 times) but its potential to act as a policy-making and policy reform advocate was never realized, partly for lack of a properly staffed and equipped secretariat and partly for structural and personal antagonisms between some of the main players.

Sector Strategic Planning

The needs assessment methodologies developed for the water/wastewater and roads sector TORs represent two of the most important contributions of the contract. When completed, they will provide original and useful planning information on the level of basic services in the three sectors which rank highest in local government priorities.

It is important that the contracting and implementation supervision of these studies be carefully followed up, to assure the quality and credibility of the final product. Additional efforts should be made to orient popular council members to the needs assessment indicators and prioritization criteria so that the final product will not be as alien to them as the NOPWASD commissioned plans are to their subjects. Sufficient flexibility has been designed into the database program that the indicators and criteria are not written in stone, but too-frequent manipulation of these would undermine the plan's legitimacy.

More generally, the availability of information on service levels is a necessary condition for fairness in public resource allocation, but it is not a sufficient one. Only the development of accountability in government holds out the promise of fairness, and accountability in Egyptian local government needs policy reform and technical assistance to strengthen the institutions of representation.

Any serious effort to implement their strategic plans will force the governorates to confront the question of the resources required to implement more than a handful of priority projects each year. Local resource mobilization will be indispensable but will occur only when there is an organized popular input into the formation of service-level targets and where the service delivery organizations are accountable for the level of service delivered.

Spatial Planning

Spatially-oriented needs assessment and planning techniques were implemented on a pilot basis only. In spite of their limited coverage, their multi-sectorial and geographical dimension gives them great significance and potential in the area of policy formulation.

Secondly, comprehensive area planning, such as village physical planning, situates issues of basic service provision within the larger local context of economic and social development. Not only does this hold out the promise of greater locational efficiency in investment, it also elicits local input into investment planning decisions, since local people are well placed to inform decision makers of local economic potential and to give their views about the relative effectiveness of economic development strategies. Greater capability in this area would give governorates a firmer grasp of one of the most important policy issues in basic services planning, namely, the choice between a development strategy which aims to provide basic services more or less uniformly over space and one which holds that greater overall development benefits will be achieved by prioritizing potential (or actual) "growth poles" for rapid development. The latter approach, to be successfully implemented, will required central-level consideration of urban and regional development policies and re-consideration of the relationship of the regional planning authorities (responsible for the provision of economic infrastructure) to the local governments, which are responsible for basic services infrastructure.

RECOMMENDATIONS FOR FUTURE TECHNICAL ASSISTANCE

Some TA actions are advisable to achieve or sustain the impact of on-going planning interventions at the closure of LD II-P. The principal ones, in order of priority, are:

- Follow up and assist sector strategic needs assessment and planning tendering, contracting, and implementation processes in the eight governorates in which the water/wastewater studies have not been contracted yet.
- Follow up and assist the contracting and implementation of physical planning studies in Ismailia, New Valley, and Luxor City
- Encourage and assist the governorates to continue the process of entering physical data for all infrastructure regardless of funding source and re-configuring the data at the level of the integral service delivery system
- Publicize, and encourage replication of the Beni Suef service-access study, in a manner which emphasizes the significance of differentials in service access among communities for the formulation of governorate development policies, strategies, and service- level targets.
- Continue to recognize the Governorate Local Development Committees as the responsible basic service program planning and management structure at the level of the governorate.

RECOMMENDATIONS FOR FUTURE LOCAL DEVELOPMENT PROGRAM DESIGN

DDS-I/LD II improved the quality of life for low-income Egyptians and upgraded the capability of local governments to plan and deliver services. But the framework of basic services provision is national in scale. The LD II program design recognized the relevance of the wider national framework, calling for the establishment of an Inter-ministerial Local Development Committee to mediate local government concerns to central-level agencies such as NOPWASD which are also involved in basic services development planning. In fact, the ILDC played virtually no role in the program. As a result, there remain important structural problems in the basic services sector. For example, NOPWASD is heavily involved in the planning and implementation of water and wastewater treatment plants and mains all over rural Egypt; while the governorates must plan the local components of water and wastewater systems in virtual ignorance of NOPWASD design and implementation plans. On the other hand, there is a void at

the center with respect to the formulation of a national water resources policy. Law 48/1982, which requires secondary treatment of discharges into the Nile or its branches, was impossible to implement from the start, though it is still on the books.

At the same time, local governments, which should and increasingly are being defined as responsible for cost- effective management of water supply, have no authority to penalize upstream polluters, of which public enterprise factories are among the principal offenders. Water resources policy needs to consider not only the problem of industrial wastewater discharge into water sources, but also the negative impact of agricultural policies on the viability of private drinking water supplies such as shallow wells, upon which, if the Beni Suef service access study is at all representative, as much as 50% of the rural population is partially or totally dependent. In summary, NOPWASD is far too heavily involved in investment programming and project planning and implementation, and not nearly involved enough in sector policy analysis and interface with related policy sectors at the national level.

Institutional issues persist at the local level as well; in fact, the successes of DDS-I/LD II may be said to have exacerbated certain structural tensions. Water supply planning and management in rural areas served by regional or large municipal plants are a case in point. Service district boundaries in these systems conform poorly with local administrative district boundaries. The regional and municipal utilities are striving to provide planning, management, and O&M support to the councils. The governorate housing departments recognize the capabilities of the utilities by giving them substantial operational autonomy, but are by and large unwilling to relinquish formal budgetary control over the utilities. The governorate housing departments (GHDs) have the tacit political support of NOPWASD in this struggle; and where the problems of GHD management have proved insurmountable, NOPWASD has shifted to the tactic of establishing water companies, which are even less locally responsive that the GHDs. It is worthy of note in this connection than the five governorates scheduled by NOPWASD for water/wastewater company formation (Daqahliya, Sharqiya, Fayoum/Beni Suef, and Asswan) are the governorates with large regional utilities which do not yet have companies.

The 1990s will be a decade of increasing complexity in public finance. Funds for local public investments will include :

- Central agency funds (Bab III/national authorities)
- Local administration funds (Bab III/local administration)
- Social Fund for Development (several programs, including public works)
- USAID funds
  - Special Account for Local Participation and Development
  - Urban development projects in Cairo, Alexandria, and "secondary cities"
- Other bilateral donors
- Private voluntary organizations
- Local Special funds
- Local development loan funds

Many of these funds have restrictions and/or conditions attached to their use, and most of them have special budgeting and reporting requirements.

Each governorate's total local development fund will be substantial. One improvement in development funding since the 1980s is that most of the bilateral programs have made five-year commitments, so there is a chance for implementation planning, provided there are no macroeconomic surprises. It is possible that the proportion of state moneys will decline, but it is also possible, in some governorates, that local special funds may achieve the status of "engine" in a particular sector. (This would seem most likely to happen first in the roads sector.)

If benefits are to be maximized, governorates will have to avoid treating each of their distinct funds as separate, even though the different fund structures themselves tacitly encourage this approach to fund management with their special conditions and accounts. Under the worst scenario, where a governorate has no program of its own, each fund's annual grant will be treated as an occasion for yet another block grant planning scramble.

Assuming that the governorate has a coherent local development strategy for the next five years, as in Beheira for example, the second requirement for maximum benefits is that the governorate budget the various funds in a manner which a) supports local objectives, b) supports orderly project implementation, and c) meets its program and reporting obligations to the grantors. However the governorate decides to finance its programs, it must have program plans first. This will allow the governorate to lead local development. The contractor's work in providing program budgeting and

management levels is the initial step in this direction. Future reorganization 'from the bottom up' of municipal service delivery systems at the local level will make local leadership in development more likely to happen.

Section IV

Implementation

OVERVIEW

Improving project quality was a major concern in the contractor's strategy for the LD II-P project. This section of the report summarizes the background, strategy and activities undertaken to improve project implementation and to increase the capacity of local government to implement infrastructure projects from the design phase through construction. The section focus is principally on the four 'hard' sectors: roads, buildings, potable water and wastewater. The three phases of implementation are design, contracting, and construction, which includes administration of construction contracts. Figure IV. 1 is the logframe for implementation. The major inputs by the contractor were training, field technical assistance and publications in the form of manuals, handbooks, TORs, and guides. The implementation outputs were:

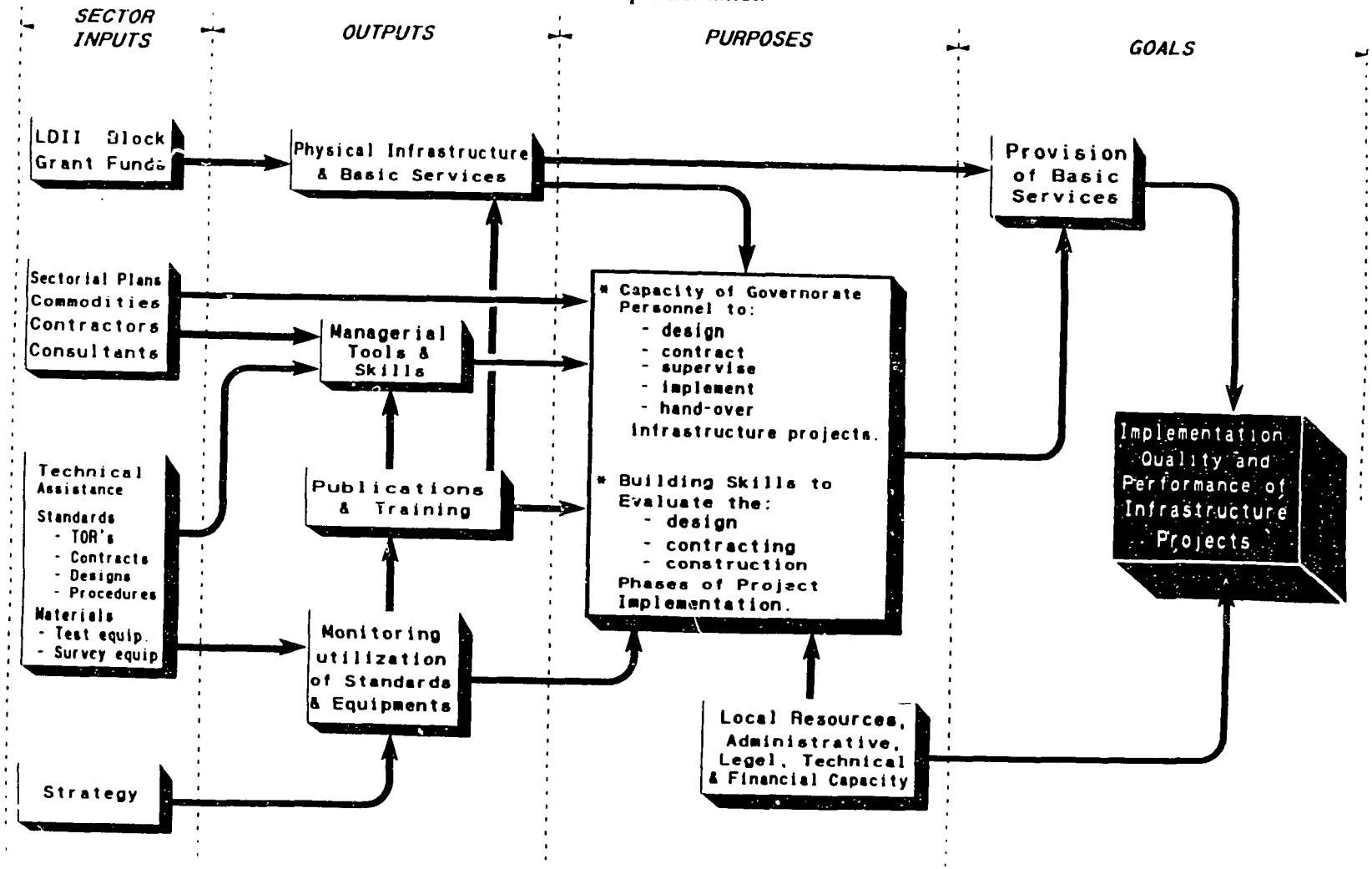
- Substantially enhanced technical capacity of governorate and marakez engineering staffs in all phases of implementation
- Improved tools for implementation ranging from materials and environmental laboratory test equipment to reference handbooks
- A working, low-cost, governorate designed and implemented project site visit implementation monitoring system which can be replicated
- A rural wastewater treatment program is underway or operating in 14 governorates

The activities described in this section were applied to governorate and markaz engineering, contract management staffs, and project managers responsible for infrastructure project implementation. The results can be seen in the quality of the infrastructure and the 14,000 projects constructed during the LD II-P program. The characteristics of the LD II-P financed infrastructure are described in Volume II.

Buildings, roads, and potable water sectors had a long history of implementation in Egypt. However, rural wastewater treatment was new and had the status of a virtually independent project within the LD II-P project.

The wastewater experience is included with the other sectors where it applies, but a separate discussion of wastewater as a unique activity has been included at the end of this section.

Figure IV . 1 Contractor's Logframe of Infrastructure Project Implementation



BACKGROUND AND CONSTRAINTS

During BVS over 5,000 projects were constructed, principally in roads and water sectors (see Table IV. 1), and construction quality emerged as a major concern to be addressed during LD II. It was clear that improving the quality of projects would require improving design, contracting and construction supervision. In some sectors, such as buildings and roads, the basic capacity to deliver infrastructure was in place in most governorates, but engineering and management skills needed improvement. In water and wastewater, increased use of private sector professional engineering services was needed to support quality construction of larger and more complex systems. During LD II the number of large projects increased in all sectors, placing more stress on local capacity to perform the management functions required to assure that projects were competently designed, that contracts were technically and legally adequate to protect governorate interests, and that contractor performance met construction standards.

Table IV. 1 BVS Block Grant Sector Distribution

Sector	BVS (1981 - 1987)		
	No	LE Alloc.	%
Water	2270	112,298,748	48%
WasteWater	394	21,056,015	9%
Roads	1471	84,224,061	36%
Building	610	9,358,229	4%
Equipment	0	0	0%
Environment	269	3,462,545	1%
Electricity	24	514,703	0%
Other	80	3,041,464	1%
TOTAL	5118	233,955,724	100

While the sectors differed in specific requirements, several common problems had to be addressed:

- Construction standards existed but were not well disseminated in the form of local ordinances and codes. In less familiar types of construction, such as hydraulic structures for water and wastewater, frequently neither the local unit construction supervisor nor the contractor (or subcontractor) were sufficiently familiar with standards
- There was poor enforcement of standards even when construction supervisors were aware of them. For example, although size standards for aggregate used in concrete are generally well known, it was (and is) not unusual to see stone so large that pieces hang up in the

reinforcing steel creating voids and weakening the structure. Local unit supervisors lacked confidence, and often the competence, to challenge contractors successfully, enforcement mechanisms were weak, and contract arbitration was not effectively used to resolve disputes. There was a lack of testing equipment and governorate personnel were not trained in applying simple check-off procedures in construction supervision

- Contracts were often "pro forma," lacking specific detail needed to enable enforcement of terms. Terms of reference were weak and local application of Law 9 generally resulted in choosing the lowest bidder regardless of performance capability. Cost cutting by the contractor and lack of contract enforcement resulted in poor quality construction
- Designs were often outdated or lacked sufficient detail to enable clear determination of specifications and bills of quantity. Funds were saved through cost cutting measures which seriously reduced the workability or reliability of the completed project. When standard designs were used, as in the case of telephone and post offices, they were not adjusted to meet local needs sometimes resulting in inappropriate structures

Major general constraints to improving this situation were:

- Low salaries for local unit engineers resulting in poor motivation and inability of local units to attract qualified personnel with experience in all phases of project implementation.
- Poor coordination, cooperation and communication among the different parties responsible for project implementation.
- Lack of resources devoted to implementation monitoring and supervision such as transportation, testing equipment and tools, and funds for contracting for private sector supervision assistance

Constraints and problems characteristic of the *design* phase were lack of personnel sufficiently skilled in design, design review and preparation of TORs. This inexperience limited local unit capacity to prepare adequate designs in-house or to contract for design services from consulting firms. To compensate for limited design skills and poor control of construction, structural components were often over designed increasing construction cost and wasting materials. Inadequate resources prevented site surveys, soil testing, and other field work required for site-specific designs. Feasibility studies were only performed when required for large projects.

70

Moreover, feasibility studies were often integrated with project design. Thus, the feasibility study which should investigate and cost alternative designs, became an advocacy study for a particular pre-chosen design. In addition, Egyptian law limits design fees to a maximum percentage of total capital cost which was often inadequate to pay for needed design services.

Specific *contracting* constraints and problems included inadequate understanding and application of Law 9 resulting in accepting "low-ball" bids, inadequate specifications, designs and TORs, and long time delays in the contracting process. Lack of technical knowledge prevented adequate technical evaluation of bids.

In *construction supervision* there was an almost universal lack of resources, knowledge, skills and procedures needed to perform adequate field supervision. Moreover the contractors themselves sometimes lacked experience in the particular type of construction required, for example, in wastewater treatment facilities. Large numbers of small projects also exceeded the monitoring capacity of local units. Local unit staff were not aware of the legal mechanisms available to enforce contractor compliance. In addition, lack of transportation, testing tools, and cultural conventions which do not support formal critical reporting on contractors by construction supervisors, limited the capacity to supervise construction.

Coordination and cooperation issues arose at all phases of implementation. Feasibility and design studies failed to take account of impact by, or on, other parties resulting, for example, in a pipe line laid beside an irrigation canal which was about to be widened. Roads recently paved would be dug up to lay utility lines or pipe networks; projects under construction would be delayed while permits were obtained; a new post office would be constructed without agreement from the postal authority to use the office. The owners of projects, usually the village council, would be shut out of the design and construction phases, and then asked to accept a poorly designed or constructed project and be expected to operate and maintain it.

While the four major infrastructure sectors faced common problems and constraints in implementation of projects, their severity and importance varied from one sector to the other. Table IV .2 indicates the status of the four major sectors in terms of key problems and constraints. The "pre" column indicates the status at the outset of LD II.

Table IV .2 Importance and Status of Constraints and Key Problems

CONSTRAINT/PROBLEM	BUILDINGS			ROADS			WATER			WASTEWATER		
	IMPORTANCE	STATUS		IMPORTANCE	STATUS		IMPORTANCE	STATUS		IMPORTANCE	STATUS	
		pre	post		PRE	POST		PRE	POST		PRE	POST
DESIGN												
Availability of codes and standards at local level	3	2	3	3	1	3	3	1	3	3	1	2
In-house design skills.	2	1	2	2	1	2	2	1	2	2	1	1/0
Capacity to contract design.	2	1	1	3	0	2	3	1	2	2	1	2
Availability of funds for design	2	1	2	2	1	2	2	1	1	3	1	1
CONTRACTING												
Adequate TORS.	3	2	2	3	0	2	3	0	2	3	1	2
Capacity to evaluate & award bids on technical quality and contractor performance.	3	1	1	3	1	2	3	1	2	3	1	1
Timely handling of contracting process.	2	2	2	2	1	2	2	1	2	3	1	1
CONSTRUCTION SUPERVISION												
Supervision practices/procedures in place.	3	1	2	3	1	2	3	1	3	3	1	3
Capacity to contract for supervision.	0	0	0	1	0	1	1	0	1	2	1	2
Adequate knowledge of good construction practices	2	1	2	2	1	2	3	1	3	2	1	2
Supervision tools available and knowledge to use them	3	1	2	3	1	2	3	1	2	2	1	2
Enforcement Capability	2	2	2	2	1	2	2	1	2	3	1	1

KEY, IMPORTANCE TO SECTOR
- 0 - Not important
- 1 - Minor importance
- 2 - Significant
- 3 - Critical item

KEY: STATUS
- 0 - Not Applicable
- 1 - Poor, inadequate, major deficiencies
- 2 - Adequate, minor deficiences
- 3 - Superior, little or no TA input required

IMPLEMENTATION STRATEGY

The implementation strategy required to address these problems and constraints was based on experience gained during BVS and the implementation of the first annual contractor work plan (AWP 1) of LD II. During BVS, technical assistance had been rendered by basic service delivery system (BSDS) teams which integrated technical and managerial technical assistance components, placing more emphasis on the administrative than technical counterparts in the governorates. Subsequent implementation of larger and multi-year projects required that technical assistance be focused on improving technical capacities in design, contracting, and construction supervision. The sector design of AWP 2 reflects this change in emphasis.

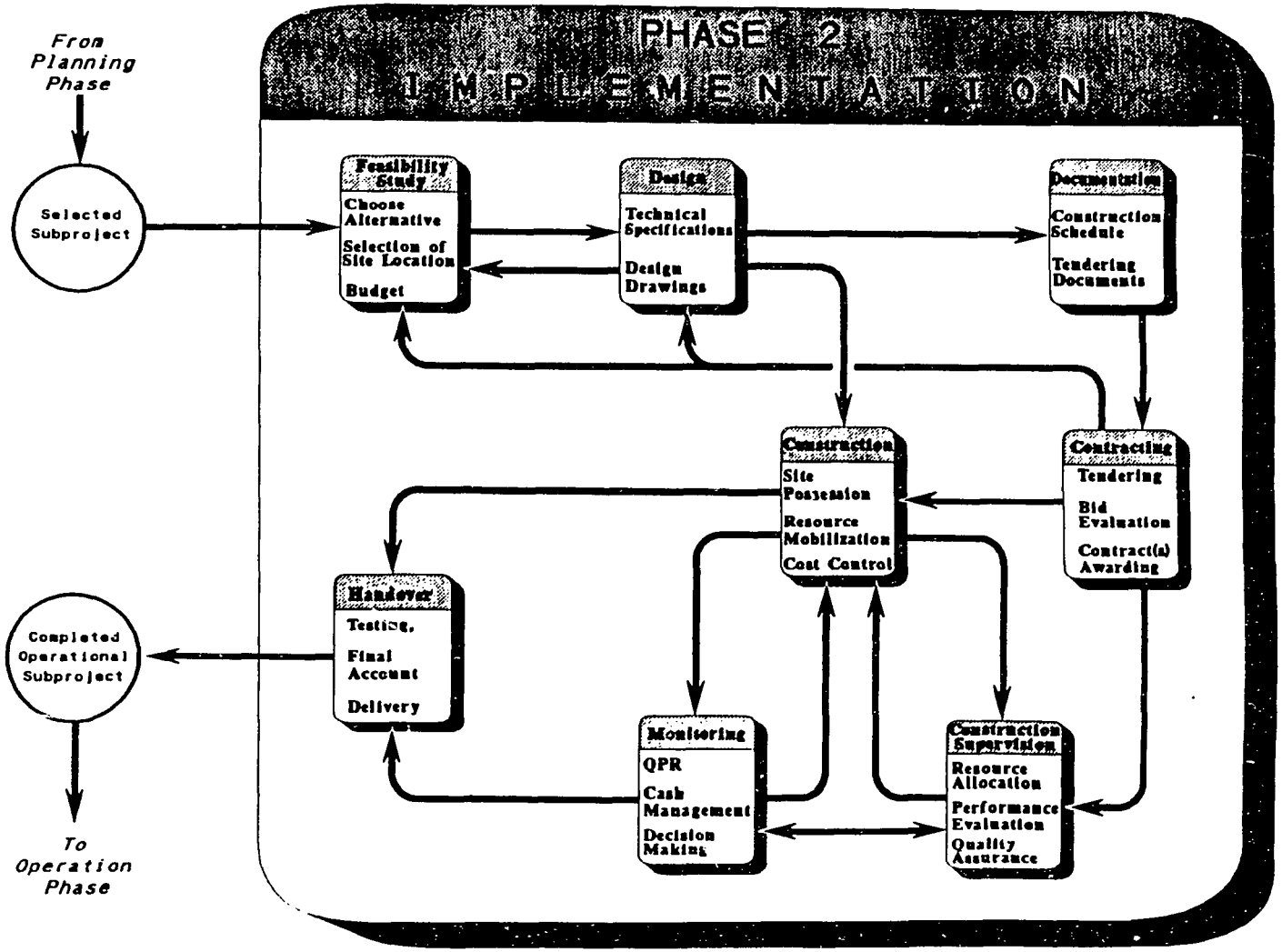
All projects run through a typical life cycle from planning through operation. Improvements achieved in one part of the cycle are reflected in others. Thus each sector was charged with addressing constraints and challenges in the entire life cycle of its projects. Better integration of the project life cycle within each sector was an important strategy element in AWP 2.

Although policies, governmental structure and the work environment are critical elements constraining improvements in project implementation, there was little opportunity to address these constraints during LD II. The major available interventions were training of governorate officials and engineers, developing and promulgating model designs, TORs, guides, procedures, and manuals, material testing labs, and improving use of these tools through on-the-job technical assistance. Where possible, private sector service providers and contractors were also trained. Improving the quality, experience and availability of private sector resources on which governorates can draw was a significant element of the strategy in implementation.

MAJOR ACTIVITIES

Figure IV. 2 shows the stages involved in typical project implementation. Only the larger projects went through all or most of the stages shown. In many small projects the local unit itself was the contractor. In other cases, project implementation responsibility was transferred to a government entity such as the roads and bridges authority or a public company such as a water company.
For governorates reporting contract data for fourth-cycle funded projects, about 85 percent of the projects were contracted with private or public companies, accounting for approximately 90 percent of the total allocations.

Figure IV. 2


PHASE 2
IMPLEMENTATION
From Planning Phase
Selected Subproject
Feasibility Study
Choose Alternative
Selection of Site Location
Budget
Design
Technical Specifications
Design Drawings
Documentation
Construction Schedule
Tendering Documents
Construction
Site Possession
Resource Mobilization
Cost Control
Contracting
Tendering
Bid Evaluation
Contract(s) Awarding
Handover
Testing,
Final Account
Delivery
Monitoring
QPR
Cash Management
Decision Making
Construction Supervision
Resource Allocation
Performance Evaluation
Quality Assurance
Completed Operational Subproject
To Operation Phase

Feasibility studies and design

In all four sectors the major interventions were development and promulgation of standard designs and design parameters, and training and technical assistance directed toward upgrading technical knowledge and skills of governorate personnel at the headquarters and markaz engineering levels. Table IV .3 shows written materials developed in the four sectors. These including design topics are denoted "D" in the column named "phase". Table IV. 4 shows the governorate coverage of training for courses where implementation issues were addressed and Table IV. 5 the coverage in field technical assistance of the four sectors. The field technical assistance is only shown for AWP 2 because during AWP 1 the technical assistance level of effort was not categorized by sector.

Training courses and field technical assistance often covered several phases of implementation; tables IV. 4 and IV. 5 do not disaggregate these inputs by implementation phase. However, the approximate fraction of these efforts allocated to design by the different sectors is shown in Figure IV. 3.

Table IV. 3 Publications Distributed to Governorates

ITEM	LANG.	PHASE	DISTRIBUTION
Roads			
Fundamentals of Roads Project Improvement	A	D,C,S	22 Governorates and 250 local unit engineers
4th Cycle Guidelines and Forms	A	D	22 Governorates to the markaz level
TOR's: Road Construction, Sector Planning,	A	C	22 Governorate road engineers
Construction Supervision, Testing Lab Equip.	A	C,S	22 Governorate road engineers
Construction Inspector's Manual	A	S	22 Governorate road engineers
Potable Water			
Planning and Design for Rural Water Supply Systems	A	D	22 Governorates to the markaz level
Case Study: Unaccounted for Water	E	D,S	Gharbiya
Water system loss reduction Guidelines & Manual	A,E	D,S	22 Governorates to the markaz level
TOR's: A.C. pipes; A.C. & UPVC pipes; installing UPVC	A	C	22 Governorates mkz eng, contract mngrs &
construction of water towers; drilling wells	A	C	Secretary Generals
purchasing/installing bulk meters	A	C	[same as above]
AC Pipeline Pocket Handbook	A	S	22 Governorates to the markaz level + Hsg Dept
Guidelines for Laying UPVC	A	S	22 Governorates to the markaz level + Hsg Dept
Manual: Installation of Pump Units	A	S	22 Governorates to the markaz level + Hsg Dept
Buildings			
Guidelines 4th Cycle Subproject Planning	A	D	22 Governorates to the markaz level
Public Buildings Manual	A	D,C,S	22 Governorates
Managers Guide on Site Selection, Planning and Building Design	A	D	22 Governorates to the markaz level
Technical Guide on Site Selection, Planning and Building Design	A	D	22 Governorates to the markaz level
Summary: Preparation of Tender Documents	A	C	22 Governorates
Construction Supervision: A Manual for Technicians and Site Supervisors (with EEG)	A	S	22 Governorates to the markaz level
Wastewater			
Remedial Work in Pilot Wastewater Facilities	A	D,C	22 governorates
* Management of Wastewater Project Design Stage	A	D	* Included in the CPP package distributed to all
* Construction Supervision: Manual for Technicians and Site Supervisors (with Bldings)	A	S	22 governorates
* TOR for Sewage System Contract Documents	A	C	
* Draft Guidelines for Village Wastewater Delivery	A,E	D,C,S	
* Construction Supervision Procedures Manual	A	S	
Construction Supervision Manual for Engineers (V2)	A	S	14 governorates with active treatment prjts

KEY - Phase
D - Design
C - Contracting

Table IV. 4 Training Courses by Major Activity

COURSE TITLE	ACTIVITY P	ACTIVITY G	TIMES OFFERED	DURATION	ASW	ASY	BEH	BEN	DAM	DAQ	FAY	GHA	GIZ	ISM	KAF	MAT	MEN	MIN	NEW	NSI	QAL	QEN	RED	SHA	SOH	SSI	LUX	TOTAL P/Ds
					No. of Participants by Governorate																							
SECTION : WASTE WATER																												
DESIGN OF VILL. W.W.TRT. PLANTS	3		2	5	0	10	10	0	30	30	10	10	10	0	0	0	10	10	10	0	10	0	0	0	0	0	0	150
DESIGN OF VILL. W.W. COLLECTION SYS.	3		2	5	0	10	10	0	30	30	10	10	10	0	0	0	10	10	10	0	10	0	0	0	0	0	0	150
CONST. SUP. FOR ENGINEERS	5		6	5	0	10	110	0	75	60	35	60	25	15	20	0	75	75	50	0	60	0	0	45	0	30	0	745
PREP. FOR FOLLOW UP WW PROJECT			1	1	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60
CONST. SUP. FOR TECHNICIANS	5		7	5	0	10	56	0	305	195	25	35	20	10	5	0	100	20	70	0	60	0	0	55	0	15	0	880
SUB - TOTAL					0	40	185	0	530	315	80	115	65	25	25	0	195	115	140	0	140	0	0	100	0	45	0	2115
SECTION : BUILDINGS																												
BUILDINGS PROJECTS IMPROVEMENT			7	5	25	45	65	50	25	50	20	35	35	35	35	15	40	50	25	15	30	25	5	75	65	15	5	785
PUBLIC BUILDINGS MANUAL	2		3	1	3	4	3	8	7	10	8	5	10	5	1	4	3	6	5	5	5	0	4	3	2	8	5	112
SITE SELECTION,PLANNING,DESIGN	3		20	5	185	260	310	160	180	300	130	210	190	135	205	205	210	175	70	180	160	305	120	280	315	115	65	4465
SUB - TOTAL					213	309	378	218	212	360	158	250	235	175	241	224	253	231	100	200	195	330	129	358	382	138	75	5362
SECTION : ROADS																												
ROAD PROJECT CONST.SUPERVISION	5	4	3	5	20	35	275	15	25	30	20	45	30	20	30	35	30	30	10	20	30	35	5	10	25	10	5	780
Roads Project's Improvement	1	3	7	8	60	84	84	60	72	108	78	102	78	80	84	42	102	84	48	36	60	84	24	78	102	38	0	1506
SUB - TOTAL					80	119	359	75	97	138	98	147	108	80	114	77	132	114	58	56	90	119	29	88	127	48	5	2286
SECTION : WATER																												
TENDER DOC. SEM	4		1	2	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	16	16	16	16	16	352
PLAN & DESIGN WATER SUP. SYST	3	2	3	2	20	18	28	16	14	16	10	20	8	4	22	6	16	16	2	4	16	0	4	14	22	2	0	280
REPLAYING PUMP SET INSTLATION	5	2	8	5	50	56	80	30	50	80	0	55	20	10	25	15	20	40	10	20	80	805	10	45	75	30	5	1570
SUB - TOTAL					86	89	124	62	80	92	26	91	44	30	63	37	52	72	28	40	94	821	30	75	113	48	21	2218
TOTAL					379	557	1046	355	919	905	362	603	452	310	443	338	632	532	326	296	519	1270	188	621	622	275	101	12061

Table IV. 5 Level of Effort by Governorate January 1990-June 1992 (person days)

GOVERNORATE	AWP 2 ACTIVITIES					
	PW	RD	WW	BO	TOTAL	%
ALEXANDRIA	27	82	6	49	164	3.7
ASSWAN	38	31	3	18	90	2
ASSYOUT	53	33	9	30	125	2.8
BEHEIRA	159	43	334	21	557	12.5
BENI SUEF	29	29	7	27	92	2.1
DAMIETTA	67	34	712	26	839	18.9
DAQAHLIYA	72	36	122	49	279	6.3
FAYOUM	39	20	83	27	169	3.8
GHARBIYA	141	46	33	27	247	5.6
GIZA	39	18	63	69	189	4.3
ISMAILIA	36	44	11	36	127	2.9
KAFR EL SHEIKH	33	27	17	22	99	2.2
LUXOR	7	0	15	37	59	1.3
MATROUH	31	28	3	38	100	2.3
MENUFIYA	50	20	55	13	138	3.1
MINYA	36	31	36	21	124	2.8
NEW VALLEY	35	15	103	34	187	4.2
NORTH SINAI	50	54	3	15	122	2.7
QALUBIYA	61	14	63	12	150	3.4
QENA	84	39	9	29	161	3.6
RED SEA	30	25	4	10	69	1.6
SHARQIYA	60	20	27	21	128	2.9
SOHAG	50	28	6	22	106	2.4
SOUTH SINAI	26	17	57	19	119	2.7
TOTAL FIELD	1253	734	1781	672	4440	
PERSON-DAYS AVAILABLE	3184	1522	4491	2518	11715	
% FIELD LOE	39	48	40	27	37.9	

* This LOE uses long term professionals since consideration.
* Excludes COP, DCOPs, Accounting, Administration, Publications and short termers as well as personnel on leave and holidays.
* Shared personnel have their LOE equally divided between sectors in LAWPD
* Includes FIELD LOE done during week ends and holidays LAWPD

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Buildings

Feasibility studies are rarely used in buildings so BD activities focused on design skills. Design training workshops and on-the-job technical assistance accounted for about 50 percent of the training and technical assistance level of effort because poor design quality was often the major problem. Building designs have long and detailed bills of materials; all components should be specified during design, but many local unit engineers needed training and reference tools to improve specifications.

