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LEBANON WATER POLICY PROGRAM (LWPP)

FINAL REPORT

May 2002 – May 2007



March 2007

Development Alternatives, Inc.

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The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Table of Content

List of Acronyms	4
Chapter One	
Introduction	6
BACKGROUND	6
OBJECTIVES.....	6
APPROACH.....	7
Chapter Two	
Policy Making	9
PRIVATE SECTOR PARTICIPATION IN THE WATER SECTOR	9
Conduct situational analysis of stakeholders concerns and interests	9
Promote a common vision on PPP and sector restructuring	9
Build knowledge base through exposure to best practices in PPP	12
Identify and reach agreement on drivers of PSP.....	12
Evaluate options for private sector participation.....	13
Support the creation of a PPP support unit at the Ministry of Energy and Water....	13
Assist in implementing identified PPP options in the south	16
TARIFF STRATEGIES FOR WATER ESTABLISHMENTS IN LEBANON	17
Develop a framework for a National Tariff Strategy.....	17
Develop a tariff strategy for water establishments in Lebanon	18
ASSIST IN IDENTIFICATION, ANALYSIS AND RESOLUTION OF VILLAGE BASED WATER ISSUES.....	20
IMPROVING PARTICIPATORY APPROACHES IN WATER MANAGEMENT	22
Design friendly brochures/leaflets to be disseminated to subscribers	22
Design friendly material to be disseminated to SLWE partners/visiting organizations	22
Conduct different awareness activities in schools	22
Design awareness material targeting heavy consumers in the south	23
Chapter Three	
Institutional Strengthening	25
FACILITATE THE CREATION AND SUPPORT THE OPERATION OF THE REGIONAL TECHNICAL WORKING GROUP (RTWG)	25
REACH AGREEMENT ON INSTITUTIONAL REQUIREMENTS FOR SLWE.....	26
UNDERTAKE A SMALL SURVEY OF SERVICE LEVELS	26
BUSINESS PLAN FOR SLWE	27
Conduct strategic visioning effort leading to a business plan	27
Develop initial performance targets	28
FINANCIAL COST RECOVERY MODEL FOR SLWE	28
Examine national pricing policies using analytical tools developed for the water establishment in the south	28
Examine costs and revenues at the cost-center level and for various users	28
Design a regional water services pricing model for the south	30
Develop efficiency scenarios	31
Propose and assess scenarios for restructuring tariff	31

REPLICATING WORK ACCOMPLISHED AT SLWE IN OTHER WATER ESTABLISHMENTS	32
Business plan for BMLWE	32
Financial Cost Recovery Model for BMLWE	33
FINANCIAL AND ACCOUNTING SYSTEM (FAS) FOR SLWE	35
Business Process Mapping (BPM)	36
Redesign of the financial cycles - Business Process Reengineering (BPR)	37
FAS software: solution acquisition and customization	37
FAS hardware: procurement and installation	38
Go-live and FAS operation	39
Chapter Four	
Technical Assistance	41
CONDUCT HYDRAULIC ANALYSIS AND ASSETS ASSESSMENT	41
Asset Assessment and Hydraulic Analysis	41
Maps and digitizing	42
IDENTIFY INVESTMENT REQUIREMENTS AND DEVELOP ACTION PLAN FOR SYSTEM IMPROVEMENTS	42
PROCURE AND INSTALL PRODUCTION AND ZONE METERS IN THE SOUTH	44
Field survey to inspect locations	44
Procurement of production and zone meters	44
Installation of production and zone meters in South Lebanon	45
DEVELOP A WASTEWATER MASTER PLAN FOR SOUTH LEBANON	46
Procurement of services for the development of the master plan	46