A major effort was devoted to upgrading the design of markaz maintenance facilities. All fourth-cycle markaz maintenance center (MMC) subprojects were reviewed and critiques done on-site. The review process was used as on-the-job training for markaz engineers. It often took several technical assistance visits for a fully satisfactory design to be completed. By and large, markaz building sections do not have qualified architects, so the utilization of space is often poor. An effort was made to teach the elements of architectural use of space in buildings guidelines and training.

Technical assistance efforts were also made to encourage use of public and private consultants to prepare design documents for public buildings when local design capacity was inadequate. A model TOR for obtaining building design services was included in the *Public Buildings Manual.*

Roads

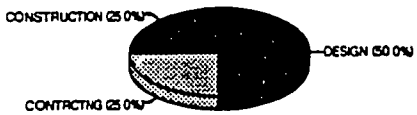
Road design needs were addressed within the context of facilitating the total implementation process for road projects and the subproject planning process. The road project improvement seminar dedicated one session to design issues, and the reference for the course included a chapter on design fundamentals. During LD II, the road project improvement course was held seven times and reached 265 road engineers.

Advisors evaluated and addressed the capability to meet design requirements in road projects through the planning forms in the planning cycles. The subproject planning forms were reviewed by RD advisors as prerequisites to subproject funding. Advisors followed up on the weaknesses found in these forms with technical assistance to local engineers in road design. As shown in Figure IV. 3, road design took about 15 percent of the training effort and 25 percent of the field technical assistance.

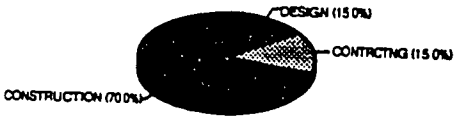
Figure IV. 3 **Training Effort and Field TA Breakdowns by Implementation Phase**

TRAINING EFFORT BY IMPLEMENTATION PHASE

BUILDINGS

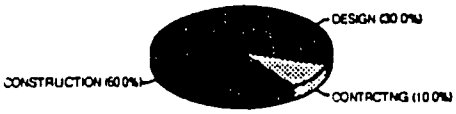


ROADS



WATER

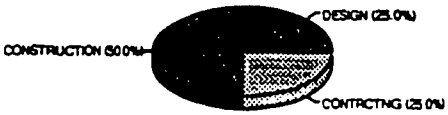
WASTEWATER



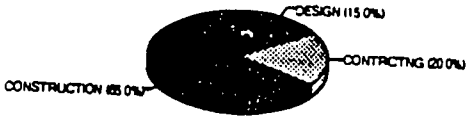
FIELD TA BREAKDOWN BY IMPLEMENTATION PHASE

BUILDINGS

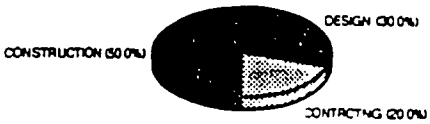
ROADS



WATER



WASTEWATER



Water

The Potable Water (PW) Section discerned many of the issues in water system design during the analysis of water system losses in Egyptian villages and while providing a program of water system loss reduction. Faulty pipelines, inadequately sized pumps and water towers, and high coliform levels in drinking water could be traced to inadequate design of the systems. Design problems were particularly prevalent where existing water systems were being expanded.

To meet these needs, PW advisors developed a workshop and published *Guidelines on Planning and Design of Rural Water Systems* as a reference. The workshop was delivered to 140 markaz engineers from 21 governorates. One of the highlights of the course was a demonstration of and training in computer-assisted design methods. In addition to discussing the design requirements of water systems as a whole, the *Guidelines* covered the design details of each component of the water supply system, including the development of ground and surface water supplies, the sizing of pumps and water storage units, and the sizing and layout of pipe distribution systems. The introduction of computers at the governorate level and, more recently at marakez, enables network analysis by computer. Software was developed and distributed to all governorates and water engineers were trained to use this program to aid network design.

Advisors used technical assistance visits to help markaz engineers solve design problems. Plan reviews were a major opportunity to work with markaz engineers on design problems. PW advisors reviewed all 935 fourth-cycle plans and assisted redesign where necessary. During monitoring visits to projects costing over LE 200,000, advisors discovered that one water project in Ismailia was not delivering water because the main supply line, the responsibility of a NOPWASD project, had not been completed. They assisted engineers with the design of a rehabilitation of the old supply line as a temporary measure in order to be able to activate the much-needed expanded water system. Overall design training and technical assistance took about 15 percent of the PW Section's effort.

Vignette: Field TA In Action

Access to services such as potable water is important, but the quality of service is equally important if citizens are to use the service and help pay for it with user fees. The governorates of Qalubiya, New Valley, Beni Suef, Sharqiya, Matrouh, and Menufiya have been troubled with the presence of heavy concentrations of iron and manganese in their water systems. The presence of iron and manganese turns the water red, and imparts a bad smell and taste. Residents in the areas with this problem have refused to use the water because it is unpalatable, they are afraid it is harmful to their health, and it stains clothes and fixtures.

After researching the health consequences of iron and manganese in drinking water and the methods used to overcome the problem, PW advisors assisted the village of Tahanoub, Shabein El-Kanatar Markaz, in Qalubiya to solve this problem as a demonstration to other localities. With the GLDC's approval of the contractor's recommendation, advisors shared the design of a simple iron removal system for a water tank with markaz engineers, who built the unit themselves. The plan included an aeration system in the primary water tank, a second elevated tank in the satellite village to hold the treated water, and rehabilitation of the main water line between the mother and satellite villages. The result was greatly improved water quality using a simple and inexpensive solution that could be replicated in other villages.

Wastewater

By the end of the BVS program governorate engineers had experience designing wastewater collection systems, but lacked the capacity to design treatment plants. The requirement for developing solutions to rural wastewater problems was gaining high priority, but the issue of determining design criteria and who should and could perform design work were unresolved. The problems associated with obtaining adequate wastewater plant designs and how these were addressed during LD II is reported in detail in *Assessment of the Rural Wastewater Projects* and only summarized here.

It was not expected that local governorate engineers would undertake wastewater system design. The technology is sufficiently complex that design work is normally contracted to engineering firms. Initial designs were standard NOPWASD off-the-shelf designs, but needed to be customized for specific sites. However, using local private design firms was not feasible because the engineers involved had little experience and tended to depend on text book solutions. Inadequate resources precluded performing the detailed analysis required for appropriate designs and resulted in designs lacking sufficient detail to guide construction. Moreover, engineers at the governorates lacked knowledge and experience needed to evaluate and review designs, or to prepare adequate tender documents.

Two publications were produced to help train and guide wastewater design: *Design Manual for Wastewater Treatment Works*, and *Design Manual for Sewerage Systems and Pump Stations*. More than 60 engineers from 15 governorates were trained in design review. Table IV. 4 shows the courses and participants. On-the-job technical assistance was extended to governorate engineers during review of the plans and designs for the more than 105 rural wastewater projects currently implemented in 15 governorates.

Results and conclusions

Buildings. Basic building design practice skills have been conveyed to more than 600 governorate and markaz engineers through training workshops for all 22 governorates and through on-the-job technical assistance. Evidence of improved building design capabilities can be seen in fourth-cycle-funded projects, particularly improvements to markaz maintenance centers. Table IV. 6 lists 44 specific projects in 15 governorates which show application of good design practice. Table IV. 7 shows overall governorate performance in terms of building design skill levels based on reviews of fourth-cycle building subproject plans. Only six governorates failed to achieve fair or better design skill levels as shown in their fourth-cycle plan submissions; however, even in these governorates, individual markaz submitted adequate or better designs.

92

In terms of sustainability, skills and knowledge transferred require that at governorate- and markaz-level workspace must be provided for drafting tools and tables and that the tools be purchased. Additional staff, especially those with architectural training, are required to design the number of projects undertaken. Reducing the tendency to over-design requires more attention to construction quality and development of a permit and inspection system applied to both public and private construction.

Table IV. 6 Examples of Good Building Design

Governorate	Project
BEH	Wadi El-Natroun MMC
	Damanhour MMC
	Itai El-Baroud MMC
BEN	Beba MMC
DAM	Kafr Saad MMC
	Damietta MMC
	El-Zarqa Slaughter Facility
	Faraskour Slaughter Facility
GHA	Governorate Roads Maintenance Facility
	Tanta MMC
	Kafr El-Zayat Water MMC
	El-Santa Water MMC
GIZ	Awsim MMC
ISM	Ismailia MMC
	El-Qantara Gharb Slaughter Facility
MAT	Marsa Matrough MMC
	El-Hammam MMC
	El-Saloum MMC
	Sidi Barani MMC
MEN	Tala MMC
MIN	Governorate Main Maintenance Facility
NEW	El-Kharga MMC
	El-Dakhla MMC
NSI	Rafah EQ MMC
	El-Hasana MMC
RED	Governorate Main Maintenance Facility
SHA	Faqous MMC
SOH	El-Baliana MMC
	El-Monshaa MMC
	Tahta MMC
SSI	All SSI 8 Cities MMCs
	Naweiba Clinic
	Naweiba Telephone/Post Offices
	Naweiba Public Latrines
	Dahab Telephone/Post Offices
	Dahab Public Latrines
	El-Tour Fisherman's Jetty
Total	44 Building Subprojects in 15 Governorates

Examples of Good Roads Design

Governorate	Project
GHR	Berma, Mehalet, Menuf MMC Multi-Year Projects
DAQ	Aga, Meit Ghamr, Nabarouh-Talkha MMC Large Projects Greater Than 500,000 LE

Table IV. 7 Governorate Performance Index

GOVERNORATE PERFORMANCE		ASW	ASY	BEH	BEM	DAM	DAQ	FAY	GHA	GIZ	ISM	KAF	MAT	MEN	MIN	NEW	NSI	QAL	QEN	RED	SHA	SOH	SUE	LUX	BASIS FOR SCORING
SECTOR:	Buildings																								
Design	All governorates have sufficient capacity to use standard design parameters and practices in buildings.	2	3	2	2	3	3	1	2	2	2	2	2	1	3	3	1	1	1	3	1	2	4	0	4TH CYCLE PLN REVIEWS
Contracting	All governorates have the capacity to use proper bidding procedu	2	3	1	3	3	2	1	2	2	3	2	3	2	2	2	2	2	1	2	1	3	2	0	4TH CYCLE TENDER REVIEWS
Const. Supervision	LDII construction supervision procedures installed in all governor	2	2	2	1	2	2	1	2	1	2	1	2	1	1	2	2	1	1	2	1	2	2	0	BD FIELD VISIT EVALUATIONS
SECTOR	Roads																								
Design	All governorates have sufficient capacity to use standard design parameters and practices in roads	1	2	2	2	1	3	1	2	1	2	1	0	2	3	1	2	2	3	0	3	3	0	0	4TH CYCLE PLN REVIEWS
Contracting	All governorates have the capacity to use proper bidding procedu	2	3	2	3	2	3	1	3	1	2	1	1	3	3	2	3	2	2	2	3	3	3	0	4TH CYCLE TENDER REVIEWS
Const.Supervision	All governorates have adequate roads construction supervision capacity and procedures.	2	2	2	3	2	3	1	3	2	3	1	1	2	2	2	3	3	2	3	3	2	2	2	RD FIELD VISITS TO >500 PRJTS
SECTOR	Potable Water																								
Design	All governorates have sufficient capacity to use standard design parameters and practices in village water	1	1	3	1	3	2	2	2	2	1	1	0	1	2	2	0	1	2	0	0	3	0	2	4TH CYCL PLN REV. + CNTR PT MTG
Contracting	All governorates have the capacity to use proper bidding procedu	2	2	3	2	2	2	1	2	2	1	1	0	0	2	2	2	1	0	0	0	2	1	3	TENDER REVIEW FOR LARGE PRJTS
Const.supervision	LDII construction supervision on procedures installed in all governorates	2	2	2	2	1	2	2	2	1	1	1	1	1	2	2	2	1	1	0	1	2	1	2	REV LG PRJS + FIELD VISITS
SECTOR	Wastewater																								
Design	Capacity to contract for wastewater design		1	1	.	1	2	1	1	1	.	.	.	1	1	1	.	1	.	.	1	.	1	1	REV OF ALL WSTWTR DESGN CNTRT
Contracting	Capacity to use TORs, evaluate bids and award contracts.			1	.	1	1	2	1	1	.	.	.	2	2	1	.	2	.	.	1		2	1	REV OF ALL CONTRACTS
Construction	Capacity to contract for construction		.	1	.	1	1	3	1	1	.	.	.	2	2	1	.	2	.	.	1	.	2	2	REV OF ALL CONSTRUCTION CNTRT
	Capacity to contract for construction supervision and administer the supervision contract.			1	.	2	1	2	1	1	.	.	.	2	2	1	.	2	.	.	1	.	2	1	REV OF CNTRTS & ARBITRATION OF CONTRACT DISPUTES

KEY

0 = no or insufficient data for achevment assessment
1 = below average, serious deficiences, unsatisfactory achievement level
2 = average, minor deficiences, satisfactory achievement level
3 = above average, no deficiences, good achievement level
4 = outstanding, model example, excellent achievement level

Roads. Evaluation of governorate road department design capacity showed five governorates with good design capacity and seven governorates with fair capacities to use standard design parameters in road design. Six governorates were judged to have poor capacities for making appropriate designs.

Table IV. 7 shows design skill attainment based on road designs submitted with fourth-cycle plans. Table IV. 6 lists specific projects that go beyond basic design and demonstrate additional roads design skills.

The keys to improving road design are sectorial planning and road department organization. In Beheira, North Sinai, and Fayoum, which contracted highly qualified consultants to produce sectorial plans, road engineers have been able to work with consultants to learn the use of the cadastral survey and methods of making traffic counts during the preparation of the sector strategic plan. These governorates have greatly improved their design capacity. To establish good design practices, road departments need to include a separate design section with qualified design engineers in the organization of the department. This type of organization of the road department in Daqahliya has allowed it to develop a staff of highly skilled design engineers by making use of the Road and Bridge Authority training resources.

Potable Water. Assessment of the governorates' capacities to use standard design parameters showed 11 of the 22 governorates which participated in the workshop and received technical assistance were at least reasonably capable of using the standard designs; the other 11 needed a great deal more technical capacity. Table IV. 7 shows the level of design skill attained by different governorates. These indices are only a rough gauge because individual markaz engineering capacities differ greatly. Beheira, Damietta, and Sohag governorates were ranked as outstanding in design capacity.

Wastewater. Progress has been made in wastewater treatment design. Turn-key plants are no longer being implemented. Rather, sufficient design capacity has been developed to the extent that designs can be contracted, TORS generated, and construction and supervision contracts let successfully. Nine local firms, none of which had done earlier wastewater treatment plant design work, have gained design experience through LD II P.

However, problems in wastewater design remain. The level of detail in drawings and specifications is not always adequate, a problem resulting from inadequate resources allocated to design. Materials selection is sometimes inappropriate, driven by a desire use local materials and to reduce capital cost. Technology choice is also a problem area.

More mechanically intensive technologies require less land, but are difficult to maintain in village environments. The feasibility and design phase should seek an optimal balance among technology, first cost, life-cycle cost, reliability, and land use. However, the experience needed to balance these factors and the willingness to commit GOE funds to investigate them are not always available.

Consultant design liability is not enforced in Egypt. If liability for design flaws were litigated, firms doing poor quality wastewater design work would tend to be eliminated and the general quality of design work would improve.

Contracting

While current laws and local practices provide for proper contracting procedures, the quality of contracts and the timely execution of contracting needed improvement in all sectors. The technical knowledge required to write TORS and specifications in most areas required upgrading and in some, such as wastewater and information systems, obtaining external technical assistance was essential. Major activities focused on developing model TORS and tender documents, reviewing governorate tenders, and training and technical assistance for upgrading tender generation skills. Poor management of the tender process resulted in delays, particularly where different parties had to coordinate in the contracting process. Techniques such as pre-qualifying contractors and establishing permanent tender review committees were explored to deal with management problems.

Figure IV. 3 shows that activities directed to contracting took about one quarter of the training and technical assistance effort in the buildings sector, but sixteen to twenty percent in the other sectors. Each sector had specific contracting needs and activities were focused on these problem areas.

Buildings

Contracting for public building design services is new in most governorates. Designs were previously performed in-house or taken from off-the-shelf standard designs. About one-third of the governorates have issued at least one building design contract. Technical assistance was a major activity, the challenge being to upgrade the quality of contracts to include more detailed specifications and better enforcement provisions. Model contracts were included in the *Public Buildings Manual*; contracting practice was covered in the public buildings workshops. In addition, copies of *Conditions of Contracts and Public Buildings Specifications*, prepared by Arab Bureau for Design and Consulting, were distributed to provide detailed specifications for the many components

41

appearing in bills of quantity for buildings. Also, physical planning TORS were prepared for Ismailia, New Valley and Luxor through technical assistance. Physical planning is a new activity, growing out of the governorates' need for assistance with contracting for physical planning services.

Roads

In addition to road construction, governorates need to use private resources to produce sector strategic plans, provide construction supervision, and supply laboratory equipment for testing road materials. To assist governorates in securing qualified consultants and quality goods and services, the RD Section provided model tenders and TORs for contracting four types of materials and services used in road development.

Particular emphasis was placed on contracting with consultants to prepare road sector strategic plans. Although they saw sector strategic planning as an important step in road development, governorate road directors lacked the expertise to discern and evaluate the requirements for the complex process of strategic planning. RD advisors developed highly technical terms of reference for acquiring consultants who could produce such plans, then worked with the governorates throughout the bidding process. Advisors developed a scoring system to assist in evaluating tenders in three categories of the TOR—technical, financial, and past experience. To qualify, each bidder had to have a technical score greater than 85. Using these rigorous standards, only three out of the four governorates participating in this pilot endeavor were able to find bidders capable of producing the study. Table IV. 8 shows the scores in each governorate.

Table IV. 8 Technical Evaluation of Offers

Offer	N. Sinai	Beheira	Kafr El-Sheikh		Fayoum
			1st tender	2nd tender	
1	90	87	76	81	88
2	86	76	76		73
3	71	74	74		70
4	66				69
5	60				

Kafr El-Sheikh, which solicited tenders twice, rejected all its bids as inadequate and reprogrammed the funds allocated for the strategic plan.

The consulting firms, which produced the plans in four stages over an eight-month period, were asked to make a collective report to the other governorates to share the experience gained in sector planning. The exercise proved to be a bold step in establishing standards of quality that would reverberate all the way to the service delivery of roads. The paucity of qualified bidders revealed a gap that must be filled if road systems are to be adequately planned.

Water

In an effort to strengthen the contracting capability of the governorates, the PW Section published five model tender documents, provided a contracting workshop for 200 markaz engineers from 22 governorates, and delivered intensive technical assistance in improving contract documents. Four model tender documents on supply and laying of AC and UPVC pipes and construction of concrete water towers were published and presented in a workshop for markaz engineers in June 1991. The workshop provided a forum for discussing the law on contracting and how it could be interpreted to assure the selection of contractors that would produce quality work as well as maintain low costs. Following the workshop, a fifth model tender document, on drilling artesian wells, was produced and distributed.

Technical assistance in contracting focused on projects costing over LE 200,000 and contracts that comprised several similar projects. An evaluation of large water projects concluded that contracts for projects above 200,000 LE should be bid separately to avoid delays in construction. (See *Intensive Program for Monitoring and Evaluation of Major Water Projects*, August 1991).

Wastewater

Wastewater sector contracting is fairly complex because the projects are large, involve many parties, and require detailed technical specifications. Generally, design services and, often, construction supervision are contracted. Major activities included developing detailed TORS and training governorate staff on tender development and tender review. Individual items prepared to assist contracting were consolidated in the *Counterpart Preparation Package* (CPP) including:

Terms of Reference for Feasibility Studies:
- Terms of Reference Collection Systems.
- Guidelines for Selecting a Construction.
- Supervision Consultant.
- Egyptian Standard Specifications for Materials.
- Engineering Terms Encyclopedia.
- Bid evaluation forms and cost adjustment methodology.

The CPP was distributed to the governorates actively involved in contracting wastewater projects.[1] Use of the materials was covered in workshops and through on-site technical assistance.

Contracting Results and Conclusions

Although the contracting process still needs refinement, the technical quality of contracts has improved in all sectors through better TORs and by increasing technical knowledge, skills, and tools such as guidelines and specification references. Application of Law 9 and finding a balance between quality and cost requires more confidence and willingness to stand on technical judgments, on the part of most local unit engineering departments. Using a single contractor for multiple projects leads to implementation problems, as evidenced by the road paving projects in Asswan and water towers in Menufiya.

Governorate performance in contracting is shown in Table IV. 7; the estimates are based on evaluation of tender documents generated for fourth-cycle-funded subprojects.

A review of more than 150 fourth-cycle tender documents for buildings was completed. On-site technical assistance was rendered followed by letters sent to the appropriate governorate officials to reinforce the recommendations made. The review of fourth-cycle tenders showed improvement in tenders. By and large, the technical quality of building TORS, tenders and contracts is adequate, and the contracting process is carried out with reasonable efficiency. Most building contracts funded under LD II are relatively small and are not technically or procedurally complex. The

[1] Assyout, Beheira, Beni Suef, Fayoum, Gharbiya, Ismailia, Kafr El-Sheikh, Minya, New Valley, North Sinai and Qalubiya.

100

major problem remains an unwillingness on the part of governorate staff to choose other than the lowest cost bidder, that is, to apply evaluation criteria when reviewing bids which may result in better value, but higher cost. Even in this environment, improvements in the TORs and enforcement provisions have the effect of improving construction quality, provided, of course, that contract supervision is performed adequately.

RD advisors ranked 18 governorates as having adequate capacities to use proper bidding procedures, with 10 judged to have better than adequate capacity.

In the water sector, advisors assessed the capability of the governorates to use proper contracting procedures and judged that 13 of the 22 demonstrated adequate skills in contracting with two of those showing outstanding capacity. The other nine had not reached a satisfactory level of contracting capability.

The capacity to issue wastewater system tenders with adequate technical specifications improved significantly during LD II, primarily through development and promulgation of TORs. Some 64 contracts for design were signed by 15 governorates with 10 local design firms; construction contracts ranged in value from LE 2.3 to 6.8 million. Eleven contracts were made for construction supervision, seven of which were undertaken by the same firm that designed the system. The status of wastewater contracts is displayed in each Chemonics Quarterly Progress Report.

Although the capacity to issue wastewater tenders improved, evaluating the resulting bids proved difficult because contractor responses often included qualifiers that made bids difficult to compare. Bid evaluation forms and a methodology for re-costing bids was developed to make comparisons possible. Lack of coordination and unclear responsibility for contracting wastewater projects delayed all phases of implementation. Establishment of permanent governorate committees to review and negotiate contracts and pre-qualification of contractors would reduce delays.

101

Construction Supervision

Successful construction supervision is predicated on several assumptions:

- The supervisor must have the technical knowledge, methodology and tools needed to evaluate, test, and report on construction quality and progress
- The supervisor must have and understand the specific contract provisions and the general standards and regulations applying to the project
- The supervisor must have the authority and backing required to enforce contract provisions and standards
- The supervisor must be able to be on-site on a regular basis and to operate independently of the contractor

The primary contractor activities undertaken to support construction supervision were directed to improving the knowledge of standards and technical skills, methodologies, and tools of governorate engineers involved in project supervision. Access problems, problems of authority and independence of operation were outside the scope of the contract although training and on-site technical assistance attempted to address these issues.

Construction supervision improvement activities took the major portion of training and technical assistance in all sectors other than buildings. This emphasis recognized that project quality depended on attacking the technical, cultural, and administrative constraints limiting effective supervision. The large technical assistance LOE focused on supervision also results from the time consuming requirement to visit project sites. In wastewater technical assistance visits were made on a monthly basis to many sites. In potable water all projects with value 150,000 LE or greater were visited. Roads visited all projects of value 200,000 LE or greater and all buildings projects with value above 70,000 LE were visited. Much of the effort was one-on-one at the job site. Another approach was experience exchange as in the counterpart meetings hosted by potable water. As shown in Figure IV. 3 a large volume of reference materials was generated to support construction supervision. In addition, the concept of contracting for construction supervision was introduced and governorates were assisted in tendering supervision contracts. Materials testing equipment was obtained in several governorates.

Buildings

Construction supervision was covered in a chapter of *Public Buildings Manual: Construction Supervision for Technicians and Site Supervisors* and in the Public Buildings workshop. About 25 percent of both training and field technical assistance effort focused on construction supervision. Most governorate engineers have adequate knowledge of standard construction practices for the types of building projects undertaken during LD II. Training and technical assistance focused on updating technical knowledge for example, familiarization with the recently released standards for concrete, and overcoming problems of limited resources for inspection and supervision.

Roads

Roads advisors assisted governorates in raising the quality of construction supervision by developing a TOR for hiring supervising consultants. In addition, seven courses in fundamentals of road project improvement and three in construction supervision were provided; a total of 376 engineers received training. A manual was also distributed on construction supervision.

Advisors visited 584 road subprojects to inspect construction quality and progress. They sent letters to the governorates recommending action where needed and followed up with subsequent visits. The installation of lab equipment in Ismailia, Sharqiya, and Beheira assisted the construction supervision process by giving supervisors the capacity to test materials being used by construction contractors.

Water

The PW Section focused its efforts in construction supervision by providing standards and procedures for quality construction of water systems. Pipe laying was a particular problem in rural villages where labor often was supplied by village residents as the "popular contribution." Two documents were produced as resources to the governorates for pipe laying: *AC Pipeline Pocket Handbook*, a translation of a pocket-sized English field manual for laying pipes, and *Guidelines for laying UPVC Pipelines*, aimed at markaz engineers. Appropriate installation of pump sets was also a concern. One deliverable and two additional documents were produced to assist in installation techniques and standards. One hundred and fifty-four markaz engineers from 21 governorates attended five pipe laying and pump set installation workshops. An intensive workshop in Qena Governorate focused on the improvement of pipe laying and included 167 participants including one engineer for each markaz, village chiefs from project villages, and housing department engineers from both the governorate and the marakez. Village chiefs were included to help them supervise the labor supplied through popular participation. PW advisors developed the monitoring and evaluation function for construction by establishing monthly

counterpart meetings to discuss problems and solutions. In the 22 governorates, 18 counterpart meetings were held, involving 130 engineers. Technical specifications of projects have improved 75 percent overall.

Wastewater

Because wastewater construction was new, governorate engineers lacked the experience needed to perform adequate field supervision services. In addition, contractors lacked experience with facility construction and, often, with standard construction practice, and applicable Egyptian standards and laws. Extensive technical assistance was provided to engineers and technicians in governorates involved and those planning involvement in construction supervision of wastewater systems. Classroom training, on-site inspection, systems for control such as "site notebooks" to record daily problems, and assistance in tapping the private sector for construction supervision were the interventions applied.

Governorate subproject field visitation system: A pilot in Kafr El-Sheikh.

Except for some large projects and projects such as wastewater where the technology was new, on-site monitoring by governorate and markaz engineers of projects under implementation has generally been on an as-needed basis. No regular program of visits, reporting and documentation of problems, follow-up actions taken, and construction/operational status existed in any governorate. The system developed in Kafr El-Sheikh aimed to provide tools and skills, and establish procedures and responsibilities for a regular on-site inspection and reporting system. The system was to be developed within the governorate and implemented by governorate and local unit staff without the need for continued external support. Implementation, operation and service delivery were to be covered which implied that regular visits would be made to completed projects as well as those under construction. Reporting would focus on projects requiring corrective management actions.

Governorate and local unit staff in Kafr El-Sheikh were involved from the outset in system design: defining objectives, determining responsibilities, establishing schedules and assigning personnel and resources. Indicative of the level of commitment is the fact that, although the pilot goal was to visit and report on about 10 percent of LD II subprojects, governorate and markaz staff completed site-visits to the entire inventory of 1042 subprojects using their own transportation resources, their own management and 1,600 person days of staff time in a period of nine weeks. The total field technical assistance input was about 48 person days.

The data collection form was based on the project status assessment form developed for the National Sample Survey, but added additional detailed information on contractors, suppliers, the physical description of the subproject and the system to which it belonged, and compared information from documents on file to that reported in the QPR subproject monitoring system. A subproject file was compiled for every project containing the project plan, contracts, financial records, and other project documents. Copies of project files were kept by the local unit (owner), the markaz and the governorate.

Data from the forms was compiled at the markaz level on summary forms which were used to make simple manual analysis of the numbers of projects in various categories (completed, operating, delivering service, etc.). Governorate computer operators entered markaz summary data into Dbase III for governorate level statistical analysis. The required analysis (simple counts) was done in the database and presented using Quatro Pro (Arabic). The technical assistance contractor took the data and applied SPSS statistical analysis software in order to examine a wider variety of correlations, but concluded that a simple analysis would produce adequate results.

The results of the site visits including lists of problem projects were discussed with governorate officials at all levels. Corrective actions were planned and are being carried out.

Results and Conclusions

Building projects sponsored by LD II tend to be small (see Figure IV. 4), numerous, and use local contractors. The two primary limitations in governorate site supervision of building projects are insufficient staff to visit projects regularly and inadequate transportation. A significant number of projects were never visited during implementation except at handover. The same housing department personnel responsible for supervision of buildings are responsible for public housing projects and water projects. Public housing and water have tended to have higher priority than public buildings.

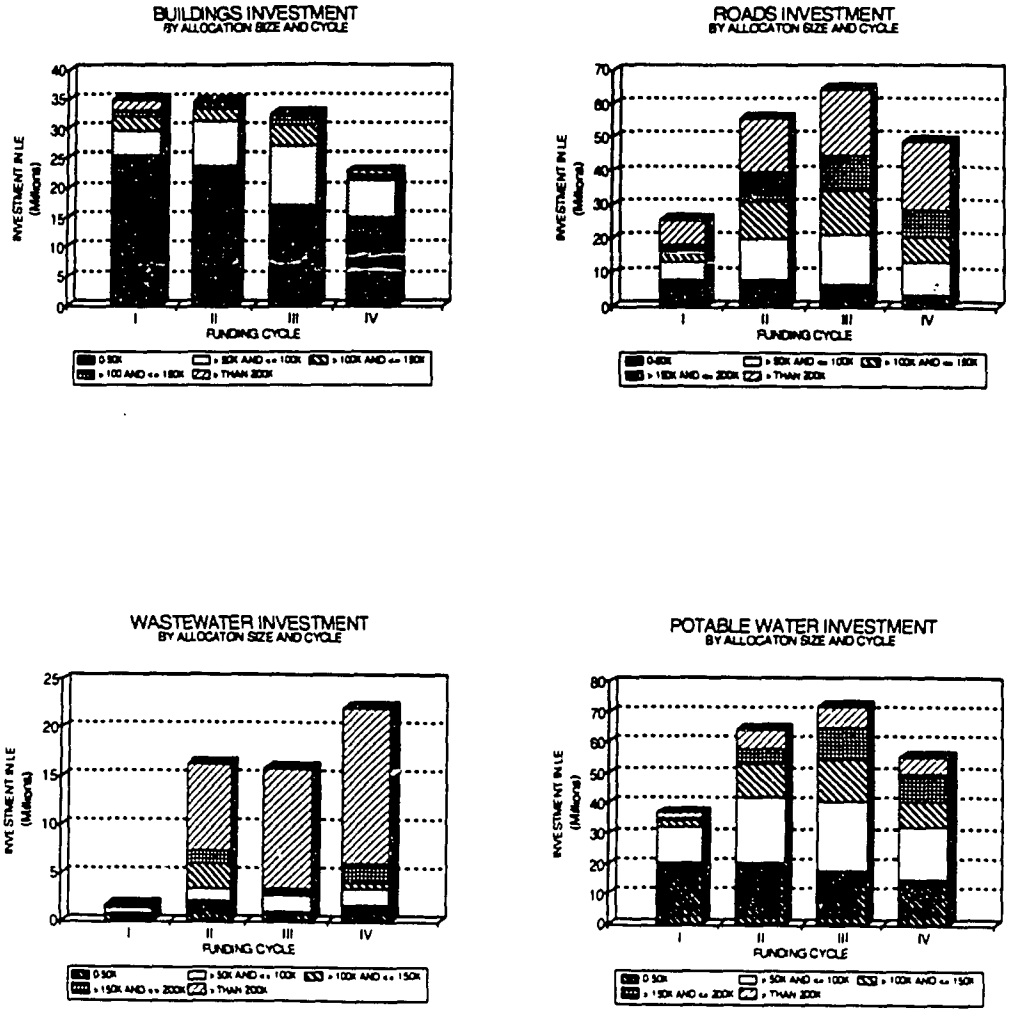
Another serious limitation is staff qualifications. Most markaz-level housing department engineers are trained in mechanical or electrical engineering and their major focus has been water system installation. There are few architects and few civil engineers. The low governorate salaries attract inexperienced staff and, as experience is gained, the more able leave for jobs in the private sector. Low salaries also help create conditions for graft; construction supervision is particularly vulnerable to the temptations of payoffs. Because many of those attending BD construction supervision

training had limited civil or building construction experience, training focused on those standards and codes important to improving building quality. *Guide to Construction Supervision* developed for wastewater was distributed to training participants and housing engineers involved in building construction supervision.

Building codes and standards are generally known by both local unit engineers and by contractors. However, enforcement mechanisms are weak. As mentioned above, site visits are at best intermittent. Furthermore, Egypt has not implemented a system of staged inspections tied to permits for public or private construction. It is up to the owner to enforce contract requirements directly or by hiring a construction supervisor. The hiring of a construction supervisor for private construction is only required for relatively large projects and can be evaded by building in small increments. There is no public supervision of private construction supervisors.

As a result of technical assistance, fourth-cycle road projects showed improvement over those in previous funding cycles. Specifically, the emphasis on material testing in technical assistance and training led to an improved material testing lab in Sharqiya Governorate and new labs in Ismailia and Beheira. The quality control of materials employed for fourth-cycle road projects in Minya, Gharbiya, Daqahliya, and Ismailia demonstrated the impact of training courses in those governorates. Sharqiya, Qalubiya, and Daqahliya, which had more than two projects costing over LE 500,000 and by fourth-cycle preconditions were obligated to hire construction supervision consultants, used the TOR for hiring consultants in construction supervision produced by the Chemonics RD Section. The use of consultants improved the road construction quality at only one percent of the cost of the project.

Figure IV. 4 Sector Investment by Allocation and Size



107

RD advisors provided a set of books for each of three road engineers in every governorate to improve resources for maintaining road standards and quality. Volumes included those on TORs for tendering road projects, construction supervision consultants, and laboratory testing equipment. Also provided were *Construction Inspector's Manual* produced by Chemonics, *Standard Materials Testing, Preparation and Implementation of Road Projects* (1989) from the Road and Bridge Authority; and a volume on Law 9 with information on tenders and bidding regulations from the Ministry of Finance.

LD II technical assistance emphasized upgrading capacity at the governorate road department level. More training is needed at the markaz level if road construction is to reach an acceptable standard across all governorates.

Water projects reflect an awareness in the governorates of the importance of complete specifications in water projects, and the need for construction supervision and pipe network testing. Photographs taken of projects before LD II and projects after LD II show improvements in project quality in 80 percent of the governorates. A large part of this improvement is directly attributable to improvement in tender documents for construction. Before LD II, tender documents were typically three pages in length—very general and with vague specifications. Chemonics supplied TORs for water project components, which laid out specifications in detail. These more technical TORs screened out unqualified bidders as well as providing a basis for holding contractors accountable. Many governorates have used the Chemonics TORs for project tenders resulting in a marked improvement in project quality. Both before and after photographs and tendering evaluations are on file with Chemonics.

Vignette: Contractor Arbitration

One role that construction supervision teams assumed was that of impartial arbitrator in contract disputes. Disputes arose, for the most part over quality of construction issues and from the fact that TORs tied the contractor to facility performance in compliance with law 48.

The former item was the result of poor construction supervision procedures (i.e. protecting design intent). Quality issues were often addressed too late in the process for corrective action to be taken and the owner had implied acceptance by not addressing issues in a timely manner (it was not rational to demolish and rebuild entire structures once they had been completed and proffered for hand over).

As to the latter item, there were often kinetic and hydraulic deficiencies in the designs and this was considered outside of the contractor's realm of responsibility by the technical assistance teams. In the case of the submerged fixed-Film reactor (SFFR) technology this was clearly an unfair requirement as the technology itself had a history of inadequate performance.

In addition it was usually the contractor who obtained permits for rights of ways and permits. This practice removed this task from the design phase where it belongs. In some cases, the design the contractor bid on was negated because permits could not be obtained. This left the contractor in the position of being responsible for redesign costs and formulation of a new bill of quantities. This situation was not only financially prohibitive but technical aspects were outside the capability of local contractors.

The resolution of these types of disputes underscored the need to continue the evolution of utilizing the contract document as a means to improve quality and assess responsibilities to the appropriate party (i.e. owner, consultant and/or contractor). Although no direct effort was initiated to establish an arbitration group or sector, the cases that were acted on served to educate governorate personnel on the importance of the application of contract documents and construction supervision to the construction phase.

Capability in supervising construction of wastewater treatment systems has increased. Most significant has been a change in attitude concerning the importance of supervision and a desire to improve the finished product. Technical knowledge and skills have also improved, but periodic training programs alone cannot build in-depth capacity. General lack of basic construction experience and organizational and institutional obstacles continue to hinder construction supervision. Low salaries fail to attract experienced personnel and provide little incentive for acceptable performance. Simple managerial tools such as filing systems, and measuring tools such as tapes, survey equipment and testing tools, and resources such as transportation are not available. It is also difficult for the supervisor to adopt an appropriate professional position between himself and the contractor. It is difficult to be dependent on the contractor for transportation and to share his office and hospitality, then inform him that a piece of work is unacceptable and must be redone at his expense.

Entering into a construction supervision contract, often with the same firm that designed the project, is an alternative to direct construction supervision by the local unit; this approach was taken in seven cases. All construction contracts since 1991 have included a separate contract for supervision. Although this approach provides local government units with a more complete construction supervision presence, the consultant concept itself has been inhibited by the absence of historical experience. A major handicap is continued micro management by LGU officials on and their response to payment vouchers issued by the construction supervision

contractors. Governorates have also failed in timely payment of the consultant.

With the establishment of the subproject visitation system, Kafr El-Sheikh Governorate is planning to continue the visitation and reporting system with an ambitious plan to visit projects under implementation every month and completed operating projects every six months. It should be noted that a single site visit often covers several subprojects which are part of a single physical system.

IMPLEMENTATION

Rural Wastewater Program

The rural wastewater program was a largely independent and separate program within the LD II structure. It was unique in that, unlike other sectors which had a long history of implementation by the GOE, rural wastewater treatment was an entirely new effort. Technologies had to be tested, initial experience gained in design, construction, operation, and management. Also, evaluation was needed of construction and operation costs. This section briefly summarizes the history of the rural wastewater effort, describes some of the special activities related to it not covered elsewhere in the report, and discusses the lessons learned in terms of future wastewater interventions.

Background

The national wastewater sector consists of three primary programs:

- Those serving the cities of Cairo, Alexander and the three canal cities of Port Said, Ismailia and Suez
- Those directed to the 155 governorate capitals and major markaz cities (active since 1988)
- A program to meet the wastewater needs of the 4000 rural villages

The need for a wastewater treatment program for rural villages was recognized by the GOE in 1960 with the passage of legislation that established a decentralization program and delegated decision making responsibility to LGUs.

The rural program concerned itself with the 4000 rural villages with populations from 10,000 to 50,000 (an aggregate population of 35 million people, approximately one-half the total population of Egypt).

The need for rural sanitation evolved, in part, from the increase in potable water systems and corresponding increase in wastewater discharges. More importantly, the construction of the Asswan Dam eliminated seasonal siltation in canals and drainage ditches that had previously prevented exfiltration from them into the ground water table. The result was an increase in the ground water level. The increased ground water table negated the traditional means of sanitary waste disposal, seepage pits.

One of the more prominent manifestations of the failure of seepage pits was the emergence of stagnant pools in low lying areas of villages, some situated in houses and schools. These pools contributed to the contamination of ground water. Low lying pools were also used by village inhabitants for solid waste and sullage (gray water) disposal. The health hazard presented by these conditions included the proliferation of disease spreading vermin.

In 1980, the BVS program began to address rural conditions through the provision of ground water lowering projects combined with sewers, which discharged into the drain canal system.

In 1982, the Ministry of Irrigation, recognizing the adverse impact of these sewer discharges, passed Law 48 specifying pollution limits to sanitary discharges. The specifications of Law 48 are strict enough to require secondary treatment, thereby restricting technology choices. It also effectively eliminated a phased program of first providing collection, followed by primary treatment and then secondary treatment.

The LD II-P Wastewater Program

The program was initiated as an extension of the BVS effort with the continued objective of increasing the capacity of the LGUs to implement sanitation infrastructure projects. A major activity in the rural wastewater sector was the development of a pilot wastewater program that would provide data for estimating the impact of Law 48 on rural sanitation.

Initial activity in the pilot program included the completion of eight extended aeration facilities that were initiated by the Damietta Governorate prior to 1988. Neither USAID or Chemonics supported the choice of this technology because initial evaluations of personnel requirements and recurrent costs had concluded that local resources were not sufficient for sustainability. However, as the governorate had committed itself to the purchase of the mechanical equipment, the decision was made to provide financial assistance for the civil portion of facility construction in support of the local initiative.

As the pilot program matured, LD II sought to provide compliance with Law 48 by evaluating technologies that were less mechanically and power intensive. Oxidation ditches, submerged fixed-film reactors, aerated lagoons and stabilization ponds were selected from the many alternatives available. From the experience gained in implementing and operating these technologies, a cost and personnel requirement data base would be developed which could be used in the selection of an appropriate technology for rural Egypt's wastewater needs as well as establishing criteria for replication throughout the sector.

Special Wastewater Activities

In addition to extensive workshop training and on-site technical assistance for governorate personnel described elsewhere, several activities were undertaken to broaden the experience base of wastewater technical and managerial staff and to address policy issues in this important sector.

Experience sharing and observation are important training and motivational tools for personnel moving into new areas of responsibility. Three observation trips, one to India in 1989 the two others to the US, were sponsored by the LD II wastewater program. A group of 15 engineers and managers from five governorates, accompanied by advisors from Chemonics and USAID, visited examples of water and wastewater sanitation facilities in India. They had the opportunity to observe village-scale systems using a range of technologies in preparation for testing several technologies under Egyptian conditions. In 1990, 13 engineers from 12 governorates visited wastewater facilities in seven US communities to observe how water and wastewater service delivery is managed in typical US cities and counties. On the second tour to the US, in 1992, 13 engineers participated. In addition to observation of facilities, they attended the annual WPCF conference and trade fair. Mini-lectures and guided discussion were used to enhance the impact of what was observed.[2]

While initial interest was focused on technology, the most eye opening impact of the US tours was learning how utilities in the US are organized, managed and financed. Particularly fascinating to the participants was the "utility district" organization with its own geographic boundaries not necessarily contiguous with administrative boundaries, of the town or county, independent source of financing through user fees, and authority to issue bonds. That utilities had elected "boards" directly accountable to citizens was an exciting

[2] LAD was instrumental in coordinating this effort, providing additional funds and external consulting services.

concept. These observations lead to spirited discussion of the problems faced in the provision of utility services to citizens in Egypt. The "utility district" concept and its application to Egypt is discussed in Section V.

Experience sharing is also valuable on a local level. Three seminars were held in Damietta to enable participants to visit six facilities operating in the governorate. The significance of this experience sharing, as reported by participants in the workshop evaluations, suggests that creation of a professional association of rural wastewater engineers be considered. One concrete result of the US tour was a request that the Water Pollution and Control Federation (a US-based, international organization) add Egypt to its international roster. Membership will help the development of local chapters in Egypt. Damietta's 16 operating facilities which include collection networks, pump stations and treatment plants has made the governorate a laboratory visited by many officials and engineers from other governorates and experts from international organizations.

Wastewater policy, particularly as it applies to rural Egypt, has been a significant concern in the LD II P wastewater program. In September 1989, Damietta hosted the Wastewater Financing seminar, sponsored by the chairmen of the PLDC and ORDEV in Ras El-Bar. Secretaries general of the 22 provincial governorates attended and discussed financing of wastewater capital and recurrent costs. The basis for discussion was the report, *Rural Wastewater Financing in Egypt* (July 1989, Chemonics). The magnitude of the financing problem was made clear and a range of options for meeting both initial capital costs and operational costs, and cost recovery for future capital needs was discussed. Governorates implementing wastewater projects have initiated efforts to establish monthly user fees either by direct collection or through water bill surcharges. A recent study, *Cost Recovery: The LD II-P Experience* (September 1992) summarizes collection experience. Seminar participants were also able to visit wastewater projects in six neighboring villages which for many, was their first observation of a treatment facility in operation.

In 1989, a national seminar on the preliminary results of the LD II-P rural wastewater program was organized by the contractor. Those attending included governorate officials and representatives from USAID, NOPWASD, universities, the Ministry of Irrigation and Planning, the shoura council, and WHO. Issues of community participation, O&M management, financing, and phased implementation of Law 48/1982 were topics of discussion. The significance of the LD II experience has been recognized by the appointment of members of the technical assistance contractor's wastewater staff to a number of committees including:

- ORDEV Wastewater Projects Coordination Committee
- NOPWASD Wastewater Sector National Policy Committee
- NOPWASD Wastewater Projects Financing Committee
- MLA Wastewater Senior Planning Committee

Results

Achievements of the LD II wastewater effort are the facilities constructed during the program which are providing treatment services, experience gained with a range of technologies enabling better technological choices for future systems, trained and experienced staff in the governorates and private sector for all phases of facility planning, construction and operation, and insights into important policy, financing and managerial issues.

As of November 1992, the original eight extended aeration facilities as well as four oxidation ditches, four submerged fixed film reactors, one aerated lagoon and six stabilization ponds have been constructed and are in operation. In addition, 16 collection systems and four wastewater treatment facilities are currently under construction and 22 systems are in the planning and/or design phase. Of the 4 treatment facilities under construction two are stabilization ponds, one is an aerated lagoon and one is a trickling filter (fixed-film) system. Table IV. 9 shows the status of the wastewater facilities including those in the feasibility and design stages, under construction and in operation.

Regarding the most appropriate wastewater technologies for rural Egypt, of the technologies piloted, stabilization ponds and aerated lagoons are the preferred choices where land availability is not a constraint and the SFFR process is recommended. Findings of the program indicate that while the use of an Imhoff-type process is the most appropriate technology, it would require reducing the standards of Law 48.

Table IV. 10 lists the primary factors considered in choosing a technology from those studied during LD II. Based on costs from the LD II-P program, at the present level of GOE funding of LE 80 million per year, it would take over 100 years to provide collection and treatment facilities to 60 percent of the rural villages at a cost in excess of LE 9 billion (discounting inflation and replacement of facilities constructed early in the program) if compliance with Law 48 is to be maintained.

Lessons Learned

The LD II wastewater experience has shown that it is possible to construct rural wastewater systems using local engineering and construction capacity. Completed systems are operating in or near compliance with Law 48; however, a large input of training and technical assistance was required and the sustainability of both construction and operation is in question in the absence of continued technical assistance input. Table IV. 10 shows that many governorates are distant from the goal of sustainability in terms of contracting and contract administration which are essential to rural wastewater implementation. In terms of operation, a nationally recognized certification training program for plant operators and specialized training for engineers through existing educational institutions is required.

As experience has been gained, design and construction quality has improved. However the infrastructure constructed thus far has been under-funded and has defects which will increase operational costs and require remedial work, and, probably, early replacement. For the sake of comparison, a secondary-level treatment plant (e.g. extended aeration) serving a community of 20,000 would currently cost approximately six million dollars in the US to construct. The budget for local plants serving similar populations is about 10 percent of this amount. While material and labor costs are lower in Egypt, this large differential is also reflected in the quality of construction, the materials used, and the longevity of the plant. Life-cycle costing would help address this problem, but limited current resources are the major barrier.

The need for integrated planning for water and wastewater is recognized and progress in developing governorate-wide long range water/wastewater plans is being made. However, funding the resulting plans remains problematic. The cost of meeting rural treatment needs nationwide using any of the currently tested technologies is far beyond foreseeable resources. Little progress has been made in establishing an effective cost recovery mechanism to meet daily operational costs, much less future capital investment fund requirements. Review of Law 48 is urgently required so that lower-cost primary treatment systems might be considered. National rural wastewater policies are also urgently needed to establish service level and coverage targets, set priorities, determine jurisdictional responsibilities and authority, and set a capital cost level which will be supported by central GOE financing and outlines how these funds will be allocated to local units.

115

Just as water and wastewater service and delivery need to be considered together, solid waste disposal, toxic hazards control, and communicable disease control should be integrated into an overall environmental health improvement program so that limited resources can be applied in the most effective manner.

Detailed recommendations for the wastewater sector are give. in *Assessment of the Rural Wastewater Projects.*

116

Table IV. 9 End of Project Status, Wastewater Projects

No	GOVERNORATE	VILLAGE	PHASE	ENG./ CONTR.	CONT. AWARD DATE	VALUE LE*1000 1992
01	Damietta	Horany	FS/D	AAW	05/89	20.0
02	Damietta	Rikabia & Gamasa	FS/D	AAW	07/90	23.0
03	Damietta	Seaf El Din	FS/D	Talaat	12/91	24.0
04	Daqahliya	Batrah	FS/D	USDC	02/92	22.0
05	Daqahliya	Mokataa	FS/D	CB	07/90	22.0
06	Sharqia	Kofor Nigm & Taradiiah	FS/D	USDC	04/89	20.0
07	Sharqia	Shiba & Nikaria	FS/D	CB	07/89	20.0
08	Qulubiya	Shalaqan, Warwara, Bata	FS/D	CB	02/90	41.0
09	Menufiya	Abuel Kom & 5 Villages	FS/D	Talaat	11/91	34.4
10	Menufiya	Batanon	FS/D	Eng. Group	07/91	18.8
11	Gharbiya	Mehalet & Marhoum	FS/D	NOPWASD	11/88	185.0
12	K. El Sheikh	Messer	FS/D	USDC	12/91	20.0
13	K. El Sheikh	Shabas & Emaer	FS/D	USDC	12/91	20.0
14	Beheira	Eflaka	FS/D	MCE	04/90	21.0
15	Giza	Kerdasa	FS/D	AAW	11/89	15.7
16	Giza	Abu Rawash	FS/D	RT	RT	RT
17	Giza	Saqara	FS/D	Talaat	09/90	22.0
18	Fayoum	El Edwa	FS/D	AAW	02/90	w.5
19	Minya	Dalaga	FS/D	USDC	11/91	28.0
20	Assyout	Doronka	FS/D	M.Saleh	06/90	25.0
21	Luxor	Karmak & M. El Amary	FS/D	M. Saleh	12/91	40.0
22	New Valley	El Rashda	FS/D	USDC	12/91	1,250.0
23	New Valley	Baris	UC	USDC/LC	03/90	1,890.0
24	New Valley	El Kasr	UC	USDC/LC	01/90	1,897.2
25	New Valley	El Gideeda	FS/D	USDC	07/91	20.0
26	Daqahilya	Miet Aamel	UC	IMS/LC	08/90	1,581.0
27	Daqahilya	El Azizah	UC	MCE/Ayoub	03/92	1,650.0
28	Qulubiya	Ramlah	UC	Nayel/LC	11/90	1,360.0
29	Qalubiya	Moshtohor	UC	EP/LC	11/90	1,667.6
30	Qalubiya	Kafr Shibin	UC	Nayel/LC	12/90	2,177.0
31	Qulubiya	Bata	UC	Nayel/LC	04/92	1,653.9
32	Qalubiya	Warwara	UC	Nayel/LC	04/92	1,372.7
33	Qalubiya	Shalaqan	UC	Spectra/LC	04/92	1,961.7
34	Beheira	Nekla	UC	HA Co.	04/92	2,551.0

AAW = Ahmed Abdel Warith Consultant
AF = Ahmed Fadel Company
CB = Consulting Fund, Ministry of Scientific Research
NEMAS = Mohsen El Shazely Contractor
USDC = Ahmed Fadel Company

TABLE IV.9 END OF PROJECT STATUS - WASTEWATER PROJECTS (Continued)

No	GOVERNORATE	VILLAGE	PHASE	ENG./ CONTR.	CONT. AWARD DATE	VALUE LE*1000 1992
35	Beheira	Waked	UC	ACC/LC	04/92	2,134.8
36	Minya	Talah	UC	NA/IEP	12/92	2,216.6
37	Gharbiya	Ebiar	CD	ACC/LC	10/92	1,215.0
38	Menufiya	Estanha	UC	Talaat/LC	02/92	1,111.4
39	Menufiya	El May	UC	Talaat/LC	02/92	1,512.0
40	Giza	Baragil	UC	ESP/Nasr	10/90	1,312.8
41	Fayoum	Sanhor	UC	Spectra/LC	02/91	4,350.0
42	Damieeta	Miet El Kholy	OS	NOPWASD/MCA	02/85	4,361.4
43	Damieeta	El Serw	OS	MI/Timsah	02/89	5,059.9
44	Damietta	Sharabas	OS	MI/Timsah	02/89	4,120.8
45	Damietta	El Roda	OS	MI/MC	02/89	5,669.9
46	Damietta	Miet Abu Ghaleb	OS	MI/Timsah	02/89	4,229.6
47	Damietta	El Westany	OS	MI/Timsah	02/89	5,023.2
48	Damietta	Ghonimiya	OS	MI/Timsah	02/89	3,936.6
49	Damietta	Kafr El Arab	OS	MI/Timsah	02/89	3,808.1
50	Damietta	Kafr Soliman	OS	AAW/Timsah	02/88	3,376.7
51	Damietta	Rahamna	OS	AAW/Timsah	02/88	3,516.6
52	Damietta	Khayata	OS	AAW/Timsah	02/88	3,799.6
53	Damietta	Kafr El Batikh	OS	AAW/Timsah	02/88	6,757.8
54	Damietta	El Barashiya	OS	AF/EMAS	07/88	2,576.0
55	Damietta	Kafr Saad El Balaad	OS	AF/EMAS	07/88	3,765.4
56	Damietta	Daqahla	OS	AF/EMAS	12/87	3,318.1
57	Damietta	Adliya	OS	AF/USDC	12/87	2,996.7
58	Damietta	Sheremsah	OS	AAW/Timsah	10/90	307.2
59	Fayoum	El Nezla	OS	AAW/Spectra	06/90	1,320.0
60	New Valley	Balat	OS	USDC/LC	02/89	795.0
61	New Valley	Bolaq	OS	USDC/LC	02/89	1,176.0
62	South Sinai	Dahab	OS	AAW	1987	NA
63	South Sinai	Taba	CD	AAW	1992	271.7
64	South Sinai	Sharm El Sheikh	OS	AAW	1987	NA
65	South Sinai	El Tour	OS	AAW	1987	NA
66	South Sinai	El Aqaba	OS	AAW	1987	NA

LC = Local Contractor
UC = Under Construction
OS = Operating System
FS/D = Feasibility Study & Design Phase
CD = Construction Delayed
RT = Retendered
NA = Not Available

Table IV. 10 **Principal Factors in Technology Choice**

ITEM	SOAF	O2 DITCH	SFFR	AL	SP
CAPITAL COST** [LE/FAMILY]	1000	700	500	500	400
O&M COST [LE/MONTH/FAMILY]	4.40	4.40	1.60	1.50	0.32
COMPLIANCE WITH LAW 48	YES	YES	YES*	YES	MARGINAL
RELATIVE LAND REQUIREMENTS	LOW	LOW	MEDIUM	HIGH	HIGH

** 1992 Assuming family of 5 at 100 Liters/day and a village population of 11,000
* With anaerobic prestage.
SOAF = Extended Aeration Facility
O2 Ditch = Oxidation Ditch Facility
SFFR = Submerged Fixed Film Reactor
AL = Aerated Lagoon
SP = Stabilization Pond

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Note: Where land requirements are restrictive then SOAF and O2 Ditch are appropriate.
Where land requirements are not restrictive then SFFR, AL, and SP facilities are appropriate.

Section V

Improving Operations and Maintenance

OVERVIEW

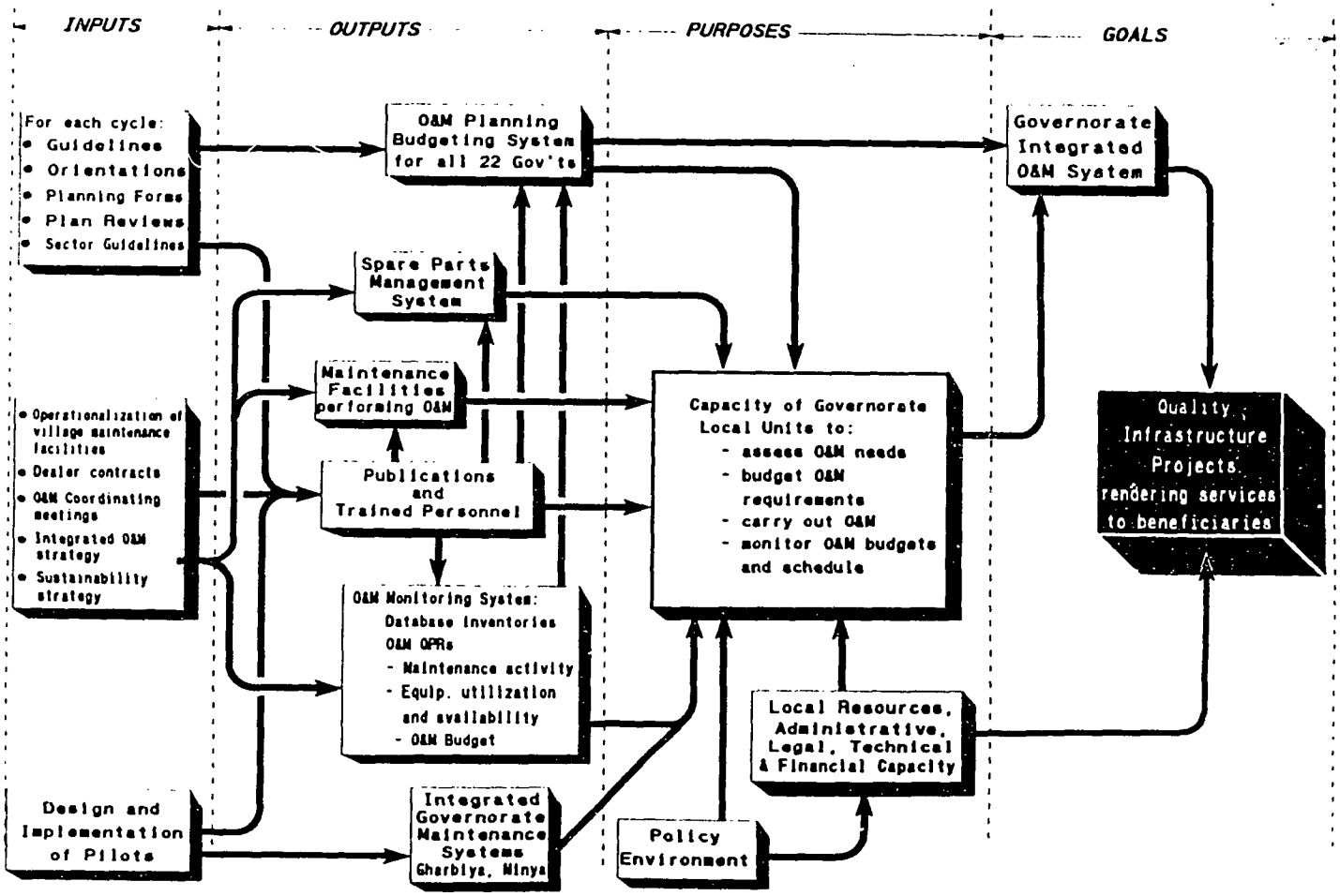
This section summarizes our strategy, activities and accomplishments in operationalizing the project purpose of improving local maintenance capacity. The logframe guiding our interventions in the operations and maintenance area is presented in Figure V.1, showing inputs and outputs provided through our technical assistance contract. The O&M outputs summarized in this section are the following:

- An O&M planning and budgeting system operating nationally in all 22 provincial governorates
- A substantial increase in the numbers of village maintenance facilities performing O&M functions, the result of our operationalization efforts
- A spare parts management system working in 16 governorates
- An O&M national monitoring system in place for all 22 provincial governorates, providing quarterly reports to the MLA on maintenance activity, equipment utilization and availability, and O&M budget expenditures
- Working, successful, replicable, governorate integrated maintenance systems in two pilot governorates, Minya and Gharbiya

The training and publication outputs in support of this activity are discussed separately in Volume II of this report. The section also contains a description of initial activities conducted under LD II-P towards the development of a working "utility model" for the water and wastewater sectors, a theme which we resume in our conclusions.

What follows is a summary account, by no means exhaustive, of what LD II-P accomplished by the time of its closure. More detailed discussions can be found in the relevant and abundant bibliography of the project.

Figure V. 1 Contractor's Logframe of Operations and Maintenance System



Improved capacity for operations and maintenance (O&M) of infrastructure was a goal of the original DSS Project. The magnitude and scope of the O&M problem as such began to receive systematic attention with the publication of the 1984 midterm evaluation of the BVS Project, which identified O&M as the "time-bomb" of the project. O&M related activities under the BVS Project included the preliminary design and costing of an O&M spare parts management program[1] and its pilot implementation in three governorates (Menufiya, Beni Suef, and New Valley) as well as surveys of village and markaz-level maintenance capacities in nine governorates.

Under the first contractor work plan, efforts were undertaken to implement and operationalize a comprehensive O&M system foundation in all 22 rural governorates. The basic elements of this system included:

- Capital investment block grant funds, and design and technical assistance for the construction and/or upgrading of maintenance facilities at each level of local administration
- Annual block grants for operations and maintenance, supplemented to fund O&M plan and budget
- Monitoring and reporting systems, developed by the contractor, to track the national implementation of O&M plans and budgets

In addition, the contractor designed and implemented a general O&M spare parts management system for equipment and rolling stock provided through the USAID Decentralization Support Fund (DSF). More than 2,000 pieces of equipment, worth $77 million, and spare parts valued at $ 15 million were delivered to all governorates under DSF.

Under the second workplan sectorial approach to capacity-building, O&M planning and management improvement tasks were incorporated into the separate work plans of the five technical assistance sections (water, wastewater, buildings, roads, and rolling stock). The "soft" sections, such as local government (LG) and local finance (LF), contributed to the O&M effort through a series of studies of conventional and non-conventional GOE systems of O&M finance and through designs and follow-up of pilot O&M cost recovery systems. In addition, the LG, water, and wastewater sections collaborated on a number of activities aimed at strengthening the management capability of water and wastewater utilities.

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[1] Documented in *A Village Infrastructure Maintenance Program*, February 1985

CONSTRAINTS

A wide variety of constraints exist to adequate and sustainable O&M. While some were obvious, and appreciated at the earliest stages of the contractor's efforts, others were more elusive, coming to light only after the technical assistance spare parts management interventions were provided.

Institutional Factors

- Before BVS, "maintenance" had no organizational identity within local government at all; there was no office responsible specifically for O&M at any level of local government.
- O&M planning and budgeting was virtually unknown. O&M "budgets" were based simply on previous O&M allocations, with no regard for the adequacy of allocations, the efficiency of expenditure, or the efficiency of O&M revenue collection.
- O&M planning and implementation responsibilities were often poorly organized, with inadequate demarcation of responsibilities leading to organizational conflicts and, typically, inaction.

Technical Factors

- Little information was available on the O&M needs of the infrastructure or indeed on the amount and characteristics of the currently existing infrastructure.
- Existing maintenance facilities and equipment were not planned with regard to the types or quantities of infrastructure to be maintained.
- Projects were selected and designed without consideration of their O&M financial, technical, and skill requirements.
- Persons working in O&M were often poorly skilled, trained, and paid.

Cultural Factors

- For the institutional and technical reasons listed above, users were habituated to low levels of service and accountability.
- The benefits of preventive maintenance spare parts management (and its costs) were inadequately appreciated since "maintenance" was understood mainly in remedial terms.
- Habituated to low levels of service and accountability, users did not feel obligated to contribute to the cost of service

delivery except in cases where breakdowns could not be covered by conventional O&M allocations.

OBJECTIVES AND STRATEGY

The overall objective of the various service delivery activities was to improve the capacity of local governments to deliver basic services effectively and efficiently. Effectiveness of service delivery was understood to mean the operation of infrastructure and equipment at planned levels of continuity and quality. Efficiency of service delivery was understood to mean the use of the optimal mix of operations inputs and the application of preventive maintenance practices to prolong the useful life of service investments.

Service delivery technical assistance strategy evolved with the contractor's increasing understanding of the constraints in the service delivery environment. In view of the constraints discussed above, the contractor's service delivery objectives under AWP 1 focused heavily upon instituting basic processes of O&M planning, budgeting, monitoring, and reporting for the sectors of water, roads, and rolling stock and providing technical assistance in the planning, design, and construction of an infrastructure of maintenance facilities. The activities associated with this effort are discussed below under the heading of General O&M Systems Development.

The AWP 1 experience of establishing basic O&M systems throughout provincial Egypt underscored the challenge and magnitude of this task. Problems of organization and management under existing institutional constraints required an intensive deployment of technical assistance resources; these problems were approached through an intensive program of technical assistance in all aspects of O&M organization and management in two governorates through the pilot O&M program in Gharbiya and Minya.

Technical O&M training efforts were also stepped up in several sectors under AWP 2. The O&M of public buildings, largely ignored under previous efforts, was addressed through a training program. Training in the O&M of rolling stock was also expanded under the AWP 2 sectorial organization. Wastewater project O&M training programs were organized and delivered as village wastewater systems gradually moved from the construction to the operation phase.

The AWP 2 emphasis on sustainability was particularly important in expanding the notion of service delivery from a fairly narrow concentration on O&M programming to a broader frame of reference. Financial sustainability was an explicit concern, but the LD II objectives of capacity-building and local management development frame this concern in broader terms than increased revenue generation. The LD II-P approach to financial

sustainability improvement was based on the recognition that increased user finance would only result in improved levels of service if the additional revenues for service delivery were locally retained for the particular service and if local operations management were made both more efficient and more accountable. If these conditions were not met, increased user charges would only result in further consumer alienation from local government and in decreased local revenues through payment evasion and even voluntary disconnection from public service, as has been observed in some water supply systems. The common strategy of the activities, discussed under the heading Utility Development, was to enhance financial sustainability through improved quality and efficiency of service delivery, and to improve service delivery by increasing the accountability of service delivery organizations.

It should be noted that utility development was not an explicit operational objective of any of the LD II-P work plan activities, yet in the process of implementing AWP 2, formal and informal recognition emerged among various sections that several of their activities were responding to a common set of constraints and objectives connoted by this term.

ACTIVITIES

General O&M System Development

As noted in the discussion of constraints, O&M activities were carried out without planning and without budgets based on records of actual service delivery requirements. The distribution of maintenance facilities was extremely uneven, and a bewildering variety of ad hoc institutional arrangements had emerged to deal with operations, repair, and materials and spare parts procurement. As a result of the low priority attached to O&M it was organizationally underdeveloped, and little was available in the way of technical resources and training or management systems.

On the basis of the several surveys, preliminary program designs, and pilot O&M activities undertaken in the latter half of the BVS Project, a general system of O&M planning and management was designed for implementation in the 22 rural governorates. The main elements of this system were:

- Annual block grant O&M financing from USAID's special account, through the Ministry of Local Administration, to all governorates.
- Design, training, and training assistance in O&M planning and budgeting.
- LD II-P capital block grant funding and technical assistance in construction and upgrading of maintenance facilities at each level of local government.

- The development of a governorate-wide O&M organization and management structure, including the spare parts management system.
- Design and implementation assistance for O&M plan implementation monitoring and troubleshooting.

Finance

USAID/GOE special account funds were placed in the MLA spare parts management Bab II budget to supplement conventional Bab II funds. Five cycles of such funding were provided to the urban and provincial governorates. Table V.1 shows the O&M funding for each cycle under the LD II provincial agreement :

Table V. 1 LD II-P Agreement O&M Funds for Provincial Governorates by Fiscal Year

CYCLE	LE
86/87	12,261,317
87/88	12,261,317
88/89	12,261,317
89/90	36,886,370
90/91	41,440,922
91/92	48,427,472
92/93	57,734,100
TOTAL	221,272,815

GOE Bab II funding (in ten governorates for which we have accurate conventional fund data) indicates the magnitude of the O&M finance gap in the GOE budget:

Table V. 2 Conventional and Agreement Bab II Funds

Governorate	87-88		88-89		89-90		90-91		91-92		Total			
	LD II-P	GOE	LD II-P	GOE	LD II-P	GOE	LD II-P	GOE	LD II-P	GOE	LD II-P	GOE	Total	% LDII-P
Beni Suef	612,990	78,336	612,990	79,410	1,726,550	75,165	2,036,920	93,095	2,266,900	113,379	7,256,350	439,385	7,695,735	94%
Damietta	612,990	11,870	612,990	18,630	1,738,240	29,720	2,053,340	32,713	2,249,900	49,865	7,267,460	142,798	7,410,258	98%
Fayoum	801,210	119,800	1,004,080	119,800	1,683,700	141,260	2,028,350	178,500	2,385,100	197,850	7,902,440	757,210	8,659,650	91%
Gharbiya	663,440	118,310	664,640	137,750	1,671,268	133,910	2,673,740	62,025	2,494,062	67,939	8,167,150	519,934	8,687,081	91%
Giza	776,892	23,966	776,892	17,374	908,910	20,814	1,874,180	26,340	2,042,090	38,670	6,378,964	127,164	6,506,128	98%
Kafr El Sheikh	544,110	79,860	588,181	83,655	1,542,246	141,620	2,028,010	142,860	2,341,387	142,860	7,043,934	590,855	7,634,789	92%
Matrouh	411,600	38,000	411,600	39,635	1,076,420	42,480	1,230,550	45,314	1,543,000	46,700	4,673,170	212,129	4,885,299	96%
Minya	632,280	28,930	623,280	30,840	1,745,050	31,160	2,075,240	33,960	2,589,700	39,330	7,665,550	164,220	7,829,770	98%
New Valley	287,050	9,800	388,620	10,600	446,137	16,701	1,072,517	17,700	1,045,375	35,000	3,239,699	89,801	3,329,500	97%
Red Sea	356,978	27,312	1,488,866	35,278	845,441	44,762	1,098,740	45,435	1,144,500	47,625	4,934,525	200,412	5,134,937	96%
Sohag	441,642	33,498	526,719	40,945	1,997,140	45,340	1,579,942	47,712	1,953,380	54,279	6,498,823	221,774	6,720,597	97%
South Sinai	0	21,800	595,350	33,400	1,285,670	36,400	1,426,670	58,000	1,362,500	54,000	4,670,190	203,600	4,873,790	96%
Total	6,141,182	591,482	8,294,208	647,317	16,666,772	759,332	21,178,199	783,654	23,417,894	887,497	75,698,255	3,669,282	79,367,537	95%

The Agreement Bab II funds provided a financial basis for O&M planning and budgeting efforts. Table V. 3, which shows the totals and percentages of Agreement O&M fund expenditure for the O&M cycles, indicates the governorates' *increased absorptive capacity* to use the greatly expanded O&M financial resources.

Table V. 3 Agreement O&M Fund Expenditures

CYCLE	AGREEMENT O&M FUND	FUND EXPENDITURE	% EXPENDITURE
86/87	12,261,317	7,485,815	61
87/88	12,261,317	10,850,434	88.4
88/89	12,261,317	10,474,545	85.4
89/90	36,886,370	35,923,200	97.4
90/91	41,440,922	40,954,311	98.8
91/92	48,427,472	48,226,371	99.6
92/93	57,734,100	Underway	NA

Note: In addition to increased absorptive capacity —greater percent of expenditures of increasingly larger allocations— the *structure* of expenditure composition also changed. Relative to earlier years, larger proportions of expenditure are now for maintenance rather that operations. This conforms to the LD II Program Grant Agreement (Section 5. 4, page 9) pertaining to the use of these funds for operations and maintenance.

Planning and Budgeting

Under the first LD II-P capital planning cycle, the governorates were requested to submit inventories of all their basic infrastructure services fully or partially funded through USAID. They were also asked to inventory their existing maintenance facilities and to identify personnel working on O&M spare parts management activities.

At the same time, a comprehensive set of O&M planning and budgeting guidelines for the O&M of water systems, roads, and rolling stock was developed. These guidelines provided a *programmed learning format* to assist local officials in planning O&M spare parts management activities and requirements for a full O&M funding cycle. The elements of the system included:

- Infrastructure inventory and statement of planned project operations/output level.
- Norms for estimating the quantities of materials, spare parts, etc. required for satisfactory service delivery at the planned level.
- Instructions on estimating the frequency and materials requirements of regular preventive maintenance actions.
- Guidance on the selection of the levels of the governorate-wide system appropriate to carry out the various O&M tasks in relation to given distributions of O&M technical capability.
- Guidance on the use of private sector firms to support governmental O&M efforts.

It cannot be overemphasized that this was the first time that local councils had undertaken any kind of systematic O&M planning and budgeting. Conventional Bab II allocations had been based on an average of the past three years' O&M expenditures in total disregard of technical requirements, with slight increases to acknowledge the fact of inflation.

The guidelines, taken in conjunction with the O&M monitoring system, were designed to encourage a dynamic, evolving systems approach to O&M planning and management. Orientation and technical assistance given to each O&M planning cycle emphasized critical review of the preceding year's expenditures and task allocations, with the goal of improving the efficiency with which financial and human resources were targeted.

Operationalization of Maintenance Facilities

During the first two capital investment planning cycles of LD II-P, construction and/or upgrading of maintenance facilities at all levels were given first-priority. Second-cycle funds were provided for outfitting facilities with tools and light equipment. During LD II-P,

875 VC (village council) workshops, 175 markaz maintenance centers, and three governorate maintenance centers were built and/or upgraded. Technical assistance was given to the governorate maintenance centers in design, construction supervision, and management, and all markaz facilities were visited. A maintenance facility improvement study (April 1992) provided a detailed assessment of the site selection, design, layout, and quality of construction for each markaz maintenance center (MMC).

During the period from August 1991 through June 1992 the contractor concentrated technical assistance efforts on increasing the operational level of village council workshops and markaz maintenance centers in the sixteen governorates not covered by pilot program activity (see O&M Pilot Program below).

On-site visits and on-the-job training (OJT) were effective in improving operations at individual workshops. Issues related to staff shortages and training needs had to be addressed at higher levels; workshop sessions were used to address these and other broad issues. The action plans developed during workshop sessions served as useful tools to focus efforts and measure progress. While progress was not always as rapid as planned or as comprehensive as intended, the action plans made the governorate local development staff responsible for some actions, which induced them to make progress before The contractor's next visit. Secretaries general put strong support behind these action plans and in North Sinai, the governor reviewed and signed the action plan.

The competence, interest, and involvement of the governorate maintenance coordinator and other staff responsible for supervising maintenance operations is a major factor in determining current workshop operational levels. These factors also affect the responsiveness of the system to outside assistance which could improve operational levels. In Matrouh, for example, the governorate staff responded to the action plan and went out and helped get several unused facilities working. In Giza, on the other hand, there was weak governorate-level direction; some improvement was observed at workshop sites, but response in addressing identified problems was generally poor.

The monthly maintenance coordinator meetings, held by the contractor in Cairo, proved to be a valuable forum for training participants and discussing problems. The design of the program, which included workshop site surveys and follow-up assignments, helped to multiply the effect of the technical assistance so that it was passed on, and distributed throughout the governorates.

Naturally, O&M coordinator meetings, sponsored by the contractor, are no substituie for national or regional associations of professional interest groups, where issues of common interest could be explored and discussed on a regular basis. To effect this, however, the organizational landscape of Egypt will need to change.

The issue of the scarcity of viable professional associations and their potential role in lobbying for standards, promulgating them, diffusing skills, and addressing common issues is resumed in our conclusions. Their contribution to institutional pluralism, in particular, is discussed.

In most governorates, facilities, tools, and funding were found to be adequate for basic maintenance. Some workshop sites, primarily in the desert governorates, lacked electrical power connections at the beginning of this activity; however, good progress was made in making the connections where networks were available. Small generator sets were supplied to some locations without networks, but a few sites still remain without power.

Management capability and staffing issues continue to be the primary factors limiting workshop operational levels. Service demand is also a significant factor. Workshops with a relatively high service demand typically have better management practices and higher levels of operation.

In spite of some improvements, the use of management tools (records, O&M plans, QPRs, etc.) remains the area most in need of improvement in every governorate.

The use of investment project regulations has generally been effective, providing service to the community and benefits to the workshop. It appears that the contractor's recommendations, which were included in some recently written regulations providing for lease of workshops to the private sector, will facilitate the beginning of workshop operations in some difficult situations.

The need for additional technical training was noted at many sites, sometimes for the improvement of current skill levels, but more often to retrain staff in new skills to cover the lack of technical staff in particular areas.

Table V. 4 indicates that the activities conducted have proven to be effective in improving the maintenance operations within the governorates and raising the operational levels at individual workshop sites. In the group of 140 workshops that were revisited, the number of workshops rated fair to excellent increased from 62 to 111. For the total number of visited sites (335), the percentage rated fair to excellent increased from 69 to 82.

Table V. 4 Impact of VCW Operational Assistance

WORKSHOP OPERATIONAL STATUS DURING FIRST AND LAST VISIT TO EACH SITE RATING BY GOVERNORATE FROM HIGH TO LOW
REPORT DATE: 15/9/92

Governorate	Sites				Status at First Visit to each Site								Status at Last Visit to each Site							
	Total No.	Number Visited (by type of visit)			Average Score		Ratings (number of sites at each)					Total	Average Score		Ratings (number of sites at each)					Total
		OP	Other	Total	SR	OR	N.U.	Poor	Fair	Good	Excel	Fair-Ex	SR	OR	N.U.	Poor	Fair	Good	Excel	Fair-Ex
ISMAILIA	12	12 100%	0 0%	12 100%	2.9	2.6	0 0%	0 0%	4 33%	8 67%	0 0%	12 100%	2.9	2.8	0 0%	0 0%	2 17%	10 83%	0 0%	12 100%
NEW VALLEY	18	6 33%	3 17%	9 50%	2.9	2.8	0 0%	1 11%	1 11%	6 67%	1 11%	8 89%	3.0	3.0	0 0%	0 0%	1 11%	7 78%	1 11%	9 100%
SOUTH SINAI	8	8 100%	0 0%	8 100%	1.8	1.6	1 13%	2 25%	4 50%	1 13%	0 0%	5 63%	2.2	2.0	0 0%	0 0%	6 75%	2 25%	0 0%	8 100%
DAQAHLIYA	85	40 47%	4 5%	44 52%	2.5	2.3	0 0%	2 5%	25 57%	17 39%	0 0%	42 95%	2.5	2.3	0 0%	2 5%	25 57%	17 39%	0 0%	42 95%
ASSWAN	27	26 96%	0 0%	26 96%	2.4	1.9	0 0%	6 23%	14 54%	6 23%	0 0%	20 77%	2.6	2.2	0 0%	2 8%	14 54%	10 38%	0 0%	24 92%
BEHEIRA	82	30 37%	3 4%	33 40%	2.5	1.9	4 12%	4 12%	14 42%	11 33%	0 0%	25 76%	2.6	2.2	3 9%	0 0%	15 45%	15 45%	0 0%	30 91%
QALUBIYA	53	24 45%	3 6%	27 51%	2.5	2.2	0 0%	3 11%	15 56%	9 33%	0 0%	24 89%	2.5	2.2	0 0%	3 11%	15 56%	9 33%	0 0%	24 89%
DAMIETTA	31	27 87%	0 0%	27 87%	2.4	1.5	4 15%	7 26%	13 48%	3 11%	0 0%	16 59%	2.6	2.1	2 7%	1 4%	15 56%	9 33%	0 0%	24 89%
FAYOUM	45	21 47%	1 2%	22 49%	2.4	2.0	3 14%	2 9%	7 32%	10 45%	0 0%	17 77%	2.5	2.2	3 14%	0 0%	9 41%	10 45%	0 0%	19 86%
BENI SUEF	45	14 31%	0 0%	14 31%	2.0	2.0	0 0%	3 21%	8 57%	3 21%	0 0%	11 79%	2.0	2.2	0 0%	2 14%	8 57%	4 29%	0 0%	12 86%
KAFR EL SHEIKH	55	24 44%	0 0%	24 44%	2.3	1.9	0 0%	8 33%	10 42%	6 25%	0 0%	16 67%	2.4	1.9	0 0%	4 17%	13 54%	7 29%	0 0%	20 83%
RED SEA	8	6 75%	0 0%	6 75%	2.1	1.4	1 17%	2 33%	3 50%	0 0%	0 0%	3 50%	2.4	1.8	0 0%	1 17%	2 33%	3 50%	0 0%	5 83%
MATROUH	35	27 77%	0 0%	27 77%	1.9	1.3	6 22%	9 33%	12 44%	0 0%	0 0%	12 44%	2.3	1.9	0 0%	7 26%	16 59%	4 15%	0 0%	20 74%
SOHAG	62	32 52%	0 0%	32 52%	2.4	1.8	1 3%	9 28%	17 53%	5 16%	0 0%	22 69%	2.4	1.9	0 0%	9 28%	16 50%	7 22%	0 0%	23 72%
NORTH SINAI	36	32 89%	0 0%	32 89%	1.8	0.9	15 47%	8 25%	6 19%	3 9%	0 0%	9 28%	2.0	1.3	8 25%	7 22%	14 44%	3 9%	0 0%	17 53%
GIZA	52	22 42%	0 0%	22 42%	1.9	1.1	4 18%	9 41%	8 36%	0 0%	1 5%	9 41%	1.9	1.2	4 18%	7 32%	10 45%	0 0%	1 5%	11 50%
Sub-totals	ERR	351 ERR	14 ERR	365 ERR	2.3	1.8	39 11%	75 21%	161 44%	88 24%	2 1%	251 69%	2.4	2.1	20 5%	45 12%	181 50%	117 32%	2 1%	300 82%
GHARBIYA	70	0 0%	70 100%	70 100%	.	.							.	.	0 0%	0 0%				70 100%
MINYA	73	0 0%	73 100%	73 100%	.	.							.		0 0%	0 0%				73 100%
Totals	ERR	351 ERR	157 ERR	508 ERR		.							.	.	20 4%	45 9%				441 87%

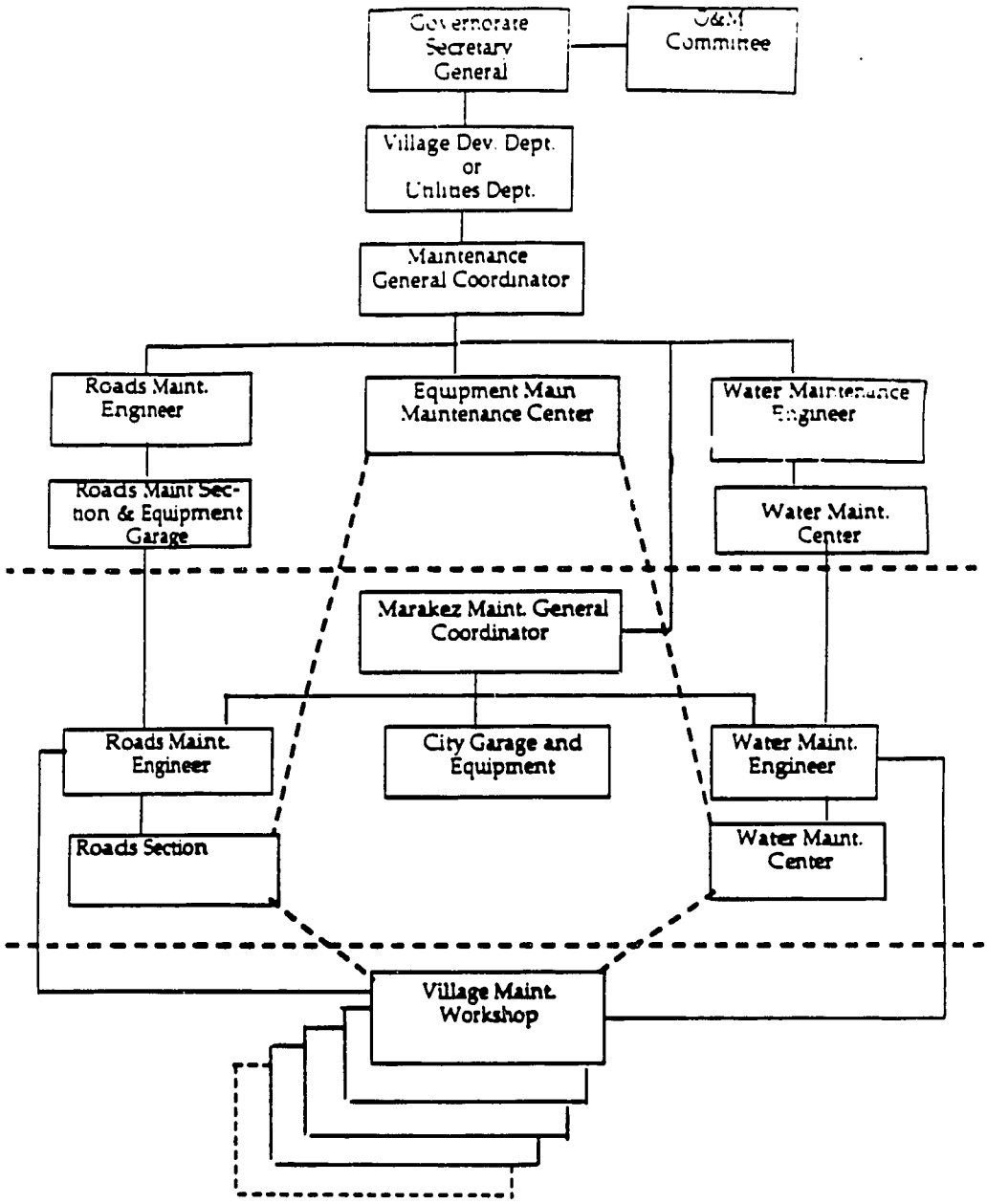
OP = Site visit for operationalization task
Other = Site visit for other task (pilot program or subproject assessment)
* Note: On the 1st trip El Khatra was operating an old and new MMC. By the 2nd visit the old MMC had been changed to a garage reducing the no. of sites from 10 to 9

SR = Suitability Rating score
OR = Operational Rating Score
N.U. = Not Used

Management

A comprehensive O&M organization and management structure was developed to cover the water, roads, and rolling stock sectors; Figure V. 2 depicts the basic structure. Intended to provide a distinct organizational focus and mission for O&M cadres, an intention buttressed by the first-cycle LD II-P requirement that the appropriate managerial and staff appointments be made, the impact of this intervention has typically been blunted by the refusal of many governorates to make full-time appointments of qualified officials to these positions. Either a capable official is given the post in addition to his regular duties or a less than capable official is assigned on a full-time basis. In general, the structure has provided an organizational shell for the annual O&M spare parts management planning and budgeting processes. One dimension of the O&M management system singled out by USAID for special attention and more intensive technical assistance was the spare parts management system.

Figure V. 2 O&M Organization and Management Structure



134

Spare Parts Management System

More than 2,000 pieces of heavy equipment and some $15 million of spare parts was purchased through the DSF between 1980 and 1987, but store managers had inadequate systems to cope with a large quantity and variety of parts. In addition, parts were poorly distributed. In many cases, the distribution of parts throughout the stores in a governorate bore no relation to the types of equipment or vehicles over which the local council or department associated with the store had responsibility. It was not unusual for all parts of a particular type to be sent to one store in a governorate.

In July 1988, the contractor expanded the installation of the Cardex system for managing spare parts from the three initial governorates to 16. The system was further developed to include a parts control system and an inventory management system.

The spare parts management system (SPMS) was installed to support the use of local government rolling stock for service delivery in the roads, water, waste management, and firefighting sectors, and covered LD II-P and DSF-purchased equipment. The particular objectives of the SPMS were to reduce service interruptions due to breakdowns and to facilitate proper preventive maintenance by making spare parts available at the appropriate maintenance and repair locations.

Technical assistance has included providing manuals, field assistance and training to store personnel in parts identification, classification, labeling, enumeration, storage, and location of parts, and the operation of the parts control system. The SPMS activity achieved the following:

- Designed and implemented the Cardex system of parts classification and storage including part designation, number, price, group/subgroup and quantity in stock in 16 provincial governorates.
- Designed and implemented a spare parts control system in 16 governorates, which centralized the Cardex information of all the stores in the governorate at a control center and authorized the control center's manager to transfer parts when necessary.[2]
- Designed and implemented an *inventory control* system in one governorate, to determine normative parts stocking requirements for equipment under various operating conditions.

[2] Two assessment reports were prepared on the Cardex activity. The first evaluated the Cardex system in North Sinai, Fayoum and Minya [O&M-R-5 (E), January, 1990]. The second assessment was on the LD II-P spare parts management system, during the second phase of pilot implementation [RD-4-01 (E), February, 1991].

O&M Monitoring

Prior to the LD II-P project, the only O&M data in the governorates were the quantities of fuel and oil consumed.

To provide better information for O&M planning and management decisions, the contractor designed a monitoring and recording system. The system included the following:

O&M Database

- **Equipment inventory.** An equipment inventory database format was designed and distributed to all governorates through training sessions for monitoring and recording. The database included complete information on each piece of equipment, such as license number, type, chassis number, source of funding, service date, responsible department, location, maintenance responsibilities, kilometers or hours covered to date, last medium and capital repairs, and present technical condition of equipment. The database is updated annually by each markaz, then consolidated by the governorate maintenance coordinator and submitted to the MLA Amana as an annex to the O&M plan and budget.
- **Equipment procurement.** A computerized database for each piece of equipment (including equipment type, quantity, location, capacity and specifications, LD II fund, tendering date, awarding date, contracting date, actual cost, delivery date, brand and model, origin of equipment and component, and supplier) was distributed to each governorate during the fifth O&M seminar in March 1990.
- **Maintenance facility database.** During the operationalization of maintenance facilities task, a computerized database, in spreadsheet form, of all workshop sites in the 16 target governorates was developed for use in recording the dates and rating scores for each site visit. The data for each governorate was listed in a separate file which included summary information concerning the status of each site during both the initial and final visits. Printouts from the database were especially useful on follow-up trips to identify sites that were still rated poor and in need of further follow-up. The database was distributed to each governorate during the regular O&M coordinator meetings for their use in maintaining a record of their follow-up visits.

O&M Quarterly Progress Report

- **Maintenance activity report on infrastructure projects and equipment.** The O&M QPR consists of records on maintenance and repair for equipment and infrastructure, equipment status, utilization and availability, materials and spare parts requirements, and O&M expenditure summaries.

These are submitted under cover of a letter that describes implementation problems along with any training or personnel requirements.

- **Equipment utilization and availability report.** This report analyzes each piece of equipment by type and location for percentage of working hours the vehicle is in use (utilization) and the percentage of working hours the vehicle is available for use (availability). If utilization is low, the manager can look at the availability and utilization analysis to determine the reason. The analyses show the presence or absence of a driver, the amount of time the vehicle has an assigned job, the amount of time it is under repair, and the amount of time spent in maintenance.

  In addition, monthly O&M coordinator meetings held at Chemonics have provided the opportunity to discuss these analyses across the governorates. Technical assistance and interchange among coordinators have created ways to solve recurring problems in equipment use.

- **O&M expenditure summary.** The information on utilization and availability of equipment and the report of actual expenditures assisted in making the budgeting process more realistic. Requests for O&M funds increased by 339 percent from 1987 to 1992. In 1987, funds requested for operation were 40 percent of the total O&M funds requested, in 1992 operation funds were only 13 percent of the total. This represents significant growth in the awareness of the role of preventive maintenance.

The O&M QPR information assisted the markaz chiefs, technical departments directors, O&M coordinators, and governorate high officials in solving problems, such as lack of technical staff, shortage of spare parts, and transportation. It also helped Chemonics advisors identify and make field visits to governorates that had specific problems. Through the fields visits, meetings with high officials and workshops for markaz and VC chiefs were held to discuss problem areas, provide necessary technical assistance, and develop action plans to solve these problems. All advisory teams were accompanied by governorate maintenance coordinators and development department representatives, providing an opportunity to transfer technical assistance skills to them through OJT. As a result, governorate maintenance coordinators have begun to use the O&M QPR to develop monthly field visit schedules to follow up the O&M activities at all levels.

Pilot Maintenance Program

Several misgivings about the general O&M approach emerged during the course of implementing AWP 1:

- The logistical difficulty of providing site-specific technical assistance to 22 governorate maintenance centers, nearly 200 markaz maintenance facilities, and 900 VC maintenance workshops.
- Logistical difficulties of providing site-specific and practical training and technical assistance to O&M managers and workers in the 22 governorates.
- Problems of over- or under-design of maintenance facilities in relation to the specific service delivery requirements and distribution of O&M responsibilities, among O&M system levels in the individual governorates.
- The tendency of the system to "crowd out" private-sector involvement in O&M in areas where private-sector capability existed.

In order to target technical assistance resources more effectively, O&M efforts during AWP 1, and continuing through AWP 2, were directed toward an intensive program of technical assistance in O&M to two governorates. The pilot O&M program was conducted from 1989 to 1992 starting in one markaz (inclusive of all village council units) in each of the two governorates, with gradual replication to other marakez.

The objectives of the pilot program were:

- To provide working models of an integrated maintenance system in two provincial governorates, one representing the Delta region and the other Upper Egypt.
- To improve the design and operation of village council workshops (VCWs) and markaz maintenance centers (MMCs).
- To institutionalize preventive maintenance practices.
- To upgrade technical skills of O&M staff through classroom and OJT training programs.
- To identify the roles of village, markaz, and governorate maintenance workshops, and that of the private sector (including equipment dealers) in the maintenance and repair of equipment and infrastructure.

Selection of Governorates

The governorates and respective marakez were selected on the following bases:

- Expressed desire of governorate officials to participate.
- Establishment of an O&M committee at the governorate level to be responsible for follow-up implementation of the O&M system at all levels.
- Assured assignment of a full-time maintenance coordinator.

- Geographic representation of upper and lower Egypt.

Minya and Gharbiya governorates were chosen, with Maghagha and Kafr El-Ziat marakez selected within the respective governorates to implement the system in all their village councils.

Approaches Used

Differences in the level and distribution of public and private O&M capabilities in the two pilot governorates enabled the contractor to develop and test more finely-tuned approaches to O&M organization and management than was possible in the general O&M program.

A governorate main maintenance center (GMMC) in Minya was built early in 1989, with DSF and GOE funds. The governorate plan was to use this GMMC to serve DSF equipment only, but the pilot program was designed for an integrated O&M system including village, markaz and governorate levels of service. It was decided that the GMMC would operate as an investment project and that the Cardex system for DSF spare parts would be relocated to the GMMC from the road department. Because there was no full-time maintenance coordinator in Minya, the governor issued a decree to establish an O&M technical office, administered by the secretary general. The decree also provided for a full-time mechanical engineer to assist the O&M coordinator.

The situation in Gharbiya Governorate was substantially different. There were more private O&M firms in Gharbiya than in Minya, and technical personnel were available at all levels, hence, a more decentralized system of O&M organization and management could be implemented for water, buildings and rolling stock.

In Gharbiya, the integrated O&M system concentrated on the village and markaz levels, using private firms for maintenance and repair activities beyond the capability of the MMC. The existing road maintenance center had to be rehabilitated to improve road equipment availability. As in Minya, a governor's decree was issued, establishing an O&M committee under the governorate local development department headed by the secretary general.

Monitoring and recording systems were implemented at all levels such as: register books, O&M quarterly progress reports (including equipment utilization and availability), maintenance coordinator field visits, and a reporting system which goes from the village level, through the O&M committee, and ends with a summary report to the governor.

O&M and utility engineers conducted a needs assessment study, which made them aware of the needs of their facilities at the markaz level. The study enhanced the process of decision making at both the markaz and governorate levels, and a noticeable improvement in the level of equipment utilization resulted. The study enabled the markaz engineers to determine which equipment

could be repaired and returned quickly to service and which needed either to be rehabilitated or replaced. The engineers found that they could increase the utilization of available equipment by an average of three hours per day. The study also provided a way to make realistic estimates of the demand for service from various types of vehicles and identified staff needs, which led to an action plan to address the shortage of technical staff.

A computerized system for budget preparation, spare parts management, and accounting was designed and implemented in Minya Governorate. The budget program provided a time schedule of various maintenance needs for all types of equipment, determined the spare parts needs for each type of equipment, and their costs. From these data a budget could be created for the O&M plan. A sub routine of the program provided for monitoring and following up the implementation of the O&M plan for equipment. The maintenance coordinator receives a monthly report from this program, from which he can determine corrective actions.

The computerized spare parts management system includes part number, part name, quantities on hand, unit price, maximum and minimum quantities, and reorder level.

The computerized maintenance center accounting system program includes modules capable of creating invoices (labor and materials) for each equipment repair and generating the GMMC budget for each fiscal year.

Results and Achievements

Through the O&M pilot program, local capacity in management of O&M systems was improved at all levels. This was achieved through technical assistance and on-job training given by the O&M coordinator during the replication of the system in other marakez. To build an institutional capacity for O&M training activities, a training center was constructed at the Minya GMMC. El-Santa Markaz in Gharbiya Governorate added a classroom for water equipment training; staff designed and implemented several training courses on O&M electrical switch panels, water meters, and plumbing. Libraries with the appropriate manuals, spare parts catalogues, and Chemonics O&M deliverables were established in the Minya GMMC and the Gharbiya information center.

The primary conclusion drawn from the assessment of the O&M pilot program implemented in Minya and Gharbiya is that management of the O&M system at all levels is the key area to be improved if the goals of an integrated O&M system are to be reached.

The alternative systems used in each governorate to install an O&M coordinator showed that the problems associated with this position could be solved at least partially within existing governorate organizational structures. Better results were achieved in Gharbiya for the following reasons:

- The Gharbiya maintenance coordinator works full-time under the direct supervision of the governorate village development department (GVDD) director..
- The GVDD director is supervised by the secretary general and is responsible for the follow up of all subprojects at the village level.
- The maintenance coordinator, as an employee in the GVDD, is eligible for promotion within the organizational structure.
- The maintenance coordinator can use all GVDD facilities.

Several indicators suggest that the pilot O&M system in both governorates had a positive impact:

- All 110 VCWs, 31 MMCs and two GMMCs in the pilot governorates are now fully operational.
- Integrated O&M systems are established in both governorates. VCWs are responsible for the first level of preventive maintenance (PM) up to monthly PM; MMCs assist VCWs in implementing semi-annual PM; and GMMCs assist MMCs with overhaul repairs and maintenance activities beyond their capabilities.

Table V. 5 shows that the effective use of water pumps and rolling stock in these two governorates improved greatly. Water pump breakdowns decreased by 63 percent in Minya and 59 percent in Gharbiya. This resulted in a 35 percent increase in the average volume of water produced per pump in Minya and a 67 percent increase in Gharbiya. The average percentage of equipment available for work increased in Minya from 63 percent to 86 percent and in Gharbiya from 56 percent to 85.5 percent.

Table V. 5 Breakdowns & Service Delivery Indicators

Water Project:

Indicators	Minya		Gharbiya	
	1989	1992	1989	1992
Pump Set Breakdowns Per Year	1036	387	1330	551
Average Number of Breakdowns Per Pump Per Year	5.2	1.2	4,34	1.45
Percent of Pump Sets Utilization	66	88	55	90
Average Quantity of Water/Pump Station/Year (1000 m^3)	141	190	121	202
Average Availability of Pumps Sets (percentage)	85	98.5	71	9V.5

Equipment:

Indicators	Minya				Gharbiya			
	1989		1992		1989		1992	
	A*	U**	A	U	A	U	A	U
Wastewater Equipment	69	56	86	63.4	62	38	80	80.3
Solid Waste Equipment	65	64	88	78	60	33	87	76
Road Equipment	55	43	84	72	46	27	89.5	50
Average	63	54.4	86	71.3	56	32.7	8V.5	68.7

* Availability
** Utilization

O&M Technical Training

Technical training in the O&M of roads was delivered to 261 governorate and markaz-level road engineers through road project improvement seminars.

Training in the O&M of bulldozers, graders, and loaders was implemented through arrangements with equipment dealers for governorates which had entered into maintenance and repair service contracts with these dealers. These service contracts with private sector dealers were the product of the operational objectives

set out in our contractor's strategy (Section II) concerning improved absorptive capacity.

O&M Strategy for Wastewater Treatment Systems

An intensive program of formal and on-the-job technical training was conducted under the pilot wastewater program.

Table V. 6 shows the technical assistance visits to 29 wastewater treatment facilities from October 1991 through September 1992. While the extended aeration facilities (EXA and OXD) have required from 10 to 22 visits over the period, the lagoon plants (SBP and ARL) have required none to one visit (except in the unusual case of Adlya, which received nine). Table V. 7 shows the ease-of-operations ratings in O&M for five types of treatment facilities.

The extended aeration treatment plants require specialized skills and demanding routines for O&M. The operating costs of these plants are also formidably high. The simpler lagoon technology requires little maintenance and is inexpensive to construct and maintain. The determining factor in this technology is accurate design. Where the design is not adequate for the population served, the plant will not perform properly, and no amount of maintenance will overcome the problem.

143

Table V. 6 Technical Assistance Visits

Facility & Technology Identification		1991			1992									Total Contact
		10	11	12	1	2	3	4	5	6	7	8	9	
Adlya	SBP		1					1	2		3	2		9
Balak	SBP									1				1
Bolaq	SBP									1				1
Baris	SBP													0
Dahab	SBP									1				1
Kasr	SBP													0
Nazla	SBP											1		1
Neweiba	SBP									1				1
Sharm El-Sheikh	SBP									1				1
Waqid	SBP											1		1
Daqahla	ARL					1		1			3	3		8
Nikla	ARL											1		1
Ghonamia	EXA		1			1	1	1	1		1	1	1	8
Kafr Arab	EXA		2	1		2	1	1	4		2	1	1	15
Mit Abu Ghaleb	EXA	1	2	1		1			1	2	1	1	1	11
Mit El-Kholy	EXA		3		1		1	1	1	1	1	1	2	12
Roda	EXA	1	1			2		1	2		1	1	1	10
Serw	EXA	1	2		1	2			3		2		1	12
Sharabes	EXA	2	1		1	1	1	1			1	1	1	10
Westany	EXA	1	2		1	1	2	2	1	1		1	1	13
Kafr El-Battikh	OXD	2	2	1	3	1	1		4	2	3	2	1	22
Khayata	OXD	1	1	1	1	1		1	3	2	2	3	2	18
Kafr Soliman	OXD	2	2		2	2	1	1	1		1	1	1	14
Rahamna	OXD	2	1		2	3	2	3	3		1	1		18
Barashia	SFF	1			1	1	1	2	1	1	2	2		12
Kom El-Akhdar	SFF					1	1			1	1			4
Kafr El-Ghab	SFF	1	1									1		3
Kafr Saad El-Balad	SFF	1		1		1		1	3	2	1	3		13
Sahel El-Gawaber	SFF					2	1			1	1			5
Sanhour	TFM											1		1

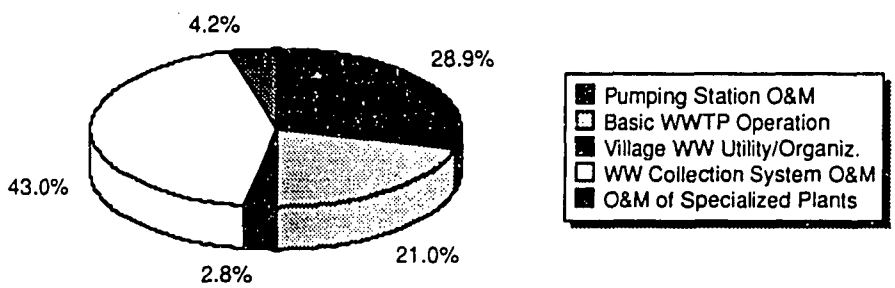
Trickling Filter

Table V. 7 Wastewater Treatment Technology Ease of Operation

Wastewater Treatment Technology	Mechanical Equip.	Elect. & Instr.	Special Tools	Process Control	Staff Training	On-site Lab Testing	Steady Flow	Overall Level of Difficulty
Ext. Air (SOAF Plant)	5	5	5	5	5	5	5	[illegible]
Ext. Air (Ox-Ditch)	5	3	5	5	5	5	5	33
SFFR Type-2	2	2	4	2	2	3	3	18
Aerated Stab. Pond	2	2	2	2	1	3	2	14
Stabilization Pond	0	0	0	1	1	3	2	7

There were several types of wastewater O&M technical training. Damietta received technology-specific training in the O&M of SOAF and oxidation ditch treatment process control, and New Valley and South Sinai received training in the O&M of stabilization ponds. Seventeen governorates received training in the O&M of sewer systems, pump stations and basic water treatment; manuals on each of these topics were also prepared and distributed. Figure V. 3 shows the relative percentage of a total of 6,785 participant days that were spent on each type of course.

Figure V. 3 Distribution of 6,785 Participant Days in WWTP O&M Courses



The O&M wastewater treatment plants require that local staff be assigned to the facility itself. The O&M system should be housed within a wastewater utility organized at the governorate level and operated at the village level where the plants are located. Guidelines have been written for operating a local utility and a

145

model has been proposed for a governorate-level wastewater organization.

Utility Development

The common objective of the activities discussed in this sub-section was to enhance financial sustainability through improved quality and efficiency of service delivery, and to improve service delivery by increasing the accountability of service delivery organizations.

Sustainability of infrastructure investments was an important objective of LD II-P technical assistance, especially under AWP 2. While financial sustainability was an explicit concern, the LD II objectives of capacity-building and local management development frame this concern in broader terms than increased revenue generation. The LD II-P approach to financial sustainability improvement was based on the recognition that increased user finance would result in improved levels of service only if the additional revenues for service delivery were locally retained for the particular service and if local operations management were made both more efficient and more accountable. If these conditions were not met, increased user charges would only result in further consumer alienation from local government and in decreased local revenues through payment evasion and even voluntary disconnection from public service, as has been observed in some water supply systems.

Accountability implies not only that an authority has responsibility to beneficiaries, but also that the authority can present an account, in the bookkeeping sense, of its revenues and expenditures. At the present time, the principal constraint to the financial sustainability of most water and wastewater services in provincial Egypt is that they lack accountability in even the bookkeeping sense, for the following reasons[3]:

- O&M finance is fragmented and primarily under central authority. Utility rates are controlled by the central government. Utility revenues are largely transmitted to the central government where they are subject to inter-sectorial and inter-governorate transfers. Some of the consequences are that local councils have no incentive to collect revenues, and that local utility managers have no incentive to improve output ratios (operational efficiency).
- Planning, budgeting, monitoring, and management of the actual physical service delivery systems are fragmented. Council water revenue departments, which conduct meter readings and record connections, are separated from utility

[3]These observations are based on research carried out by the contractor on several integral water supply systems at regional, municipal, and village levels in Daqahliya and Qena governorates.

operations, so that it is not unusual for the utility division(s) not to know the number of connections, average consumption, or revenues related to their operations. Therefore, there is no system performance monitoring or feedback to managers. Even technical responsibility may be fragmented, either between sourcework and network managers or between levels of a supply system which contains more than one sourcework, or has a multi-level distribution system, or, as is the case with all regional systems, most municipal systems, and many rural systems, where a system's service area crosses local council boundaries. There is no unified planning and budgetary system for utilities, even at the governorate level. Existing accounting systems would not enable one to compare the efficiency of separate integral supply systems even if the data were available on which to base an assessment of the quality and efficiency of each system's service.

Strategy

Multiple levels of management are to be expected in all but the simplest service delivery systems. The problem contractor's utility development activities addressed was not management hierarchy, but authority fragmentation and the consequent lack of either commercial or consumer orientation at the level of the integral service delivery systems. Chemonics' utility development strategy was to enhance utility organizational integrity in the areas of capital and O&M planning, budgeting, accounting, management, and finance. Activities included:

- Techniques, manuals, and training for integrated utility system planning, design, and operations and maintenance.
- Spare parts management manuals, training, and technical assistance for performance-oriented, utility-level management information collection and analysis.
- Organizational design and development assistance for utility management and user finance.

Tools for integrated utility planning, design, operations, and maintenance included:

- *TOR for Upgrading Water Systems for Small Cities*
- *Manual : Planning and Design of Rural Water Systems*
- Wastewater system O&M manuals and training.
- Workshops on hydraulic analysis and design of water networks.

The TOR for small municipal systems (service-area populations of 30,000 to 100,000) is based on TORs published to assist the cities of Mit Ghamr and Sinbalawin, both in Daqahliya. All of these materials assist the local utility manager to view the utility as an

integrated system and to understand the equilibrium conditions of the system components (such as sourceworks, storage, mains, and distribution) in planning for system expansion or for O&M.

Materials related to utility management information systems include:

- *Manual: Water Billing*
- *Manual: Bulk Meter Sizing, Specifications, and Installation*
- *Manual: A Water Utility Management Information System*
- *Manual: Water Loss Reduction Manual*
- *Manual: Water Loss Reduction Guidelines*
- *Report: Unaccounted-for Water in Rural Water Systems*
- *Report: Water Supply in Qena Governorate: A Study of Four Utilities*

Though applied in different locations and variably accompanied by training, these interventions collectively represent a legacy of instruments and procedures for performance monitoring of utilities. Bulk metering, combined with computerized or manual systems which process information on consumption levels, provide the utility manager with the two fundamental data of water system technical efficiency measurement : actual output (relative to design capacity) and actual throughput (relative to output). Apart from the overall efficiency measure, these data allow the manager to form a preliminary strategic assessment of the relative effectiveness of the production and distribution components of the system, and to compare throughput rates in the different zones of the network. The water auditing materials support the latter effort and provide guidance on loss reduction practices. The water utility spare parts management guidelines give managers a strategic view of the performance and cost of each component of the service delivery system, and also provide a management structure for integrated performance monitoring of utilities which cross local council boundaries or which cover only part of a local council area. This system has been applied to four utilities in Qena Governorate; the data formed the basis for a comparison of their operations efficiency and a strategic assessment of each utility's strengths and weaknesses. A similar effort, attempted by the contractor, to apply the system at the regional utility level in Daqahliya Governorate bogged down for lack of systems and instruments to collect even basic data and because of lack of communication between the governorate housing department (to which the utility was formally affiliated), the utility itself, and the local councils.

Technical assistance related to organizational design and development included:

- *Manual: Guidelines for Village Wastewater Service Delivery*
- *Report: Local Revenues*
- *Report: Design of a Revolving Loan Fund for Local Capital Investments*
- *Report: Cost Recovery, The LD II-P Experiment*
- Technical assistance for spare parts management for water and wastewater utility managers to enhance vehicle maintenance center enterprise development

This series of activities provided designs, training, and/or technical assistance in integral utility organization and management.

The *Guidelines for Wastewater Service Delivery* provided an organization chart, staffing requirements, and job descriptions for the operations and maintenance of village level wastewater utilities. It also included O&M programming and budgeting form guidelines for choosing between local council management or management contracting, and administering management contracts. Guidelines have been successfully utilized in village councils in Damietta, New Valley, Qalubiya, Beheira, and Fayoum. An effort to set up integral performance monitoring systems for water supply was conducted at regional, municipal, and village levels in selected utility areas in Daqahliya and Qena governorates; proposals to institute these systems were formally presented to the Qena governor and Daqahliya secretary general.

This latter activity, as well as the local revenue study and the fourth-cycle LD II-P cost recovery experiment, have also considered ways to enhance actual accountability and local user finance through increased consumer involvement in performance review, O&M planning and budgeting, and rate-setting. The approach endorsed in the local revenue study and in the water utility management technical assistance to institute consumer representation assemblies at the utility level complementary to the utility management board. The assembly would review quarterly performance records and accounts distilled from the monitoring system, and discuss priority improvement requirements and strategies with the board. Local rate increases would be proposed to the assembly by the board annually, together with the board's annual report and the proposed O&M and improvements plan and capital budget for the following year. Under this system, rate increases would be conditional upon rate-payers' perception that the utility is improving service delivery.

Achievements and Lessons

The cost recovery system implemented for the village wastewater projects and the fourth-cycle cost recovery experiments in local service finance are oriented to regularizing utility finance by retaining user charges locally in special accounts of the Local Services and Development Fund. Observation has shown that under conditions of local managerial and financial autonomy, as the quality of service improves, so does the rate of local revenue

119

generation. These conditions were found mostly in the village wastewater projects, because of the intensive technical assistance given in organization and management, and in village mobile sewage collection, because of the face-to-face character of the service delivery and the high level of local financial autonomy. Less success has been achieved in the case of water projects because the cost recovery pilots were not implemented at the utility management level and because a substantial part of recurrent cost finance for water is centrally managed.

Accountability is impossible when there is no single official level of the administration responsible for the service as a whole, because the organizational elements of technically and physically integrated supply systems are dispersed among different offices and even different councils. Moreover, there is no integrated account of system operating at the system level. In the absence of even minimal system performance data, quality and value-for-money decrease, if only for lack of feedback.

The water company organizational framework implemented in three governorates establishes the administrative integrity of water system operation. It does not solve the problem of technical integrity entirely though, because the framework has been implanted at the governorate level, not at the same supply system level, which is typically regional or municipal. It is unlikely that whatever economies of scale are realized through procurement above the regional level justify the loss to efficiency entailed in governorate-level budgeting and accounting.

The Kafr El-Sheikh water company appears to have gone further than Beheira or Damietta in devolving authority to the six supply districts of the governorate, but district managers are dependent upon the company for their annual and capital budgets. The company, in turn, depends upon NOPWASD, which has to budget for all its provincial liabilities.

The companies collect and keep their revenues, which cover most of their labor and O&M costs, but they have limited staffing powers. The companies still have a way to go to reach the condition of formal accountability, such as implementing performance monitoring systems. Assuming this is achieved, the remaining requisite of actual accountability in the formation and activation of general assemblies to represent the view of consumers remains. We view this achievement as requisite for improved management and for increased user finance of O&M and capital costs. A second requirement is financial devolution to the utilities. A third is the devolution of authority over the conditions of employment.

In the absence of data which measure the operational efficiency of utilities, it is hazardous to estimate the future costs of providing service at acceptable levels. Leakage, waste, source contamination and obstruction, design disequilibrium, and poor construction quality are typical problems, though the strategic weights of these

different factors vary from one system to another. More cost-centered accounting at the appropriate system level would support strategic O&M and capital improvement programming. The sustainability of Egypt's provincial water systems is increasingly dependent on both improved operational (lower unit costs) and collection efficiency. Tariffs are being increased gradually, but their potential benefits for performance are lost in the circuits of the local administration financial system and are consumed by unproductive labor which represents a large part of "fixed" costs. Unaccounted-for-water rates in an unknown but surely large number of systems must be reduced for these systems if financial sustainability is ever going to be attained.

At the same time, there are several utilities, particularly those run in large population and economic centers (Cairo, Alexandria, the canal cities, Mansoura/Talkha, Tanta, Mahalla Kubra, Luxor, Sharm El-Sheikh, etc.) whose operations could certainly be managed at a profit if their systems were given a proper technical strategic assessment and if their managers were given the authority to control labor costs.

An experiment with private management and/or concession arrangements at these locations would prove extremely valuable to policy makers and water system managers all over Egypt. The utilities in these cities have labor/economic advantages of scale in operation and collection, and they have the advantage of educated and articulate spokesmen to represent consumers on general assemblies.

SUMMARY

We have presented in this section the contractor's strategies and activities to operationalize the achievement of the project purpose in improving the local capacity to maintain and operate infrastructure projects. The documentation provided in this section, in Volume II of this report, in our technical reports and, more importantly, what any outside observer may verify in the field, points to a successful achievement of the project purpose in this area.

However, avoiding O&M system decay and achieving financial sustainability in the long run is highly unlikely under the current organizational framework of local basic service provision. Our efforts to go beyond the current project design to achieve sustainability have been documented in this section under the "utility model" development. The relevance of these efforts in pointing towards greater institutional performance, accountability, decentralization and local resource mobilization via a reorganization of structures providing local municipal services is discussed in our conclusions.

Section VI

Project Monitoring, Management Information Systems and Finance

OVERVIEW

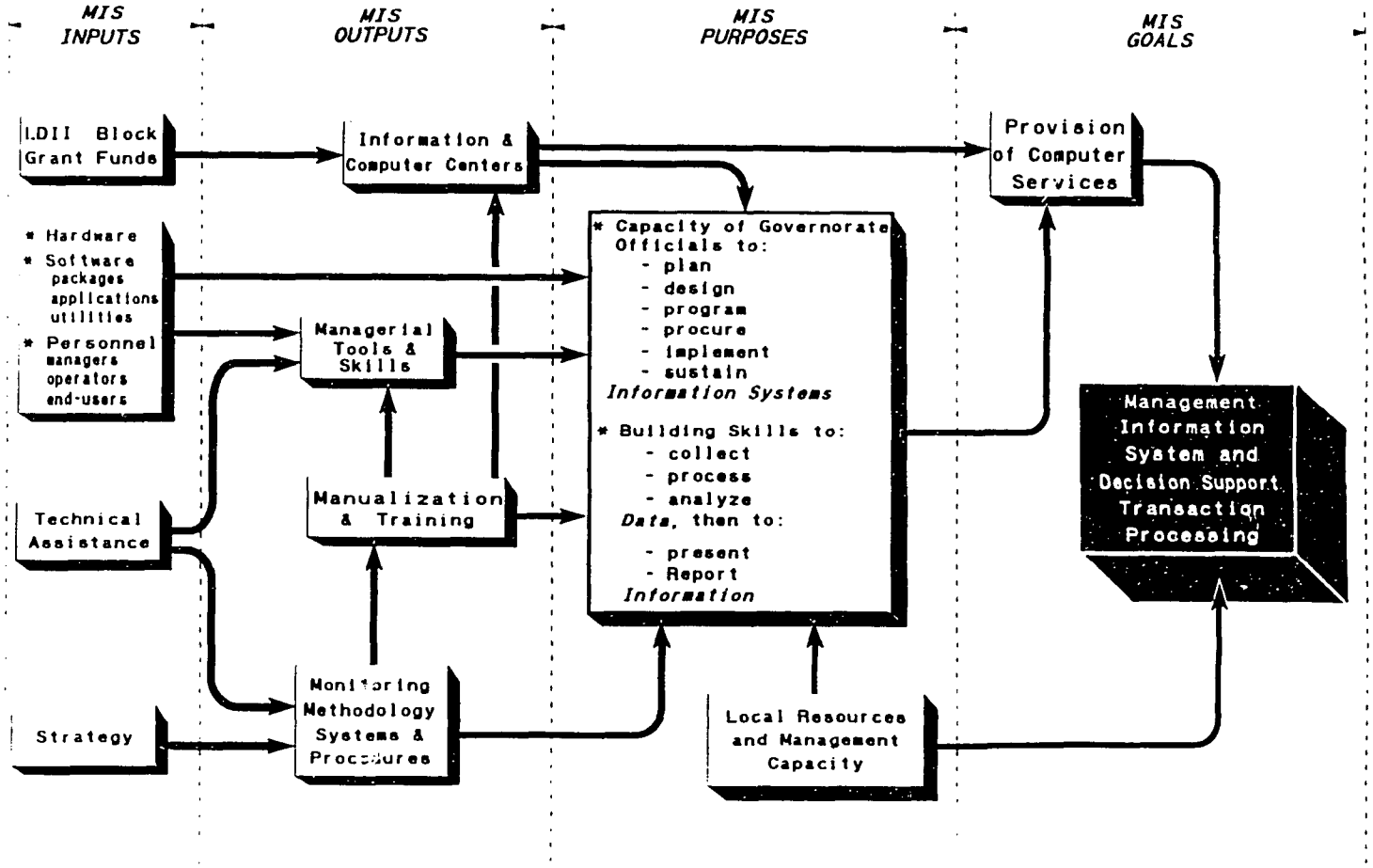
Financing, planning, implementing and maintaining infrastructure all require accurate timely information. Management information systems are tools for acquiring, processing and analyzing data, and presenting information. A major motivation for developing the information management capacity in governorates was support of project monitoring, the feedback of information about project implementation to key local mangers and to central authorities. However, general enhancement of governorate information management was also an objective. This section summarizes activities undertaken to develop information systems in the governorates and improve project monitoring. The inputs and outputs in terms of the project logframe are shown in Figure VI. 1. The major outputs achieved during the contract were:

- A fully automated MIS for recording and reporting information on project implementation operating in the 22 governorates and at the MLA Amana. The system provides management information to local managers and monitoring information to central authorities
- Improved monitoring procedures and practices in all governorates and a low-cost pilot site-visit monitoring system appropriate to governorate resources which can be replicated

Efficient use of financial resources requires management of fund balances and local resource mobilization can be enhanced by improving fee collection efficiency. Two additional outputs described in this section are:

- Development and installation of software improving the efficiency of local revenue collection
- Systems for fund and cash management installed and operating in all governorates

Figure VI. 1 Model of Management Information System Logframe



Project monitoring and information system activities are discussed in an integrated fashion because they were closely related in history, concept and implementation. Enhancement of governorate information systems supported project monitoring, but had wider impact. New skills learned by operators and managers were applied to many tasks. Improving the efficiency of revenue collection from local business fees and water billing were two applications adopted and are described in this section. Getting better information for infrastructure planning and management were other applications and are described here as well as in Sections 3 and 4. The final part of this section describes efforts in improving the management of the LD II fund and unspent cash balances.

PROJECT MONITORING AND MANAGEMENT INFORMATION SYSTEMS

Background and Constraints

During the BVS program, implementation monitoring of numerous village level infrastructure projects required development of an information system. To meet USAID's need for financial tracking information, the technical assistance contractor's need for implementation information to direct field technical assistance, and local government's need for project data to manage implementation, an automated reporting system was initiated in 1982. BVS installed these systems at ORDEV and in the governorates.

In addition to an MIS, monitoring practices, procedures, and tools needed development and implementation. Improved local monitoring capacity would enhance project quality, increase accountability, and help assure maximum benefit to rural citizens. Local government monitoring of subprojects during implementation was weak and monitoring during operation was virtually nonexistent. The monitoring function is closely linked to the automated subproject monitoring system, the quarterly progress report (QPR), but includes additional tasks such as site visits, and practices and procedures such as the approval process for making changes to project allocations and plans.

Constraints to improving **project monitoring** were:

- Lack of understanding on the part of governorate officials of the monitoring function and the need for a systematic approach to project monitoring, both of which resulted in a lack of commitment to the monitoring project's implementation and operation
- Lack of funds and vehicles for site visits
- Dispersed responsibilities for monitoring and reporting among different departments and directorates

- Lack of timely information on the progress of project implementation presented appropriately for managers' understanding and action

Furthermore, local government units needed greater information management capacity to achieve program objectives in planning capital investment, implementing projects efficiently, and operating and maintaining the installed infrastructure. Information system interventions during LD II were designed to assist local government to develop information infrastructure including a system of organizational structures, policies, procedures, and trained staff plus the hardware, software, and applications for data acquisition, processing, analysis and reporting.

Experience during the BVS program revealed several constraints that had to be addressed if IS systems were to succeed in the governorates.

- **Inadequate salaries.** Low salaries for personnel which are not competitive with private sector levels for trained IS staff causing difficulty in hiring qualified personnel and retaining trained individuals
- **Unfamiliarity with numeric information.** General lack of training in producing, presenting or using numeric information and a consequently limited commitment by managers and operators to information systems
- **Little experience in MIS.** Minimal exposure to and knowledge of computers and little experience in planning or managing information systems resulting is poor use of existing automation resources and inadequate planning for new systems
- **Few IS resources.** No off-the-shelf local government applications and no private or public sector organizations addressing local government IS needs, no computer system vendors or service facilities outside Cairo and Alexandria leaving most governorates without sources of technical assistance other than the technical assistance contractor
- **Limited Arabic software resources.** Lack of a uniform Arabization standard and lack of English language competency among governorate IS staff at a level required to use standard software and manuals
- **Poor intra-governorate communications.** Poor horizontal communication among departments within governorates and a tendency to view information as an asset to be hidden rather than widely shared

- **Lack of utilization of information for decision making.** Vast amounts of data are collected but there is little meaningful information available in suitable form for managers to use.

Sustaining information systems required increasing the capacity of rural governorates to support their own information systems and increasing the availability of and access to external sources of support. Most critical, however, was improving the processing of data and use of information within the governorates and the commitment to automation.

IMPLEMENTATION STRATEGY

Monitoring

Improving the project monitoring function overall in the governorates required a strategy that focused on developing systems that managers could and would implement. Short-term activities focused on improving understanding of the monitoring function and encouraging adoption of procedures and practices that supported project monitoring. The QPR system was modified to provide information needed to better manage projects. Longer range activities included pilot efforts to design and implement practical low-cost systems for regular subproject visits, and to determine service delivery indicators needed for infrastructure planning.

Information Systems

Information system activities occurred on two levels:

- Satisfying the information needs of capital investment planning, implementation, monitoring, and service delivery
- Developing general information system infrastructure in local government units.

The strategy for meeting the information needs of the capital investment program was structured around the QPR. This financial monitoring tool was introduced during BVS; its major audience was the technical assistance contractor and USAID. While this central monitoring function was important, the QPR was to be enhanced as a management tool providing information needed by governorate managers to improve local project planning, monitoring, implementation management and service delivery. The software would be rewritten and the database expanded to

include information for better management of local infrastructure. An improved user interface would be created to improve the accuracy of data, and operators would be trained in ad hoc report generation, data analysis, and data presentation to enhance communication with managers.

The strategy for assisting general governorate information system development was to locate IS functions in governorate information centers, which would provide decision support to key managers and officials. However, through a major effort known as the Cabinet Project the GOE initiated Governorate Information Centers in all governorates much along the lines envisioned in the LD II strategy. In response, the strategy of the LD II-P project was shifted to compliment the GOE effort by emphasizing IS planning and by broadening the base of IS experience in the governorates to include transaction-based applications such as collecting water bills, and local business taxes and fees, and by moving automation to the markaz level.

MAJOR ACTIVITIES

To implement these two strategies, the following activities were carried out.

The Project Monitoring System

While the project monitoring system includes the information system as an important component, it also includes sets of procedures and practices required for successful monitoring of project implementation and operation. Figure VI. 2 shows the major activities undertaken during LD II to support improved project monitoring. Training of managers was initiated during orientations, and continued through Advanced Seminar modules 1 and 4. A monitoring procedures manual was prepared and managers from all governorates trained during six workshops held in conjunction with training on cash management. An improved site visit system was developed and implemented in Kafr El Sheik and a pilot service indicators system was implemented in Beni Suef. Table VI. 1 shows training and Table VI. 2 the publications associated with monitoring procedures, practices and systems. A total of 6,027 person days of training were delivered to some 1,800 governorate staff ranging from secretaries general to markaz village development directors and other markaz department staff.

Figure VI. 2 Development of Monitoring and Evaluation Functions in Governorates

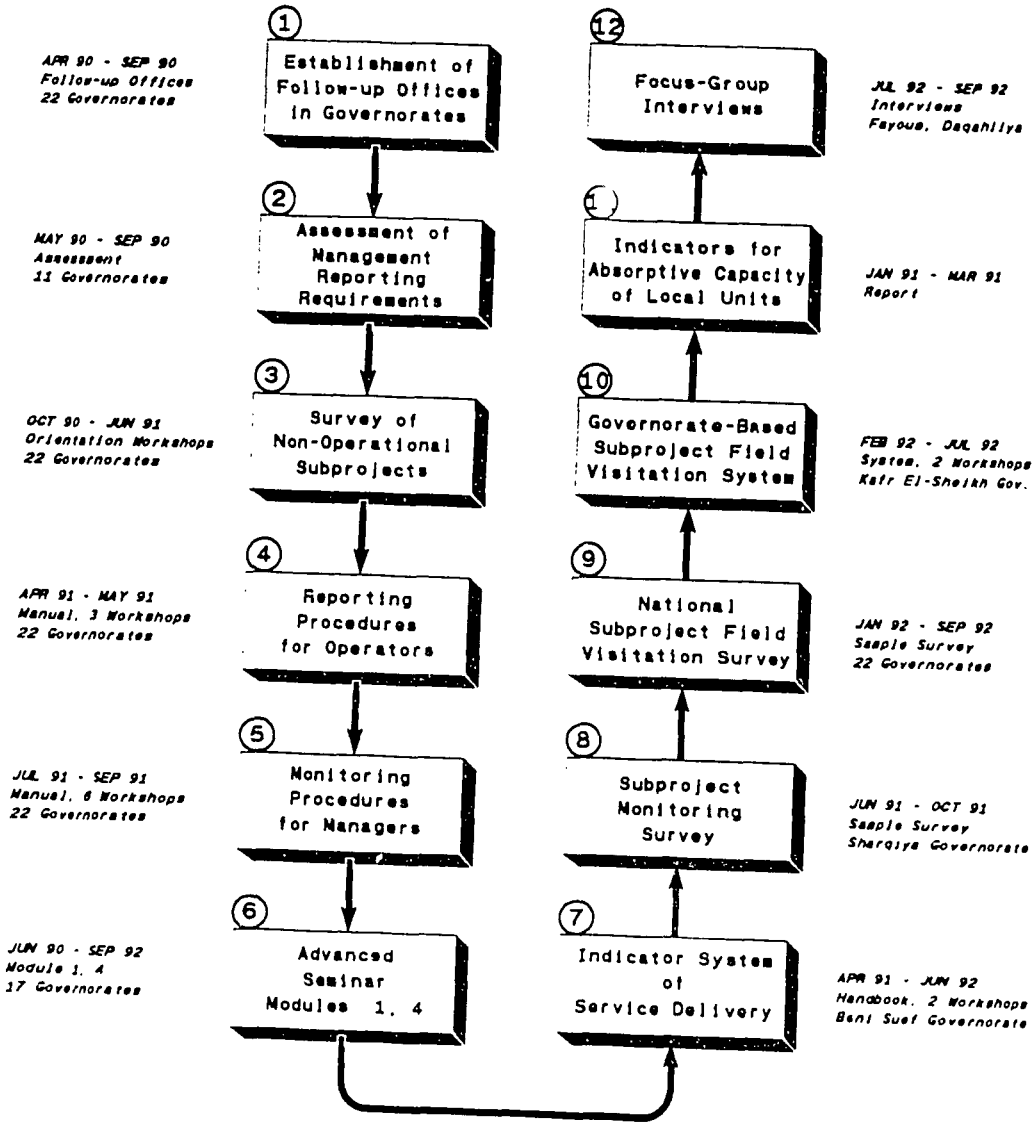


Table VI. 1 Monitoring Systems And Procedures Training

Item	Duration	Audience	Person days	Govn't Coverage
Orientations:				
		Rural managers		
· Sec. generals and mkz Chiefs	1/4 day	Sec. generals, Markaz Chiefs	52	)
· Govn't key managers	1/4 day	Acc. Dep. Manager, Engineering Dep. Managers, Village Ch.'s Follow-up Rural Dep.	108	(All 22 govs.
· Mkz Rural Dev. Manager's &	1/2 day	Rural Department Managers at Marakez	104	)
· Follow-up Persons	one day	Follow-up and LD II Persons at Marakez	624	(
Advanced Seminars (Mod 1)	1/2 day	Gov - Markaz - Village Key decision-makers & managers	680	) 17 govs.
(Mod 4)	one day		1360	(
Monitoring Procedures:				
· Computer Operators	4 days	Computer operators rural director, mkz - rural managers,	264	) (22 govs.
· Managers	5 days	Accounting manager at mkz, Maint. person	1980	) (
Field Visitation System	9 days	Follow-up persons at marakez . Village chiefs - Computer operators Markaz chief	495	Kafr El-Sheikh
Indicators System	8 days	Mk, rural dev. managers Water, health, education, roads planning & follow-up info. system department. Tech. staff	360	Beni Suef
Total			6027	

Table VI. 2 Monitoring Procedures Publications

Title	Language	No. of Pages	Distribution	Issue Date
Absorptive Capacity, Project Quality, and Local Indicators	E	45	USAID	March 1991
Sample Design Alternatives for Subproject Field Visitation System	E	84	USAID	Oct 1991
Sample Design for Subproject Field Visitation System - Field Test in Sharqiya	E	24	USAID	Oct 1991
Analysis of Survey of Nonoperational Subprojects	E	152	USAID	Nov 1991
LD II-P Subproject Follow-up Procedures Manual	A	90 74	All 22 governorates USAID	March 91
LD II-P Subproject Field Visitation System - Kafr El-Sheikh	E	167	USAID	May 1992
LD II-P Subproject Field Visitation System - Kafr El-Sheikh - Analysis Report	A	64	Kafr El-Sheikh	Sep 1992
Indicators for Rural Development in Beni Suef Gov. Report + Training Manual *Beni Suef Gov., Indicator Handbook*	A E	86 44 122	Beni Suef USAID	August 1992

The QPR Software

The subproject monitoring system inherited from the BVS program was a database with a limited number of financially based reports. Its primary purpose was quarterly reporting of expenditures by funding cycle. The unit of analysis was the fiscal subproject. The software needed a user interface in the form of data entry screens, a uniform geocoding of administrative locations, and the capacity to run in both English and Arabic. Figure VI. 3 shows a simplified flow chart of the major steps taken to revise the QPR software and install it in the governorates. Version 1 of the QPR was a compiled turnkey application. Version 2 added or revised features to increase usefulness for project management. The current version 3, which added fund management features, was installed in March 1992. The software is fully documented with a detailed user manual and a technical manual. Figure VI. 4 briefly describes the major features of the software and reporting functions.

QPR Database and Reporting

The QPR database was expanded during the LD II period to include an increasing amount of data on the physical nature of subprojects (components), the relationship of one subproject to another (system code), the stage and status of implementation and operation, contracts and contractor data, and improved fiscal tracking such as separate in-kind and cash contribution fields. Modifying the software and database to accommodate these additions was a minor aspect of implementing these changes. Training operators, motivating them and other staff in the governorate who had to cooperate in acquiring new data, and encouraging checking of initially-entered data were much larger tasks.

Generally, QPR data are supplied by village development offices at the village and markaz levels and entered at the governorate headquarters. However, the expanded database required information from the contracting offices and increasing data from the markaz and governorate engineering departments. The major mechanism for training and motivation were the quarterly QPR training workshops directed to QPR operators, and workshops for managers to improve their understanding of what was available to them through the QPR and to increase their interest in using QPR reports.

Figure VI. 3 Developing the QPR Subproject Monitoring Report

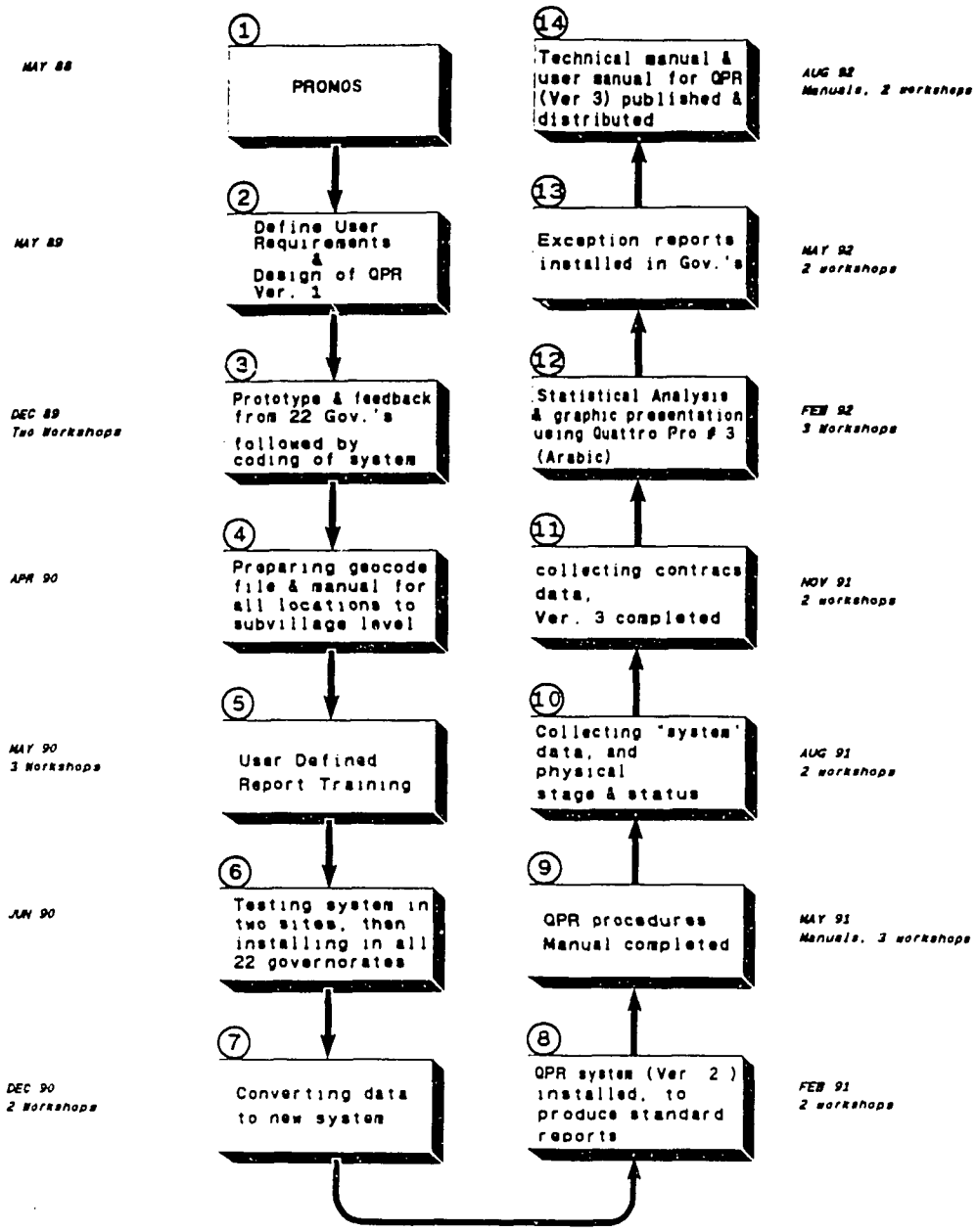


Figure VI. 4 Key Features of the QPR Software and Reporting System

Software

* menu driven
* bilingual
* multi-user
* context sensitive help
* data entry verification
* ad-hoc query

Monitoring

* financial
* physical stage & status
* contractors & contracts
* funds management

Reporting

* standard project progress reports on markaz, village, and sector level

* exception reports:
  - unstarted subprojects
  - stopped subprojects
  - contract value > allocation
  - contract value < allocation
  - delayed subproject list
  - quarterly handover list

* quarter-to-quarter comparisons:
  - added subprojects
  - deleted subprojects
  - changed allocation subprojects
  - fund management reports

* ad-hoc queries & custom reports:

Data Analysis & Presentation

* link from data base to Arabic Quattro

* high impact graphic presentations:
  - slide show
  - statistical analysis
  - modeling / projections

Figure VI. 1 shows the flow of activities in terms of the project logframe for MIS. IS planning and management must be facilitated through training experiences, manuals, and guides. Operator skills are a second major target of training and on-the-job technical assistance. Major applications can be developed and then ported to governorates where operators are trained to use them. Governorates can be assisted through training and technical assistance to develop smaller custom applications on their own.

IS Planning and Management

IS planning is a new responsibility in all governorates. Three categories of IS planning activities were undertaken: a strategic planning pilot in Ismailia Governorate, annual IS operational plans in six governorates, and IS subproject planning for fourth-cycle IS subprojects in 16 governorates.

IS strategic planning was the most far reaching and comprehensive. The objective was to project information system development over a three-year period for the entire governorate such that implementing the IS system would support the governorate's strategic objectives. Annual operational plans would identify priority IS applications and how available resources should be allocated to IS development during the upcoming fiscal year. Subproject planning determined how fourth-cycle funds allocated to IS projects should be spent in terms of specific applications. Planning workshops were used in all three types of planning and were structured to introduce needed concepts and provide models and exercises to assist participants to draft actual plans during the workshop.

Following identification and prioritization of IS applications, and characterization of current IS resources, planning at all three levels stressed determination of hardware, software, staff, training, and organizational requirements which had to be met if the objectives of the automation are to be achieved. The exercises on organizational requirements raised the issues of how the provision of IS services should best be managed. A management component was added to the IS planning workshops and a manual written to assist IS managers. Table VI. 3 lists IS planning and management publications.

Table VI. 3 IS Planning And Management Publications

Title	Language	No. of Pages	Distribution	Issue Date (Final)
Information Services Management	A	175	ISM, DAM, NSI, SSI,	March 1992
Information Services Strategic and Operational Planning	A	51	GAR, BEH, LUX, NV,	March 1992
Information Services Planning Guide	A	68	QEN, FAY, ASW, ASY	March 1992
Information System Hardware Procurement and Maintenance	A	37	All 22 Governorates & Luxor	March 1992
Geographic Information Systems for Managers	A	100	DAQ, BEH, DAM, GHA, SSI, NSI, QAL, GIZ	March 1991

A planning workshop introducing geographic information systems (GIS) was held for managers from eight governorates who had expressed interest in GIS as a possible fourth-cycle IS subproject. This workshop introduced participants to GIS concepts and technologies, and identified the time and resources required to obtain useful results from a GIS system.

IS Procurement and Hardware Maintenance

During the fourth cycle of capital funding, governorates were permitted to allocate up to LE 100,000 to purchase computer systems and software. Virtually all existing computer equipment in governorates had been purchased by outside organizations and provided to the governorates. No IS staff or governorate contract departments had experience with procuring IS equipment and software, or with contracting for maintenance services. In addition, governorate IS staffs do not include qualified computer engineers or technicians, and technical hardware knowledge is very limited.

Through IS project planning workshops, governorates identified the types of IS applications they intended to implement. Model specifications were drawn up for the hardware requirements of these applications and a manual prepared to address the specific concerns of IS procurement using the standard procurement procedures governed by Egyptian Law 9.

Although only 12 governorates initially indicated an intention to pursue fourth-cycle IS projects, staff from all governorate IS and contracts departments were invited to a training workshop on IS procurement. Advisors provided additional technical assistance with preparation of tenders to

some governorates, and an advisor was generally present to assist governorates in testing equipment when it was received. In no case did an advisor act an official or voting member of tender, selection or receiving committees. The advisory role emphasized the governorate staff's need to become sufficiently knowledgeable to take responsibility for procurement decisions.

The fourth-cycle block grant also included funds for a special purchase of computer equipment and software to support subproject monitoring. At the JUNE 1991 PLDC meeting approving fourth-cycle projects, it was decided that this procurement would be made through the MLA Amana as a single procurement on behalf of all the governorates. Technical assistance was provided to the Amana in drawing up the technical specifications and tender document for this large purchase. The tender included training and requirements for extended system maintenance. Technical assistance was also provided during technical review of offers and at the time of receiving the equipment.

IS Applications

There are two types of applications in governorates, *decision support* and *transaction processing*. The purpose of decision support applications, such as the QPR software and the indicator system in Beni Suef, is to provide information to managers. On the other hand, the primary function of transaction processing applications such as tax and fee collection, payroll, and accounts payable, is efficient and accurate processing of transaction data. Until introduction of water billing and local fee collection applications, all governorate IS applications were decision support.

Two transaction processing applications were developed and implemented during LD II P, *Water Billing* and *Local Revenue Collection*. Figure IV. 5 shows the steps in creating these applications. The applications were chosen because they automate functions performed throughout Egypt by local government, are relatively simple and autonomous, that is, they do not immediately have to be integrated into other systems, and had been piloted by Damietta Governorate. These applications also offered an opportunity to bring computers to the markaz level since water bills and local business license fees are collected at the markaz level.

Local revenue collection is a general program for collecting any local fee that does not require meter readings. For example, a typical business may pay five to ten fees, usually assessed and collected annually. In existing manual systems these fees are generally collected separately, and no statement that summarizes the annual total is provided. The collection efficiency is poor, delinquencies often are not collected, and reporting is infrequent, making management of the process difficult. The automated system creates a single bill for all fees, organizes the invoices into collection districts, records and tracks partial payments, and prints delinquency lists. Improved collection efficiency permits collectors to focus on delinquent accounts. Management reports are printed regularly and on demand. The database of businesses is a valuable resource for information on economic activity in the markaz and can be integrated from all marakez to provide a governorate business information database.

Water billing is software for generating water bills from meter readings and recording the collection of the fees. Most water fee collection is done by local government at the city or village level. Three water companies currently operate in Egypt and bills are collected by the company. The water billing software used in this application was first developed for the Damietta Water Company, but has been generalized for local government use. Manual water billing systems suffer many of the same problems as local revenue collection with the added complication of meter readings. More efficient office work enables fee collectors and meter readers to address problems such as delinquencies and faulty meters. The automated system also has records of non-working meters and provides management with timely reports on fee collection and water consumption.

Vignette: Automating Transaction Processing and Improving Service Delivery

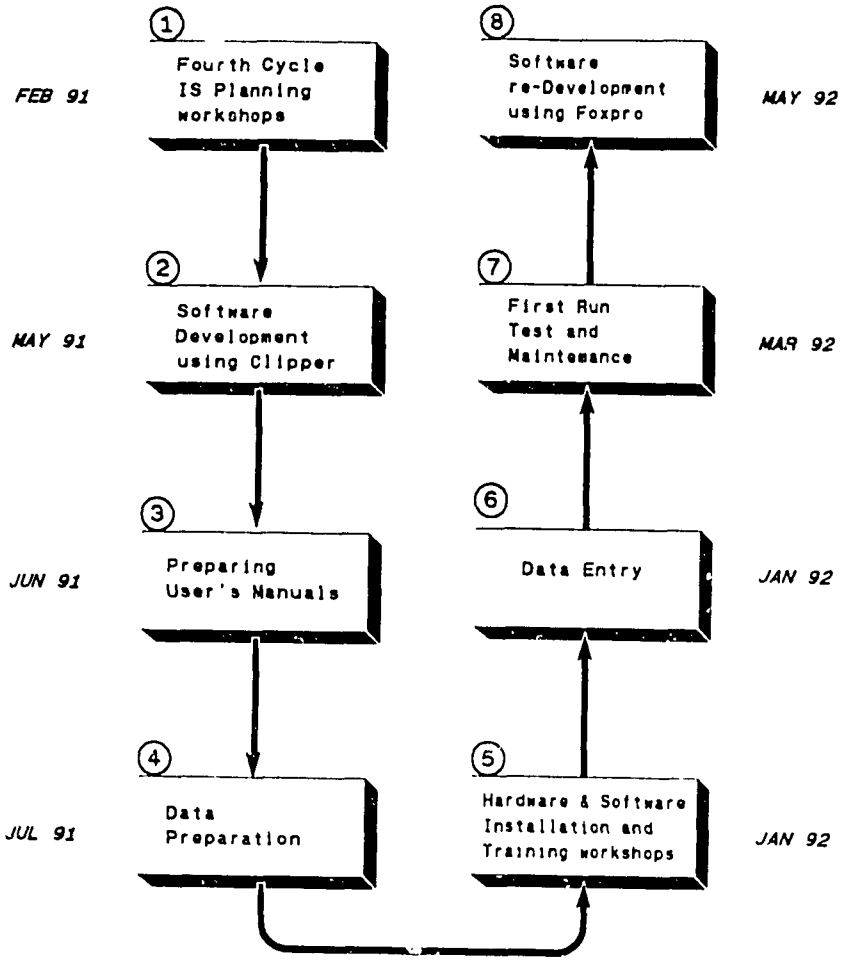
Decision support applications have high visibility and are often at the cutting edge of technology as is the case with geographic information systems. In contrast, transaction processing automates existing manual applications and operates out of sight in the back office. However, there is no better way to motivate building the organizational, financial, staff and managerial support for information system development than automating a significant transaction function. Once a transaction function such as collecting water bills, which in a typical markaz involves 10 to 30,000 customers, is automated, the commitment to automation is virtually unbreakable. The local government unit using the system will do whatever is required to keep the application functioning.

Transaction applications improve delivery of services for citizens by:

- Improving the accuracy of records
- Improving timeliness
- Improving collection efficiency
- Providing current and accurate management information.

In addition, transaction applications provide data required for decision support applications. For example, an automated water billing system has up-to-date connection and consumption records which can easily be transferred to a decision support application being used to plan new capital investment and operations and maintenance budgets.

Figure IV. 5 Development and Implementation Cycle for Local Revenue and Water Billing



Vignette: Water Billing and Improved Revenue Collection

By law, minimum fees should be charged to all residences using water service. However, many buildings have only a single meter serving many flats. A common practice in manual systems has been to charge only a single minimum fee to the owner, thus substantially under charging. Implementing the automated system includes a "data preparation" step wherein customer lists are updated and prepared for entry into the computerized system. Performing this step has required updating customer lists to include residents of multiple flats in single metered buildings. This update alone will increase fees collected by 20 to 40 percent even if the automated system were not installed.

Both the local revenue and water billing applications were designed for use by staff having little computer training or experience. User manuals and an operator training sequence were developed to train markaz operators to use the turnkey packages, and prepare governorate IS staff to provide support to markaz users. A second version of the local revenue package used Foxpro 2 to incorporate new features to maintain an audit trail and provide protection against fraud. The water billing software is currently being recoded in Foxpro and will include audit features. Foxpro was chosen because it provides high performance for databases with large numbers of records and because the Cabinet Project has chosen Foxbase as its standard.

A *Contractor Tracking* application was developed and tested in Ismailia. The package maintained data on contractors and governorate experience with them. The objective was to have an easily accessed, current list of contractors along with their capabilities and performance on previous contracts to use when tendering and evaluating bids. However, a number of problems arose when testing the package. It proved very difficult to obtain capability data from the contractors and subcontractors who actually perform most of the work. In bid evaluation, review committees were very reluctant to apply evaluative data if the result would be to select other than the lowest cost bidder. In addition, the number of contractors is not so large that manual and informal record keeping cannot suffice. After evaluating the pilot experience it was decided to drop this application.

Governorates are also generating their own applications. On the whole, these are simple databases. However, some are complete with data entry screens, menus and standard reports. Applications include full-scale water billing systems in Gharbiya and Qalubiya, public housing application lists in Daqahliya, South Sinai and Red Sea governorates, road condition inventories in Beheira, tourist data in North Sinai, South Sinai, and Luxor, personnel data system in Daqahliya, and a payroll system in Sohag. "Home brew" applications are to be applauded as evidence of growing IS capacity and sophistication, but are also risky because governorate IS staff have no formal university-level software training and lack the software engineering skills needed to create reliable, well-tested applications. Two workshops in systems analysis and application design were offered to introduce IS staffs to the concepts and the simpler procedures used by professionals in designing and writing applications. These workshops also

emphasized the limitations imposed by the lack of formal training.

RESULTS

Table VI. 4 summarizes information system progress during the LD II-P contract. In most governorates, the use of computers and the information they provide is in a transitional stage, from a peripheral to a central activity. This section describes results obtained in terms of the constraints and major activities in IS undertaken during LD II.

Three challenges were faced in implementing the QPR subproject monitoring application:

- Developing a turnkey package for the rural governorates remote from sources of hardware and software technical support
- Meeting the financial monitoring needs of the governorates, central government, USAID, and the contractor
- Providing project management information useful at the local level

The QPR software is a fully menu-driven turnkey package compiled in Clipper. The user interface has been designed so that all data entry other than numbers and text notes is accomplished by choosing from menus. This technique improves data entry accuracy and is basic to the bilingual features of the software. All place names for the 22 provincial governorates and their administrative hierarchy to the subvillage level are incorporated into the user interface in English and Arabic. The software runs in English and in Arabic and all reports can be printed in either language. Financial monitoring functions have been enhanced and many features such as the exception reports providing information for project management have been added as is shown in Figure VI. 4.

Table VI. 4 IS Progress 1988-92

ACTIVITY	SITUATION PRIOR TO LDIIP	CURRENT SITUATION
Planning	No governorate IS plans	3 yr strategic plan in 1 governorate Annual IS plans in 6 governorates IS subproject plans in 16 governorates
	No Arabic IS planning manuals, guides, or training materials	IS subproject planning forms IS Planning and Management Manual IS Planning Guide
Implementation	QPR monitoring database in 22 governorates; semi automatic consolidation of national project monitoring data. Little use of QPR data for local subproject management.	QPR project management and monitoring turn-key system in all governorates; quarterly transfer of govn't data to Amana via disk, fully computerized processing and printing of reports by the Amana. Contract, component, stage and status included for implementation management. Increased use of QPR for local management.
	Arabic wordprocessing, Dbase, Multiplan installed in 18 govn'ts. Little ability to generate ad-hoc reports. No transaction applications. Few Arabic software guides or manuals.	Programming tools: Qpro 3 with Arabic graphics, Dbase III+, Easyflow, Norton, R&R Report writer, FoxPro 2 in all governorates. Widespread generation of locally designed reports and small DB & SS applications. Transaction applications installed in 15 govn'ts and 66 marakaz for water billing and local revenue collection. Arabic guides to R&R, Qpro, Lotus, Dbase, Foxpro, MSDOS.
	No computer equipment procurement experience. No capacity to identify hardware problems.	16 governorates have purchased 97 systems following standard procurement practices. The Amana has completed a 1.4 Million LE computer system procurement on behalf of the 22 govern'ts and Luxor city. Increasing capacity to trouble-shoot hardware.
	No local user training. No TOT training in IS, no trainer guides.	6 govn'ts are training new users in the governorate and marakaz. TOT training for 22 govn'ts and trainer guides for DOS, R&R, Lotus, Quatro, Dbase training.
	One XT class "QPR" computer at governorate headquarters.	12 govn'ts have computers at one or more marakaz, 3 have purchased systems for additional departments.
Service Delivery	Little use of computer generated data at local level.	Regular quarterly reports generated from the QPR database in 12 govn'ts for managers. Monthly and quarterly publications by IS departments in 22 govn'ts which use computer generated graphics and analysis.
	No use of computers to support administrative functions except in Damietta. Few locally developed applications.	In addition to govn'ts implementing transaction applications, widespread use of systems for stores inventory, personnel records, tourism records, LDF loan tracking, etc. 16 governorates trained in system analysis and application development.

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QPR SOFTWARE

Version 3 of the QPR software is fully implemented in all governorates and at the MLA Amana. All governorates currently run the QPR software with virtually no technical assistance, a marked change from earlier years when regular visits to governorates were required to assist operators with the QPR database. At the end of each quarter, an updated copy of the current quarter QPR database is transferred from each governorate to the Amana computer center by disk. The center processes governorate data to produce and print national level progress reports in English for the technical assistance contractor and USAID, and in Arabic for the MLA. The technical assistance contractor no longer has any role in the quarterly reporting function other than Xeroxing copies of the reports. (The MLA does not have duplicating facilities adequate for reproducing the set of reports which currently total some 1,700 pages.)

QPR Database and Reports

All governorates use the same database structure and have a standard set of QPR reports. However, the degree of progress in entering the required data to use all new features of the software is variable, as is the capacity to use report generation software to create custom reports. Table VI. 5 shows governorate performance and status in implementing and using various features of the QPR.

Two important decisions in implementing the MIS strategy were to train operators in report generation (rather than hard program reports into the software) and use of tools such as QuatroPro for analysis and data presentation. All QPR reports are generated using Relational Report Writer and operators in most governorates are well-accomplished in using the program (see Table VI. 5). Most have also mastered Arabic Quatro graphics and even such features as slide show presentations. As shown in Table VI. 5, 19 governorates regularly generate a quarterly report package for local managers which includes locally designed reports and graphics.

Governorates are supporting project monitoring and implementation management by regularly gathering and entering QPR data. All but three governorates have entered fourth-cycle contract data, and exception reports, which rely on quarter-to-quarter comparisons and help identify "problem" projects, are regularly generated. Stage and status data are regularly updated. Fund management reports are

Table VI. 5 IS System
Governorate Performance and Status

ITEM	ASW	ASY	BEH	BEN	DAM	DAQ	FAY	GHA	GIZ	ISM	KAF	LUX	MAT	MEN	MIN	NEW	NSI	QAL	QEN	RED	SHA	SOH	SSI
PLANNING																							
Strategic Planning										C													
Annual Planning			C		C			C		C		C					C						
4th cycle IS planning	C	C	C	C	C	C			C	C			C			C	C	C	C		C	C	
IMPLEMENTATION																							
SOFTWARE TOOLS *																							
Database	3	2	3	3	3	3	4	4	2	3	3	3	2	3	3	3	4	3	2	4	3	3	3
Spreadsheet	3	3	3	3	3	3	4	4	1	3	3	3	2	2	3	2	3	3	3	3	2	4	3
Report Generators	2	3	3	3	2	3	4	4	1	2	3	1	2	3	3	2	3	3	2	4	2	3	3
Programming	2	1	2	2	2	2	3	3	1	1	1	3	1	2	2	2	3	3	1	2	1	2	3
Application design	2	1	2	2	2	1	2	3	1	1	1	2	1	1	2	1	3	3	1	2	1	1	2
PROCUREMENT																							
4th cycle IS Subprojects	C	C	C	C	C	C		C	C	C			C			C	C	U			C	C	C
Other Hardware/software								C		C		C							C				
GENERIC APPLICATIONS																							
Water Billing	U	NS		U		NS		C		NS		C				NS			C				
Local Revenue	NS	U	C	NS	NS	NS			NS	C		NS	NS			NS							
SPECIAL APPLICATIONS																							
Geographic Information Systems										U							C			U			
O&M Vehicle Maintenance System															U								
PW Network Analysis																							
SUBPROJECT MONITORING SYSTEM (QPR)																							
Local production of:																							
Standard reports.	2	2	2	2	1	3	3	3	2	3	3		3	3	2	2	3	3	1	4	1	3	3
Exception reports	1	2	2	1	1	2	1	4	1	2	4		1	2	2	1	3	4	1	4	1	3	3
Custom reports	3	3	4	3	2	3	4	4	2	2	3		2	2	2	2	3	3	2	4	2	3	4
Fourth cycle contracts data	2	3	1	1	2	3	1	4	1	3	4		4	3	2	3	3	4	3	4	3	3	3
System coding	R	R	R	R	R	R	1	C	R	1	1		R	R	R	R	R	R	R	R	R	R	R
Data analysis & graphical presentation	1	3	3	2	1	3	3	3	1	1	3		2	1	2	1	3	3	1	2	1	4	3
BVS data conversion	1	R	1	1	NS	1	NS	C	NS	NS	1		NS	NS	NS	NS	1	1	NS	1	NS	1	1
Promptness in task completion	3	3	3	2	1	3	1	4	2	2	2		3	3	3	1	3	3	2	3	2	3	3
OVERALL IS CAPACITY INDEX	2	1	3	2	3	2	3	3	1	2	1	2	1	2	2	2	3	3	1	3	1	2	3

* These scores are based on skill levels achieved by governorate staff

KEY

Achievement or skill level
- 0 no data or not applicable
- 1 low level, major deficiencies
- 2 moderate level, minor deficiencies
- 3 good level
- 4 excellent achievment, model example

Data Entry
- I first pass
- R revised
- C complete

Completion Status
- NS not started
- U underway
- C completed

Capacity Index
- 1 low capacity, requires significant TA to sustain IS functions
- 2 moderate capacity, can continue current IS functions with minimum TA
- 3 high capacity, largely selfsustaining provided current staff remains

being used to determine what funds are available for redistribution to new or existing projects requiring additional funds.

Information support for project planning is less advanced. Nineteen governorates have entered system codes for LD II projects and are in various stages of updating and correcting this data. Twelve have converted BVS subproject data to the LD II format and are updating this data. Gharbiya has completed this process and has published a report showing all infrastructure put in place from 1981-1991 through BVS and LD II. Adding Bab III-funded components, particularly in water and roads sectors, is needed to fully describe the physical systems actually in place. Full information on system components (specifications, year of installation, condition and, especially, *valuation*) represent the assets in an "enterprise model" of organization for the sectors. Capital and operations budgets can then be planned in a multi-year framework. Furthermore, when costs are visible in this way, LRM issues can be confronted meaningfully.

With minor modifications, principally to how fund sources are handled and reported, and to the sector assignments, the existing QPR can be used to track Bab III funded investments, the new LD II-funded projects, and infrastructure projects funded through the Social Fund. **An integrated project tracking system would be far more valuable for planning and management of capital investment projects than separate systems for each funding source.**

Project Monitoring System

Progress in the QPR reporting system has been supported by improvement in management's understanding of the monitoring function and the coding of monitoring procedures in the monitoring procedures manual. The large commitment of time and resources by both Kafr El-Sheikh and Beni Suef in their respective pilot monitoring efforts indicates significant interest and need at the governorate level for improving monitoring functions. Both pilots were successful in meeting their objectives and can be replicated.

IS Planning and Management

The IS strategic planning process was completed in Ismailia and the governorate produced a three year IS strategic plan. Six governorates completed annual IS plans for the 1992/93 GOE fiscal year, which identify the applications to be implemented and the resources required for implementation. Sixteen governorates planned fourth-cycle IS subprojects and completed the planning forms for each

project. Three governorates elected to pursue GIS, two of which are using governorate funds or other non-LD II sources. Table VI. 5 shows the governorates completing IS plans and Table VI. 6 shows the types of applications selected. Markaz automation based on one or more revenue collection applications was very popular, reflecting availability of turn-key application software and the fact that these applications are very appropriate for automation.

The use of very concrete IS applications like the water billing system as successful because the information needed (such as the number of customers) was available, the application already existed in manual form, and only a single department was usually involved. More abstract applications such as GIS, which require cooperation from several departments, require large amounts of data, and are not familiar manual applications, were more difficult to plan. The software and hardware specifications could be determined, but staff training and organizational requirements were less clear. Planners confronted the lack of clear lines of authority and responsibility in governorate organizational structure for IS.

Six governorates completed fairly elaborate annual plans for the 92/93 fiscal year covering application selection, resource requirements, and training needs, and identifying organizational prerequisites. The secretary general in each governorate approved the completed plan. The planning process seems to have generated good discussion of important issues, particularly around how the information services function should be housed and managed within the governorate structure. How useful the completed plans will be during implementation will have to be evaluated at a later point.

Although a three-year strategic plan was produced, the Ismailia IS strategic planning effort was not very successful. Strategic planning is a new concept not previously applied by governorate managers and little appropriate written material in Arabic about strategic planning is available. A significant part of the training and technical assistance , including preparation of a manual on strategic planning, was required to introduce the concept and to help managers outline long-term governorate and departmental goals. Lack of experience with information systems limited managers' ability to imagine the role of information in achieving these goals. The organizational structure of governorates, which mixes local offices of line ministries with independent governorate departments, was also a barrier to developing a coherent governorate IS plan.

Table VI. 6

IS Fourth Cycle Subprojects Status

GOV	PLAN			PROCUREMENT			APPLICATION STATUS				QPR System	
	APPL TYPE	HQ SYSTEMS	MARKZ SYSTEMS	4TH CYL FUNDED	OTHR FUNDED	PROCUR STATUS	DATA PREP	INSTAL S/W	TESTING 1ST RUN	OPER-ATNL	SOFTWARE VERSION 3	HARDWARE NEW SYSTEMS**
ASSWAN	WB* LR	1	6	7	0	C	C C	C U	C	U	O	3
ASSYOUT	LR* WB	2	10	12	0	C	U C	C	C	U	O	3
BEHEIRA	LR	1	14	15	0	C	C	C	C	C	O	3
BENI SUEF	WB* LR	2	5	7	0	C	C C	C U	C		O	3
DAMIETTA	WB NET	2	4	6		C	C	C	C	C	O	3
DAQAHLIYA	LR	2	7	9	0	C	U				O	3
FAYOUM	PH	0	0	0	0		C	C	C	C	O	3
GHARBIYA	WB	2	0	1	1	C	C	C	C	C	O	3
GIZA	LR	3	4	7	0	C	C	U			O	3
ISMAILIA	LR* WB GIS	1	4	5	0 1	C U	C U	C	C	C	O	3
KAFR EL SHEIKH		0	0	0	0						O	3
LUXOR	WB* LR	2	0	0	2	C					O	3
MATROUH	LR	2	3	5	0	C	C	C	U		O	3
MENUFIYA	WB		3		0		U	U			O	3
MINYA	EM	1	0	1	0	C	C	C	U		O	3
NEW VALLEY	LR* WB	2	2	4	0	C	C C	C C	U U		O	3
NORTH SINAI	WB GIS			6	0	U	U C	C	C	C	O	3
QALUBIYA	WB* LR			5	0	U	U U				O	3
QENA	WB						C	C	C	C	O	3
RED SEA	PH				0		C	C	C	C	O	3
SHARQIYA		1	4	5	0	C					O	3
SOHAG	PR	2	0	2	0	C	C	C	C	C	O	3
SOUTH SINAI	PH				0		C	C	C	C	O	3

O Operating C Completed

* Generally, the same hardware systems are used for both the LR and WB applications.

** Procurement of new systems in support of subproject monitoring has been handled as a joint purchase on behalf of all governorates by the MLA, Amana. As of November 30, 1992 the new hardware has been installed in all governorates. The systems include one 80486DX, 200 Mb hard disk high-end system and two 386SX, 80 Mb hard disk systems plus printers, a scanner, a plotter and software.

IS procurement and hardware maintenance

Table VI. 6 shows the status of hardware procurement as of 30 September 1992. Fifteen governorates have completed hardware and software procurement for fourth-cycle IS projects or for other applications. Gharbiya, Ismailia, and Luxor have made additional computer system purchases using non LD II-P funds, but following the tendering process pioneered in purchasing fourth-cycle-funded equipment. Assyout and Beheira increased the governorate contribution level well above the 25 percent requirement in order to fund systems for all marakez in the both governorates.

In about half the procurements the initial tenders had to be canceled and retendered. The problems were lack of detail in defining specifications resulting in bid responses that could not be compared, or failure to meet some procedural requirement of Law 9. The Amana procurement was rebid three times due to problems with bid procedures followed in the first two attempts. The third rebid used a "best and final" approach which was very successful in reducing the cost.

The availability of qualified technical assistance and the use of this assistance in all but one case has resulted in computer equipment purchases that meet the specifications and are appropriate to the applications being installed at the governorates. However, had this technical assistance not been available, experience gained in this first effort on the part of governorates to purchase computer equipment, suggests that serious deficiencies would have resulted.

IS Applications

Response by governorates to the local revenue and water billing packages has been enthusiastic if not overwhelming. Table VI. 6 shows the status of the applications and of the hardware procurement associated with installing them. Over 50 sites are currently installing one or both packages. Through workshops in August 1992, the software, manuals and installation procedure was made available to all governorates and IS staffs of each governorate were trained in installation and application start-up.

Development of applications by governorate staff is exciting evidence of increased skill levels and sophistication. When the applications are relatively simple and are carefully developed and tested they often provide excellent returns. However, there is a real danger of over reaching the skills and experience of operators in attempting more complex applications, particularly those involving accounting transactions. The application design and development

courses mentioned above stressed the risks involved in developing applications.

GENERAL RESULTS

Improving the Information Infrastructure of Governorates

The overall capacity of provincial governorates to plan, procure, manage and operate computerized information systems has improved over the five years of LD II. The number of microcomputer systems in the governorates has risen from one or two per governorate in 1988 to up to 25 or more today. The number of staff using systems has increased from typically fewer than five, to ten or more in most governorates. The Cabinet Project has initiated governorate information centers in all governorates and supplied them with three to five computer systems and staff. There is a moderately skilled core IS staff in most governorates with the capacity to use standard database, spreadsheet, utility, and Arabization software. Fifteen governorates have successfully procured systems and signed maintenance agreements with vendors, five have run introductory training workshops for new users, and 10 have undertaken automation in one or more marakez. At least 16 governorates have designed and implemented custom applications to meet local needs. Governorates competed recently to showcase their IS capabilities at the July QPR quarterly workshop. The eight chosen each had three or four custom applications to demonstrate. All governorates are running the QPR software with little or no technical assistance required.

These are all positive developments and indicate that many of the constraints identified earlier have been at least partially overcome. At the same time, information system development in most governorates is fragile, and significant barriers remain. The most serious general problems are summarized below:

Vignette: Information Systems Organization Structures in Governorates

In an organization with a mature information system, users form a triangle. At the base, the large majority of computer users are simply users of turnkey applications and standard office productivity software. They have and need little technical knowledge. Near the apex a small, more highly trained group provides support services to users in the form of training and technical assistance. In many organizations these two groups complete the triangle. However, a third level consisting of software and hardware professionals are needed either internally or externally to generate applications, design systems, procure hardware and software, and train trainers. The triangle in most rural governorates is distorted in the middle. There are only a few users of turnkey applications [the markaz transaction applications are beginning to create a larger cadre of such users], virtually no professionals and little accessible professional help. Most users are moderately trained but have not taken on the support function.

- **Small numbers of trained and experienced staff.** In most governorates if one or two key staff members were to leave, IS capacity would seriously diminish. There is little capacity in place to train new staff beyond an introductory level. IS is also fragile because the majority of IS resources in most governorates have been allocated to decision support applications, which are not crucial to the day to day functioning of the governorate and therefore garner limited support from key managers
- **Lack of clear authority and responsibility for IS services.** IS has simply not been brought into the formal local government structure. Management of IS groups is generally poor and there is little coordination among different governorate groups using IS. With a few exceptions, the most successful IS implementations are in governorates where IS is centralized in a single physical space. The least successful are governorates where different groups using computers see each other as competitors and vie for resources, training, and staff
- **Inadequate funding of operational and maintenance costs.** Extended maintenance agreements signed with vendors when new equipment is purchased is a step in the right direction but, in too many cases, systems are not being used due to lack of supplies or funds for simple repairs or upgrades
- **Senior managers remain computer illiterate.** Because they do not understand computers or their use, managers fail to understand what to expect or how to tap the IS resources available to them. Decision support systems are underutilized, and information fails to flow from producers (the IS groups) to those who need it
- **No local private sector sources of technical assistance are available.** Private sector IS development away from the major centers has been remarkably slow. It may be that the increasing pace of governorate automation will lead private sector use of computers in provincial areas. An encouraging sign is that a significant number of the governorate personnel trained during LD II have initiated consulting or other IS related private activities outside their government employment
- **There is no source of local government software.** Governorate staff are not qualified to develop major applications such as accounting systems. No

mechanism exists for governorates to collectively contract for software development common to all of them.

The last line of Table VI. 5 indicates the overall sustainability of IS in each governorate. It represents an estimate by the contractor staff of the likelihood of finding a thriving information system function in the governorate some years hence. A recent study found that about 22 percent of U.S. county employees work in information management i.e., providing information services[1]. At current growth, governorates are many years away from this level of commitment to information systems. Sustainability is a reflection of organizational commitment, which remains limited in most governorates.

Capital Investment Project Information System Support

The QPR project monitoring system including the software, trained operators, and the procedures and practices supporting the monitoring and reporting on projects under implementation is a well-developed and valuable asset that can be adapted readily to monitoring and reporting on *all* governorate capital investment projects regardless of funding source. A major institutional problem is assignment of LD II project monitoring responsibilities to the village development departments while Bab III-sponsored projects are monitored and reported by the planning and follow-up departments. **The assignment of responsibilities needs to be resolved to make possible an integrated governorate monitoring system.**

The move to reporting on "systems" rather than fiscal projects is crucial to using the QPR data for project planning and O&M. *Systems*, not their component projects, provide services, *systems* have to be maintained, and *systems* require expansion or consolidation, and administrative organization into utilities or service districts. System coding in 19 governorates for LD II-P projects is complete, adding BVS projects to the system is underway; including Bab III and components sponsored with local or other donor funds remains a future task. When completed, an *inventory* of rural infrastructure will be available. This database can be combined with maps in a GIS, with cost data to prepare O&M budgets based on actual equipment, or with population and service access data to generate capital investment plans based on systems in place and actual needs.

The future of the monitoring system depends in part on the success achieved in moving the system from a monitoring

[1] "Positions and Pay in County Information Management," *Micro Software News*, ICMA, 9, # 10, October 1992.

tool primarily providing project financial data for USAID and the technical assistance contractor to a monitoring and management tool useful at the governorate level for project planning, implementation and operation. One indicator that this may have occurred is the large number of custom reports generated in some governorates from the QPR database (see Table VI. 6). Another is the expressed intention by several governorates to place the QPR software system on markaz computers so data entry can occur at the source (generally the markaz) and reports generated for markaz use. Ismailia is training markaz operators to receive the QPR software during October. The future of the system will also be affected by the degree to which the MLA Amana requests and uses information generated by the system.

RECOMMENDATIONS

IS Planning

Recommendation 1: MIS strategic planning should be delayed for three to five years until governorates have acquired greater hands-on experience with IS applications and senior managers have gained experience with general strategic planning.

Recommendation 2: In all governorates, annual IS planning should be encouraged and tied to IS application implementation.

Discussion

The use of computers is increasing rapidly in the governorates under the sponsorship of external organizations including aid donors and the central government. In addition, governorates are using local funds to purchase systems for departments and marakez. However, in most governorates, this introduction of automation is haphazard. Developing an annual IS plan is useful as much for educating managers in the issues concerning managing IS resources as for the plan that results. Focusing the plan on specific applications requires participants to deal with identification of resources required to implement the applications (hardware, software, staff, training, support and procedures).

Implementation

Guidebooks in Arabic for IS management and annual IS planning are available from the technical assistance contractor. The six governorates that completed IS plans for 92/93 can assist other governorates through the process for fiscal year 93/94 with minimal technical assistance. Involvement of the Cabinet Project staff is recommended to encourage an integrated approach to IS planning and management at the governorate level.

QPR Software and Database

Recommendation 3: The QPR software and database should be modified to enable entry and reporting of all capital investment infrastructure projects in the governorates.

Discussion

The QPR system is working throughout Egypt providing consistent quarterly reporting on the financial and physical progress in implementing LD II sponsored projects. With minor software modifications and minimal training of operators, this system can encompass reporting on projects sponsored by Bab III, Social Fund and other funding sources.

Implementation

The modifications to the software and database structure, and the new report formats can be designed and implemented by the technical assistance contractor and distributed through a quarterly workshop, thereby assuring use of common data and report formats. The Amana computer center could undertake database and report modifications. Software changes would require professional input.

Obtaining cooperation among governorate and national offices to use a common reporting system will require leadership and rationalization of responsibilities for project monitoring regardless of sponsorship.

Recommendation 4: The QPR "geocode" system should be considered for adoption as the national system for designating administrative locations.

Discussion

A requirement for implementing the QPR was development of a consistent updatable coding system for inhabited areas which incorporates the hierarchy of administrative units; that is, designates what subvillages belong to which mother village, and which villages belong to which markaz. This system is maintained up-to-date by governorate operators. Updating is needed because administrative boundaries change, that is, villages become cities, markaz boundaries are altered, and so on. The current geocodes cover the sub-village level but can be extended. In order to develop useful service delivery indicators for Beni Suef, it was necessary to

extend the coding system to the ezba level. Infrastructure needs assessment and planning require a consistent designation of locations based on administrative units and a single national geocode system should be adopted.

Implementation

Negotiations between the MLA, which is responsible for administrative boundaries, the National Survey Authority, CAPMAS, the MOP and other agencies are needed for agreement on the universal adoption of a geocode system. Extending it to the ezba level requires significant effort in governorates where there is disagreement about settlement boundaries, how to handle "illegal" settlements, and what settlements belong to which subvillages.

Applications

Recommendation 5: Give priority to automating governorate budget and financial (accounting) systems.

Discussion

Governorate financial systems (payroll/personnel, accounts receivable and payable, purchasing/inventory, fee and tax collection, general ledger, and budgeting) are crucial governorate functions and in current manual form, provide little timely information to managers. Automation of these functions will represent a watershed commitment to computerization and will elicit the management attention and financial resources needed to fully establish automation in the governorates.

Implementation

Local governorate accounting software should be centrally designed and coded. Accounting software *should not* be designed or implemented by individual governorates. A design study has been completed for Alexandria and the functional design for urban and provincial governorates will be similar. However, the implementation of the design might be quite different given the large differences in scale. The Egyptian Central Audit Authority should be involved to assure that auditing requirements are met and that auditors are trained to assess automated accounting systems. While the system design and ultimate application should be fully integrated, the software should be modular enabling installation of individual modules (for example, payroll first, then accounts payable, and so on).

Recommendation 6: The MLA should enter a "retainer" contract with a local firm offering IS professional assistance in the areas of system design, hardware and software procurement, and application development.

Discussion

While hardware and software literacy of governorate IS staff has improved, they do not have the knowledge or skills required to assess applications in terms of hardware and software requirements, draft appropriate specifications, technically evaluate bids or inspect equipment adequately when it is delivered by vendors. Governorate staff are not sufficiently trained to reliably create major application software. It is unlikely that the MLA or many governorates will be able to employ qualified computer specialists to provide qualified in-house technical expertise. Furthermore, individual governorates require expert consultation only occasionally.

Implementation

A central consultancy arrangement, through a retainer or IQC type agreement administered by the MLA, offers a workable alternative to arrangements by individual governorates. The successful QPR equipment procurement handled by the MLA indicates that the MLA can assist governorates in collaborative undertakings. A TOR for services required can be drafted and tendered on behalf of governorates by the MLA. Firms such as Arabsoft would be appropriate bidders. The tender process should result in a fair price for services on the part of governorates, and an attractive opportunity to potential bidders.

IS Management and Training

Recommendation 7: A central IS training facility, or several regional training facilities should be created to provide on-going training of *governorate IS support staff and governorate IS trainers.*

Discussion

The major responsibility for training new computer users must devolve to the governorates. As the use of automation increases, the numbers to be trained at the elementary "user" level will become too large for training away from the governorate. Already, several governorates are training markaz staff as users of the local revenue, water billing and/or QPR software. However, preparing governorate IS staff as trainers, and keeping them current, as well as continued training of IS support staff requires access to higher level targeted training.

Implementation

A central training facility or perhaps, two or three regional centers would be an efficient approach to meeting this training need. The facility requires systems capable of supporting current software and staff who are competent technically and pedagogically. As in recommendation 6, contracting through

the MLA for training services may be the most cost effective way for governorate collaboration in obtaining these services.

Recommendation 8: One or more higher education institutions be *encouraged to create a certification program in IS management.*

Discussion

IS management in the governorates is very weak. Virtually no current managers have formal computer science or computer related degrees and none have any training in managing information services. This situation reflects the lack of centrality of IS in governorate functions and the absence of a well defined organizational "home" for IS staff and operations in the governorate organizational structure. Moreover, a formal training program in IS management is not available in Egypt. Professionalization of IS would be assisted by establishing requirements for the IS manager position and a formal IS management training program recognized by a certificate. Individuals trained as managers would find a role in private as well as public organizations.

Implementation

In addition to introductory computer science, managers would be trained in IS system planning and budgeting, procurement of hardware, software and IS services, personnel management and data presentation. The appropriate home for this type of training is probably a business school or computer science program rather than an engineering college. The certificate could be offered as a one-year program for individuals with a computer science or engineering degree, or two-year program for those with other degrees. A significant constraint for governorates is a salary level too low to attract the graduates of such a program.

FUND & CASH MANAGEMENT

Background

The LD II Agreement specified that LD II capital grants could and should be financially managed by the governorates through the deposit of idle funds in interest-bearing accounts. Cash management was a novel activity for the governorates. Bab III funds cannot be kept in investment accounts, and in any case, they are disbursed to the governorates on a quarterly basis. While interest rates are three or four percentage points below the inflation rate, cash management would upgrade local capability to finance projects by at least partly protecting the value of LD II block grants against inflation.

The annual LD II-P planning guidelines encouraged the use of a simple cash management system, in which 30 percent of the LD II-P grant was kept in current accounts and the

remainder in investment accounts. How extensively this system or any cash management system was applied during the first three implementation cycles is difficult to judge. The early QPR report format included a column for interest income, but it was frequently ignored, partly because it assumed that separate accounts were kept for each project (the exception rather than the rule) and partly because MLA officials themselves were not all convinced of the legality of investing LD II funds on the local level. A study of first-cycle LD II-P funds management in four governorates (*Managing LD II-P Funds*, November 1988) found only one keeping funds in investment accounts.

Management of the block grant fund was also open to improvement. At the time where plans are completed the block grant is fully allocated to projects. However, as implementation proceeds, projects are canceled, interest earned contractor penalties collected, etc. A pool of un-programmed funds grows over time and should be allocated to new projects or to fund averages in existing projects. Project managers need to know the un-programmed amount on at least a quarterly basis.

ACTIVITIES

The November 1988 study also proposed specific cash management models. These models, plus a formalized version of the simple model which had been endorsed in the annual guidelines, were incorporated into *Cash Management Procedures Manual* (September 1991), which provided three cash management models -- basic, intermediate, and advanced -- and set out reporting requirements and formats. The manual was the basis for a training program held in the summer of 1991 which representatives from 396 governorate and markaz-level village development and accounting offices from all 22 governorates attended. Field assistance was extended to governorates which required technical assistance.

At the time of writing, three quarterly cycles of cash management reporting have been completed, and fourth-quarter reports have been received for seven governorates (Beni Suef, Daqahliya, Menufiya, North Sinai, Qalubiya, Red Sea, and South Sinai). Reported interest earned over the first three quarters of the fourth LD II-P cycle is LE 8,453,596. Four governorates are chronically late in their reporting: Damietta, Kafr El Sheikh, Minya, and Qena.

The cash management models are not specific as to the level at which the accounts are to be maintained or whether project allocations are to be kept separate or merged. In terms

of level, the following governorates keep their investment accounts mostly at the governorate level:

Asswan	Matrouh
Beheira	North Sinai
Damietta	Red Sea
Kafr El Sheikh	South Sinai

Other governorates manage their funds mainly at the markaz level :

Assyout	Ismailia
Beheira	Minya
Fayoum	New Valley
Gharbiya	Qena
Giza	Sohag
Sharqiya	

In Daqahliya, Menufiya, and Qalubiya governorates, a considerable portion of the funds are managed at the VC level.

A fund management module was added to the QPR software which tracks available funds for re-allocation. This feature computer an available fund balance at the end of each quarter.

ACHIEVEMENTS AND LESSONS

All 22 governorates can be said to have mastered the basic cash management model, which keeps a constant 20 percent of the original LD II-P fund in current accounts and the remainder in monthly investment accounts. Many governorates are now interested in experimenting with the higher-yielding intermediate and advanced models, which place idle funds in a series of longer-term investment accounts. These models require cash demand projections based on project implementation schedules, and hence draw attention to the financial benefits of precise implementation scheduling at the project planning stage.

While the cash management effort was successful and sustained considerable local initiative, its long-term impact is uncertain, since LPD funds will be subject to conventional Bab III financial procedures, which prohibit investment. The limitations on local financial decision making entailed by Bab III financial procedures extend beyond the loss of interest income to local governments. By upgrading local capability to manage funds and accounts in general, the LD II-P cash management system developed skills which have provided a foundation for an integrated budgeting and accounting system. Such a system would enable the governorates to

191

manage the variety of infrastructure program funds (Bab III, LPD, the Social Fund, local special funds, etc.). Each of these programs has its own budgeting and accounting requirements, yet many infrastructure projects, systems, and investment programs draw on more than one of these sources of finance.

An integrated financial management system is a virtual necessity if the continuity and orderliness of project implementation processes is not to be lost in the welter of different budget and account systems. The LD II-P cash management intervention (as well as the project monitoring system) could be expanded to provide such a system. The principal impediment to achieving such a system are the highly restrictive accounting and disbursement mechanisms imposed by the National Investment Bank, which not only prohibit local use of investment accounts and disburse funds on a quarterly basis, but also require central government approval of any transfer of funds between projects.

Section VII

Summary, Conclusions and Recommendations

SUMMARY

Section I presented an overview of the provincial local service infrastructure funded through the Decentralization Sector Support I (DSS) and Local Development II agreements which this technical assistance contract supported. The section also outlined the organization of this report.

Section II discussed the project environment, especially the local administration system, in which LD II-P operated. The section also included a discussion of the contractor's strategy to implement the technical assistance contract.

This first volume has documented selected technical approaches, systems and procedures, the "tools" developed, tested and used in our technical work in LD II-P[1]. These tools have been conceptually organized around the project purpose of improving the capacity of LGUs to plan (Section III), implement (Section IV), maintain and operate (Section V), and manage (Section VI) locally chosen basic service delivery projects. Detailed technical discussion was kept to a minimum, so that readers may be able to judge the suitability of these approaches to similar problems and situations in other projects and environments[2].

The technical assistance contract supported the Mission's LD II Program through the design and delivery of systems of planning, implementation, operations and maintenance, monitoring, and management which local government units (LGUs) could use to improve local municipal service delivery. The systems we designed as technical assistance contractors supported the successful achievement of USAID's Local Development II Program infrastructure outputs. Highlights of these Program outputs achievements are:

- Over 13,000 locally planned, implemented, and managed local municipal services projects

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[1]Contract accountability concerns, the "project outputs", are treated separately in Volume Two.

[2]Interested readers can use the annotated project bibliography included in Volume Two to find more extensive information on any particular tool or topic discussed in the report. The information is available through technical manuals, assessments, training materials, and quarterly implementation progress reports.

- These projects are serving over 30 million rural beneficiaries
- These beneficiaries reside in over 3,000 hamlets belonging to 976 village units, in twenty-two provincial governorates spread over a territory of more than one million square kilometers
- Benefits of this Project have reached over 95 percent of rural residents in provincial Egypt. Table VII.1 documents these facts
- The vast majority of these locally-chosen municipal projects *are* rendering service, as documented by a national stratified random sample of subprojects.

This was the largest, broadest-based rural infrastructure program ever undertaken by AID, with *direct* benefits actually reaching the often forgotten rural populations. *Indirect benefits*, yet unmeasured, include the employment generation (directly employed skilled and unskilled labor, the labor coefficients of construction materials, equipment, and supplies) and the multiplier effects in the local economies[3].

The technical support role provided to the Mission's efforts has made the system work and deliver benefits where they are most needed. Highlights of the contract outputs include:

- An average field level of effort of 15 *person/months, per month*, or 36 percent of total professional LOE delivered to the 22 provincial governorates
- An average of *74 field trips per month* organized and carried out to provide assistance to LGUs
- Publication of *103 Manuals, Handbooks, and Guidelines* (over 90% in Arabic) as scheduled deliverables. These embodied the "tools" given to LGUs to support the Project
- Publication of *81 studies and reports* (English and Arabic) pertaining to assessments, policy discussions, findings, case studies, and project management support
- Some *42,300 copies of publications* delivered to LGUs

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[3]We would urge the Mission to undertake a separate evaluation of employment generation and multiplier effects in the local economies, using perhaps any existing IQC as a contracting venue. Although not considered in the original project design, the impact of the massive, national "public works program" nature of LD II-P on local structures of opportunity for the under- or un-employed cannot be understated. For example, "safety net" type programs designed to soften macro-economic structural reforms and adjustments, such as the Social Fund in Egypt, are increasinly relying on "public works" projects as a means of assistance during the adjustment period.

190

- Approximately *4,800 copies of project newsletters* delivered to governorates and marakez
- *Fifty-five Monthly Field Trip Reports* delivered to the Mission for appraisal of field activities
- Seven *Quarterly Progress Reports* summarizing significant project activities, status of project outputs, implementation of work plan activities, and assessments of governorate performance
- Over *87,000 person/days of training* delivered, leaving behind a critical mass of trained cadres in the provincial governorates. Table VII.2 documents this
- Almost *89,000 person/days of orientations* delivered to LGU officials in the governorates on the four LD II-P funding cycle requirements and guidelines. Table VII.3 presents these data

Yet, direct support of the Program infrastructure investment is only part of the story. Embedded in LD II-P were at least four "projects":

- a complex provincial wastewater program devoted to testing selected technologies to meet Law No. 48 requirements
- a national O&M planning, budgeting, and management system for infrastructure, rolling stock, and equipment
- a national human resources development and institutionalization program
- a national management information systems program

Each of these activities could stand on its own as a usual "project", national in scope. In addition, were one to add the key pilot interventions we successfully designed and implemented, the count of embedded projects would be even higher. These simple *activities*, in the parsimonious language of the contractor's work plan would become "projects" on their own. Among these, one could include the following:

- Sector strategic plans for roads, water, and wastewater
- Town master plan development (village physical planning)
- Geographic Information Systems (GIS) in North Sinai governorate
- Service access and coverage indicator system for Beni Suef governorate
- Integrated O&M systems in Minya and Gharbiya governorates

- Subproject monitoring systems in Kafr El-Sheikh governorate

Thus, LD II-P could be thought of as composed of four national projects and at least six additional local or sectorial "activities", for a total of ten distinct projects.

Given the project complexity, its broad-based delivery of benefits to needy populations, and the programmatic, logistical, and management challenges, Chemonics and its subcontractors are proud to have rendered support to this successful program.

In the remainder of the final section of this report we summarize our broad conclusions, distill the lessons that we have learned, and, most importantly, explore project design elements that the Mission may consider in future programs. These project design elements are clustered around a conceptual model that organizes local municipal services as ***enterprises*** that are held accountable at the local level. When combined with the needed re-structuring of the ***environment*** in which these enterprises operate, the proposed conceptual model is shown to be responsive to the themes of decentralization, institutional accountability, and pluralism discussed in our Introduction.

CONCLUSIONS

Successful Completion of Project Purpose

The project has successfully achieved its designed project purpose. The approaches, systems, and procedures developed by LD II-P have been successful in improving the local capacity to plan, implement and maintain locally chosen basic infrastructure projects in the following ways:

- The codification and documentation of tools for sector and subproject planning, model terms of reference (TORs) and contracts, construction supervision, operations and maintenance (O&M), and management information systems (MIS) has been achieved
- The vast diffusion of these tools through training and technical assistance have promulgated them
- The actual use of these tools by LGUs, albeit uneven at times, is also documented in our results and analysis of governorate performance

The data presented in Volume Two support the first two claims. The periodic monitoring and extensive data analysis

of governorate performance in our *Quarterly Progress Reports* and future external evaluations will validate the third claim.

Much progress has also been achieved in developing the overall management capacity of LGUs and a sense of ownership in the LD II-P project portfolio, as documented by the focus group interviews in Fayoum and Daqahliya governorates. Again, external evaluators will need to validate and elaborate on these statements.

More specifically, Table VII.4 documents the accomplishments of LD II-P in fulfilling its project purpose.

The accomplishments are, overall, noteworthy. An exception is the improvements in local capacity to finance. Improving local capacity to finance local infrastructure has been fulfilled only in the sense that there is improved capacity in subproject cost estimation and budgeting. This, in itself, is not insignificant. Additionally, our work in providing tools to governorates to provide a framework for sector-wide program management and budgeting through the preparation of sector strategic plans can be viewed in this context. Likewise, the LD II-P cash management system is responsive to the project purpose of improving local financial capacity. However, governorate strategic plans for the roads sector have been completed in three governorates and as many as eleven governorates will be issuing local tenders for strategic plans for the water/wastewater sectors by the time LD II-P closes. Thus, this mechanism to improve sector-wide program management and budgeting capability is not yet in place.

Likewise, the LD II-P cash management system through which LGUs could generate additional resources, and gain relevant financial management experience, will cease its usefulness once GOE Bab III budget procedures are used to channel funds from the central level to LGUs to finance local infrastructure.

Larger issues of project design, however, relate to the slow rate of achievement in local financial capability, relative to progress in other functional areas of the project purpose. These issues are discussed in our next broad conclusion.

The current project design has outlived its useful purposes

The program has been successful in improving the basic infrastructure needed to provide service delivery and in developing the local capacity of units to plan, implement, and maintain these services. However, the linkages, assumed by the design, between decentralization and improved local capacity have not occurred. Decentralization,

in the form of devolution of authorities to local governments, has not naturally followed improved local capacities in planning, implementing and maintaining basic infrastructure service projects.

Another implicit assumption of the original project design has been invalidated. Significant resource mobilization (LRM) to recover the O&M costs and, eventually, some capital costs has not followed improved local capacities in planning or implementation of locally-chosen subprojects.

Central control of tariff-setting authorities for user fees collected for the provision of local municipal services such as water and wastewater remains strong in Egypt and, it is frequently argued, is an impediment to cost-recovery and further local resource mobilization[4]. Larger issues of the organizational landscape of local municipal service provision, gleaned from our perspective as contractors are, however, at stake. Based on what we have learned over the last decade we conclude that a different approach is required to further decentralization, LRM, and local governance in Egypt.

Thus, we support the Mission's decision to terminate the LD II Program. As the Mission re-structures its program portfolio around more focused strategic goals and objectives in response to accountability, staffing concerns, and performance management of results, the "fit" of LD II, as currently designed, comes into question. The many "themes" embedded in the current Program need to be more sharply focused around the Mission's strategic goals and objectives.

The provision of local municipal services is not organized properly

Among the lessons learned during implementation of LD II-P are that:

- **The planning, budgeting, monitoring, and management of the actual physical service delivery systems are fragmented.** The National Organization for Potable Water and Sanitary Drainage (NOPWASD) is heavily involved in the planning and implementation of water and wastewater treatment plants and mains all over Egypt. Governorates, on the

[4]We do not believe that "conditionality agreements" by which policy changes are induced (in this case, higher user fees) through tiered, *tranche disbursements*, is a useful policy instrument to effect cost-re_overy in the provion of local municipal services provision. Uninformed policy dialogue inis area is likely to burden local governments with users' service accountabid performance requirements for which they are largely unprepared, as argued in our next general conclusion.

other hand, must plan the local components of water and wastewater systems in virtual ignorance of NOPWASD design and implementation plans

Capital budgeting for infrastructure investment operates through multiple programs (Bab III ministerial, Bab III municipalities, a variety of local special funds, LD II, and other donors') in the absence of governorate structures capable of integrating these multiple sources of funding into coherent sector development strategies.

The monitoring of water meter readings and recording of connections, for example, is usually the responsibility of the councils. This is separated from the utility operations so that it is not unusual for the utility divisions not to know the number of connections, average consumption, or revenues connected to their operations. Therefore, there is no system performance monitoring.

Technical management responsibility may also be fragmented, either between sourcework and network managers or between segments of a supply system which contains more than one sourcework.

There is no unified planning and budgetary system for utilities, even at the governorate level. Existing accounting systems would not enable one to compare the efficiency of separate integral water supply systems, even if the data were available.

O&M finance is equally fragmented and primarily under central authority. Utility rates are controlled by the central government and thes revenues are largely transmitted to the central government where they are subject to inter-sectorial and inter-governorate transfers. Some of these consequences are that local councils have no incentive to collect revenues and that local utilities have no incentive to improve efficiencies.

- **There is no national standard set of geocodes, names of population settlements, administrative boundaries, and hierarchies.** We have documented in this report that the listings from the 1976 or 1986 census data from CAPMAS, the Central Agency for Popular Mobilization and Statistics (the "Census Bureau" of Egypt), did not match in many names or hierarchical jurisdictions the "common knowledge" in the governorates. The current system of geocodes and names (English and Arabic) developed by Chemonics for all twenty-two provincial governorates, available as a database and used for our work, is perhaps the most

complete set available. But it is at best an approximation

Two experiences support this assertion, one in Beni Suef governorate, and the other in Damietta governorate. The former dealt with the development of service access and delivery indicators. The latter, in Damietta, dealt with the development of a wastewater sector strategic plan.

The common element of these experiences in LD II-P is that governorates do not have access to nor do they have the resources to invest in basic data acquisition that is normally a "given" in other project environments or countries. Without a nationally-supplied framework of consistent names and codes for jurisdictions and basic population data at a suitable level of aggregation, LGUs lack a fundamental tool to determine who has or does not have access to basic services and where the pockets of need are. Local municipal services need basic data on housing and population characteristics to identify users's profiles, plan services accordingly, and delineate approppriate boundaries for their "service districts". Currently, these data are unavailable to them.

Authority devolution for local municipal services provision is undesirable at this stage.

If one accepts the analysis that the organization of local municipal services provision is perversely, albeit unintentionally, organized against institutional accountability and performance, then devolution of authority to local governments for these services is undesirable at this point in time.

Decentralization driven from the top will find LGUs without adequate management structures in place to cope with municipal service delivery.
The lack of performing, locally accountable municipal services organizations over which users have a sense of ownership and control is a fairly pervasive feature of the organizational landscape in Egypt. So is the lack of transparency of decison-making in Bab III capital budget allocations. Under these conditions, consumer indifference, apathy, or withdrawal are induced as rational, adaptive, individual behaviors.

From the management point of view, central control of municipal service provision has inhibited the development of viable, accountable local service delivery organizations. Devolution of authorities cannot be accomplished until these organizational requirements are in place at the local level.

Financial sustainability for local municipal service provision cannot be accomplished under the current organizational structures

Under the current organizational framework for local municipal services provision, the profound realities of meeting service provision costs have not been confronted at the local level, nor are they likely to be. Current systems of accounting do not produce meaningful cost center data. Except for our work in provincial Egypt, O&M plans and budgets are generally not based on technical requirements. Neither are these O&M costs assigned to meaningful enterprise level centers.

Although it is highly unlikely that local resources will suffice to make basic service delivery locally sustainable in the financial sense, the current structures perpetuate a system of dependency on external funding without incentives for LRM.

One may also add that unrealistic national standards, such as those embedded in Law No. 48, restrict the range of technologies for wastewater treatment and drive the cost towards unsustainability[5].

Independent professional associations do not articulate interests or foster professional development in local governance or management of municipal service delivery systems

In Egypt, unlike most of Central or South American countries, local mayors (markaz and city chiefs) are not organized in professional associations[6]. Thus, the organizational framework for exchanging experiences and solutions, debating problems, articulating common positions, etc., is missing[7].

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[5]The estimated funding requirements derived from the LD II-P tested technologies for wastewater treatment to meet these standards are staggering, especially if one were to apply them to countries such as India or China. Clearly, while more approppriate technologies need to be tested, there is a need for the donor community to engage in a policy dialogue with the GOE on these standards. As contractors, we have delivered the numbers to make this dialogue more meaningful.

[6]The articulation of local government interests in the Central American countries has now gone trans-national in the region, as judged by the recent *Declaration of Tegucigalpa* issued during the last meeting of provincial mayors in the region in the early spring of 1992.

[7]Markaz chiefs, as all executive officials in local government in Egypt, are nelected. Although this fact inhibits their organization in independent profssional associations, approppriate means to "professionalize" their role are also missing. That there is a need for such organization was demonstrated accidentally during our fourth cycle orientations in Ismailia wfor the first time, provincial markaz chiefs were gathered together. Many of the issues raised and discussed dealt with problems other than LD II-P.

Much the same analysis applies to water plant managers, O&M and HRD specialists, MIS personnel, and the whole array of professionals and technicians who could support local government. Although it is unrealistic to expect that the professional association landscape can change much in the short run, selected support of key such organizations can provide a more sustainable institutional anchor to the short-term nature of project interventions.

Fostering greater institutional pluralism through professional local government management associations remains a viable agenda for improving local governance in Egypt.

These broad conclusions of successful achievement of the project purpose as designed, the need for new project designs, the ineffective organization of local municipal services, the undesirability of authority devolution for local municipal services provision, financial unsustainability of the current system, and absence of independent profeesional associations of local government managers lead us to recommend a deep re-structuring of local municipal services organizations.

The remainder of this section outlines some of the key elements which, from our perspective, need to be considered for such an approach to be successful.

DESIGN ELEMENTS FOR IMPROVING LOCAL GOVERNANCE THROUGH MUNICIPAL SERVICES PROVISION

The recent Mission decision to fund a GOE- managed block grant system to finance the provision of basic infrastructure services offers an opportunity to re-direct limited Mission management and staffing resources to the achievement of more strategic goals and objectives. These objectives, applied to local governance could be stated as follows:

- Improved local governance: effectiveness and efficiency of LGUs, local citizenry voice and choice over the quantity and quality of their municipal services
- Improved institutional accountability and performance of municipal organizations providing services to provincial populations
- Improved technical and financial sustainability of local municipal services through their reorganization as *enterprises*

Key features of local municipal services organized this way, are that these *enterprises*:

- provide local consumers with a voice and choice over the quality and quantity of their municipal services
- are identifiable entities for the provision of the service, with clear agreements on benefits and costs between the entities and their clients or consumers
- once organized and running properly, they could seek legal charters as local public utilities, consumer cooperatives, private, or mixed enterprises
- provide a more generic model than the "utility" model for public divisible goods such as water and wastewater. The model, with the necessary adaptations, applies equally well to the management of rolling stock fleets for public works and maintenance facilities

The ***enterprise*** model of organization of local municipal services also requires changes in the ***operating environment.*** Sector policy planning and budgeting and finance mechanisms, quality standards and mechanisms of enforcement, standardization and bulk procurement mechanisms, etc.

Some of the necessary components to effect this reorganization have been initiated, tested, or are in use in LD II-P. Many more will need to be designed, tested, and validated through use. In the remainder of this discussion, we examine the applicability of the model to water systems, linked to what LD II-P has accomplished[8].

Application to the Water Sector

By the end of the project, nineteen provincial governorates had completed the consolidation of their LD II-P funded water subprojects into "systems." The many isolated subprojects financed through the four funding cycles were, in reality components of larger water systems. The consolidation exercise was initially designed to document the LD II Program investment and beneficiaries reached. For the first time we had the USAID investment in these systems but new questions emerged. What were the rest of the components in each system? What was their condition? Could these data be used to generate O&M and capital budget plans? What were their sources of funding? What was the BVS investment, if any, in these systems?

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[8]Our discussion is sketchy at best, given the nature of an end-of-contract report. Project Identification Documents (PIDs) and Project Papers (PPs) will need to refine, specify and document how these design considerations can be translated into well-defined projects.

The data on systems components, the fixed assets of the potential *enterprise* model were not available. This was a further manifestation that the concept of physical integrity of water systems as entities to be managed was not present. It was clearly beyond the scope of this contract and available level of effort, to undertake such a "system reconstitution" even at the inventory or asset level. Extensive database inventories, on the other hand, had been completed for all rolling stock in the provincial governorates. These inventories could become the fixed assets of markaz and governorate-level *enterprises* for this sector. And, in fact, there are incipient cases of this model in the Red Sea and Minya governorates.

Figure VII. 1 provides a rough sketch of the conceptual components (shaded area of the graph) of the *enterprise* model and its operating environment.

As an *enterprise* organized for municipal water provision, the organization would require:

- A statement of mission, objectives, organization, etc
- A management structure: organizational chart, job descriptions, functions, lines of authority etc
- Personnel: recruitment, policies, pay schedules and training
- An accounting system: chart of accounts, general ledger, accounts payable and receivables, capital assets, payroll[9], etc
- Capital and operating budgets;
- Plan of operations.
- Some form of oversight: by the popular and executive councils and/or citizens boards.

The system inventories become the fixed assets of the enterprise. Expansion, replacement, and maintenance of these assets, linked to a plan of operations and maintenance, provide the basis for the estimates of capital and O&M budgets proposed by the enterprise management to a board of consumers or citizens, as shown in the graph of Figure VII. 1. Also shown in the graph is the fact that user fees (the accounts receivable of the enterprise) relate to O&M and capital budgets. The extent to which the accounts receivable or user fees help meet the O&M budget requirements, or even the existence of such a relationship from user fees to capital budgets, are empirical questions likely to vary from system to system. For the first time, however, actual

[9]Salaries come under the Bab I budget line item and are frequently treated as "subsidies" at the local level.

measures of self-reliance (LRM) in meeting these budgets could be gauged.

The ***enterprise*** model, as shown in Figure VII. 1, addresses:

- the fragmentation of responsibilities for capital expenditures and O&M between central and local levels;
- the weak linkages between collected revenues and expenditures;
- the need for long-term planning and budgeting procedures at the local level

The essence of the ***enterprise*** model is that performance becomes a concern. The enterprise must "meet its budget" and operate successfully within its environment: keep its consumers (users) satisfied, yet keep costs down. It is forced to operate efficiently and effectively. System performance in terms of system efficiencies (cost per unit of output, water leakage, service continuity and pressure, etc.), service coverage of potential beneficiaries, etc., can be gauged and linked to an identifiable organization for accountability purposes.

Much work has been done along these lines on the village wastewater utility model under the wastewater program of LD II-P, including a verifiable set of indicators for progress assessment. This methodology of objectively verifiable indicators relies on an institutional framework of pre-requisites that must be met, or components that must be in place for successful operation. The methodology emphasizes **results** rather than project outputs as the acid test of interventions. (*Quarterly Progress Report-Chemonics*, January 1991)

Similarly, the water-billing program currently being installed by LD II-P in many sites through the fourth-cycle of funding becomes the cornerstone of the accounts receivable accounting module for an enterprise model organization of the water and wastewater sector. Our work in Beheira and Kafr El Sheikh on organizational structures and measures of system performance, respectively, fit here.

In terms of the ***environment*** in which these enterprises would operate, the revolving loan fund mechanism proposed and designed by Chemonics, or similar mechanisms, will need to be tested and refined to help finance the capital budget needs of these enterprises[10]. GOE

[10]There are many other alternative forms of asset ownership and capital fund raising that would need to be explored. Bonds, shares sold to

201

and foreign donor funds can be used to capitalize such a fund. The advantages of such a form of capital budget financing are well documented in our report, *Design of Revolving Fund for Local Capital Investments*. (December, 1991). In essence, the fund acts as a multiplier of financial resources and, through the interest rate setting for its loans, may choose different levels of "subsidy" to the enterprises. As enterprises have to pay back these loans, their financial management systems must be responsive and responsible.

In the long run, there is some hope for local financial sustainability under this system. We do not see such hope under the current system of dependency on the central government or direct foreign grants.

Future design work on improving local municipal services delivery systems will also need to address the roles of the governorate housing departments, governorate sector planning and budgeting mechanisms, and the role of NOPWASD. Functions such as quality assurance, enforcement of standards, standardization and coordination of procurements, etc. need to be explored as meaningful roles for these entities.

EPILOGUE

We have outlined some strategic mechanisms, processes, and institutions that need to be explicitly considered in future project design efforts to tighten the linkage between local capacities and decentralization. We have suggested that deep reorganization, "from the bottom up", is needed in the provision of local municipal services. We have also proposed that this reorganization should be carried out at the enterprise level and in the environment in which these enterprises would operate. We have also argued that this reorganization must precede decentralization, not the other way around.

The enterprise model also has the potential for <u>institutional accountability</u> at the local level. Viable enterprises have the potential of operating under market forces; a condition impossible to attain under the current system.

Furthermore, professional associations representing managers and technical specialists of these enterprises can form an important link in diffusing experiences, standards, professional upgrading, etc. At present, there are not enough suitable mechanisms to articulate these interests in Egypt.

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consumers, employee stock ownership plans (ESOPs), single or in combination, may be utilized.

Careful nurturing of institutional pluralism in this area could be designed.

Finally, we have suggested that local municipal service provision can be used to anchor interventions aimed at improving local governance. After all, citizen debate over local services of direct personal impact is the stuff that local politics is made of.

Lest it be thought that these broad strokes are exceedingly optimistic, we must humbly state that as technical contractors with over a decade of assisting the Mission and the GOE in provincial infrastructure development and decentralization, we are all too aware of the many pitfalls of implementation. Much careful thought and detailed analyses are needed to design sustainable programs and projects in this area. Much judgment and savvy will be required during implementation. This is essentially a political process where all actors must perceive that they are "winning" something in this process of institutional realignment of the sectors. And, undoubtedly some luck will be indispensable to capitalize on windows of opportunity during implementation. The rewards, however, are well worth the risks, considering the prevalent *malaise* of local municipal services provision in Egypt.

-207

Figure VII.1 THE "ENTERPRISE" MODEL APPLIED TO MUNICIPAL WATER SERVICE PROVISION

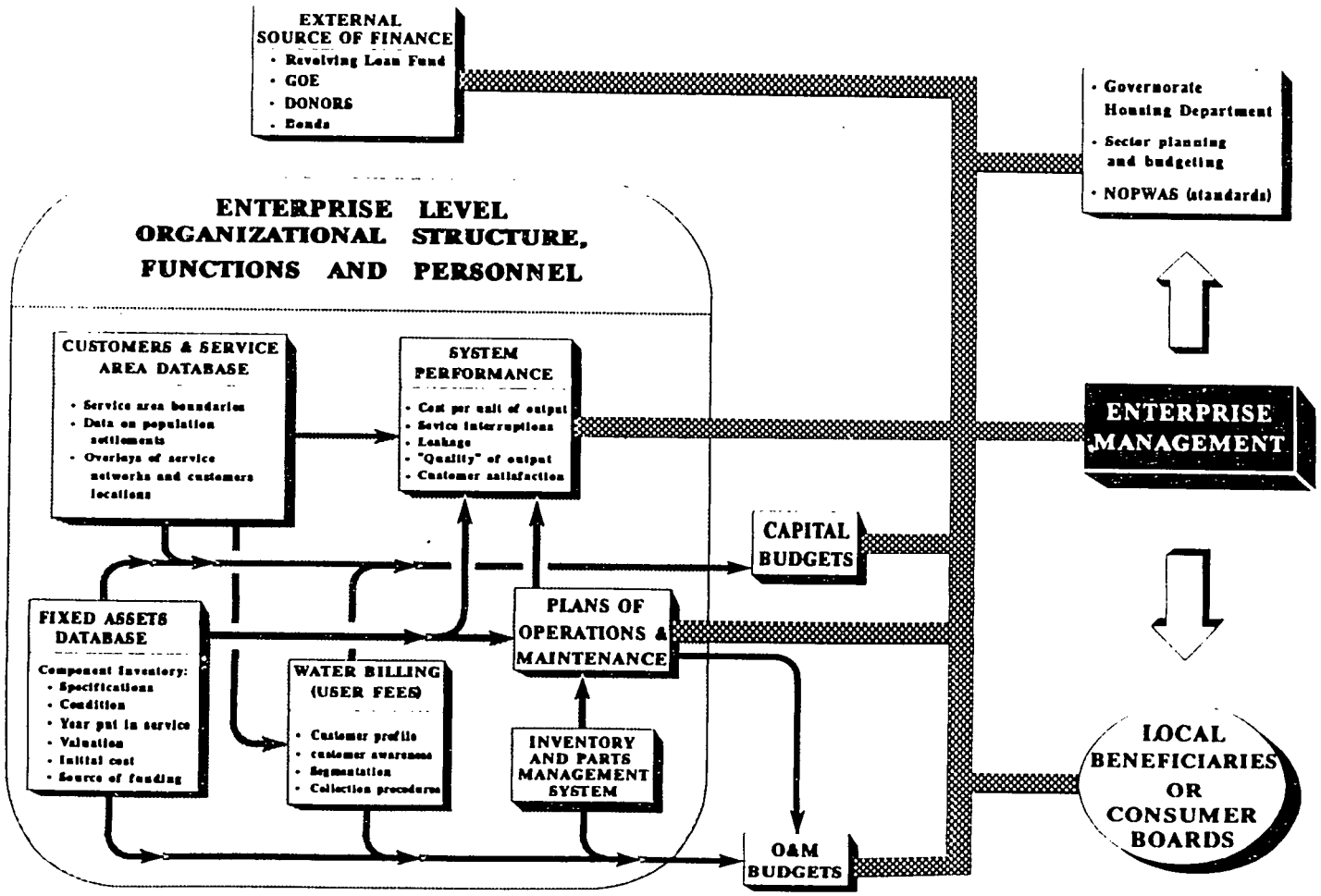

Table VII. 1

RURAL BENEFICIARIES OF LDII-P
(VILLAGE RESIDENTS ONLY)

GOVERNORATE	1990 ESTM. TOTAL POP.	1990 ESTM. RURAL POP.	AVERAGE BENEFICIAR INVEST.	Range (LE.) LOW	Range (LE.) HIGH	PERCENT SERVED
ASSWAN	898,500	541,771	47.7	17.1	234.4	92.5%
ASSYOUT	2,492,300	1,771,459	15.0	6.3	54.4	90.2%
BEHEIRA	3,651,700	2,757,763	10.5	3.8	82.9	91.4%
BENI SUEF	1,617,700	1,203,033	27.6	18.2	55.1	97.6%
DAMIETTA	831,000	613,506	43.5	20.8	178.0	91.1%
DAQAHLIYA	3,924,500	2,849,254	10.1	0.4	71.8	94.5%
FAYOUM	1,731,000	1,320,243	18.2	5.2	117.3	99.5%
GHARBIYA	3,218,700	2,150,266	15.3	6.1	72.2	99.1%
GIZA	4,148,300	1,743,848	14.5	1.1	37.4	96.6%
ISMAILIA	610,300	309,397	85.5	21.0	198.8	84.1%
KAFR EL SHEIKH	2,018,200	1,548,398	20.4	2.7	136.3	89.7%
MATROUH	180,000	87,792	136.4	10.8	1192.9	76.2%
MENUFIYA	2,496,900	1,966,569	14.0	8.6	37.5	99.6%
MINYA	2,968,800	2,322,586	11.1	6.5	31.4	99.0%
NEW VALLEY	127,700	70,250	160.0	57.8	414.3	100.0%
NORTH SINAI	192,300	73,052	158.1	80.4	1050.2	100.0%
QALUBIYA	2,818,800	1,567,804	18.0	2.2	75.8	100.0%
QENA	2,525,200	1,918,447	16.1	7.5	46.0	95.9%
RED SEA	101,500	14,377	297.3	43.0	7348.3	78.1%
SHARQIYA	3,834,500	2,986,309	11.2	2.5	55.6	94.7%
SOHAG	2,752,600	2,116,408	13.6	5.3	49.7	98.5%
SOUTH SINAI	32,500	19,399	90.9	25.0	968.1	40.6%
TOTALS OR AVERAGES	**43,173,000**	**29,951,931**	**17.3**	**0.4**	**7348.3**	**95.6%**

Notes: Estimates of 1990 population are based on 1986 national census using a 2.6 perecent rate of annual growth.
Average beneficiary investment is computed by dividing LDII-P allocations from 1986 through 1991 over the population for each village council.
There were 976 village councils in LDII-P.
The percent served is based on beneficiaries served in the rural population only. Thus, it is a conservative estimate of coverage.

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Table VII. 2

LOCAL DEVELOPMENT - II PROVINCIAL

CUMULATIVE TRAINING BY GOVERNORATE AND SECTION

NUMBER OF PARTICIPANT DAYS

FROM 01 - 04 - 1988 TO 30 - 09 - 1992

Governorate	NO. OF PARTICIPANT DAYS BY GOVERNORATE								TOTAL
	RS	LG - LF	EEG	BD	RD	PW	ADV. SEM.	IS - M&E	P/Ds
ASSWAN	497	132	0	242	80	91	0	557	1599
ASSYOUT	546	100	67	334	119	144	3072	816	5198
BEHEIRA	1005	148	826	404	359	156	2610	1002	6510
BENI SUEF	718	164	0	252	75	103	1758	868	3938
DAMIETTA	659	381	3805	245	97	94	1392	415	7088
DAQAHLIYA	904	490	549	417	138	97	3150	688	6433
FAYOUM	544	60	415	191	98	55	1560	268	3191
GHARBIYA	851	164	271	278	147	224	2142	402	4479
GIZA	555	56	265	278	108	77	0	428	1767
ISMAILIA	363	56	62	215	80	58	1272	1197	3303
KAFR EL SHEIKH	792	228	112	259	114	76	0	961	2542
MATROUH	311	68	0	246	77	41	1896	490	3129
MENUFIYA	611	100	805	280	132	101	0	232	2261
MINYA	917	68	226	249	114	113	2838	255	4780
NEW VALLEY	366	40	1152	140	58	40	864	379	3039
NORTH SINAI	503	92	0	227	56	48	1734	914	3574
QALUBIYA	695	80	225	214	90	146	0	286	1736
QENA	679	373	10	347	119	823	3312	304	5967
RED SEA	394	52	0	143	29	30	720	389	1757
SHARQIYA	817	116	244	384	88	112	3894	355	6010
SOHAG	847	192	0	408	127	120	3462	366	5522
SOUTH SINAI	674	116	425	159	46	53	990	355	2818
LUXOR	44	8	19	113	5	24	168	197	578
TOTAL	14292	3284	9638	6025	2356	2826	36834	12124	87219

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Table VII. 3

TRAINING COURSES DELIVERED BY SECTOR

ORIENTATION

COURSE TITLE	ACTIVITY P	ACTIVITY S	TIMES OFFERED	DURATION	No. of Participant Days by Governorate ASW	ASY	BEH	BEN	DAM	DAQ	FAY	GHA	GIZ	ISM	KAF	MAT	MEN	MIN	NEW	NSI	QAL	QEN	RED	SHA	SOH	SSI	LUX	TOTAL P/Ds
1st YEAR ORIENTATION PROGRAM			21	6	680	1146	1116	954	666	1332	894	894	864	402	1314	534	1398	1386	534	618	912	1290	510	1458	1328	0	0	20238
2 nd YEAR ORIENTATION PROGRAM			21	6	552	978	882	822	564	1146	804	870	738	318	1044	414	1200	1182	480	510	792	1122	468	1212	1182	0	0	17280
3 rd YEAR ORIENTATION PROGRAM			22	6	912	1764	1944	882	678	2052	942	1404	1266	540	1770	684	1464	1980	492	654	1164	1716	660	1404	1740	876	0	26988
4 th YEAR ORIENTATION PROGRAM			22	6	984	1134	1620	996	1032	1896	996	1236	930	738	1254	612	1404	1200	840	924	1098	1398	480	1482	1476	744	0	24444
TOTAL					3168	5022	5562	3654	2940	6426	3636	4404	3798	1998	5382	2244	5466	5748	2346	2706	3936	5526	2118	5556	5724	1620	0	88950

Note A VILLAGE COUNCIL WORKSHOP APPROUCH WAS TAKEN TO 1st CYCLE ORIENTATIONS INDIVIDUALS TRAINED BY THE CONTRACT IN TURN TRAINED ADDITIONAL COUNTERPART IN THE GOVERNORATE A TOTAL OF SOME 140598 WERE DELIVERED ORIENTATION TRAINING.

Table VII.4 LDII-P Achievements

ACTIVITY CAPACITY AREA	ACHIEVEMENTS	COVERAGE NO.GOVERN.
Planning		
Needs Assessment	-Sector strategic plans for water/wastewater	10
	-Sector strategic plans for roads	3
	-Sector development strategy statements for water, wastewater	22
	-Settlement survey of access to basic services	1
	-Geographical information systems techniques applied to integrated development planning	1
	-Village/town physical planning	4
	-Governorate Local Development Committees experienced in setting program priorities and allocations criteria	22
Project Planning	-Standards of project planning internalized through four planning cycles	22
	-Improved planning management through participation in advanced seminars	17
	-Governorate technical review committees capable of reviewing project plans	22
Operations and Maintenance		
Needs Assessment	-Inventories of infrastructure and equipment, and quarterly capacity utilization monitoring for equipment and water projects	22
Planning and Budgeting	-Local officials experienced in preventive maintenance programming estimation of materials and spare parts requirements through six O&M planning cycles	22
Implementation and Monitoring	-Quarterly reporting on plan implementation and expenditure	22
	-Service contracting for equipment maintenance and repair	14
	-Spare parts management systems operationalized	16
	-Village wastewater utility departments in operation	5
Local Resource Mobilization	-Transaction processing applications in use	15
Implementation		
Design	-More comprehensive and detailed project designs	22
	-Equipping of governorate and markaz technical departments with design and reference manuals for buildings, water, and wastewater projects	22
	-Increasing use of professional consulting firms for design of wastewater and large water projects	22
	-Demonstration of the relative capacities, efficiencies, and costs of five wastewater treatment technologies	
Contracting	-Greater understanding of GOE contracting law and procedures	22
	-Equipping of governorate and markaz technical departments with TORs and model contracts for water and wastewater projects	22
	-Increased confidence of local officials in contract management	22
	-Increased accountability of local private contractors	22
	-Local experience in managing large contracts	15

Table VII.4 LDII-P Achievements (Continued)

ACTIVITY CAPACITY AREA	ACHIEVEMENTS	COVERAGE NO.GOVERN.
Construction Supervision	-Equipping of governorate and markaz technical departments with construction supervision manuals for buildings, water, and wastewater projects	22
	-On-the-job training in construction supervision and increased confidence in dealing with contractors	22
	-Increased capacity to plan for and procure materials testing tools and equipments	3
	-Increasing use of professional consulting firms for construction supervision of large or complex projects	12
	-Model monthly project field visitation system listed and	1
Monitoring, MIS and Finance		
Project Monitoring Management and Finance	-Project monitoring procedures and practices in place	22
	-Automated project monitoring and reporting system fully operating at governorate level	22+Amana
	-Fund and cash management system and procedures in place	22
	-Governorate based site visit system	1
	-National sample site visit methodology and completed on-site survey of 750 projects	22
MIS	-Operators trained in spreadsheets, database utility, Arabic word processing, application development	22+Luxor
	-MIS operational plans	6
	-Local Revenue and Water Billing applications installed at more than 50 markaz sites in 15 governorates	15
	-GIS sytem operational	1
	-Procurement of new equipment and software through the MLA Amana	22+Luxor
	-Governorate procurements of computer equipment totalling more than 600,000 EP.	15

Glossary

BVS—Basic Village Services Project
CAPMAS—Central Agency for Population Mobilization and Statistics
DSF—Decentralization Support Fund
DSS—Decentralization Sector Support Program
GHD—Governorate Housing Department
GRD—Governorate Roads Department
GIS—Geographic Information System
GLDC—Governorate Local Development Committee
ILDC—International Local Development Committee
LGU—Local Government Unit
LD II—Local Development II Program
LD II-P—Local Development II-Provincial Project
LOE—Level-of-Effort
MIS—Management Information System
MLA—Ministry of Local Administration
MOP—Ministry of Planning
MOF—Ministry of Finance
NARB—National Authority for Roads and Bridges
NOPWASD—National Authority for Potable Water and Sanitary Drainage
O&M—Operation and Maintenance
ORDEV—Organization for the Reconstruction and Development of the Egyptian Village
OJT—On-the-Job-Training
PLDC—Provincial Local Development Committee
USAID—United States Agency for International Development
VC—Village Council
VPP—Village Physical Planning

210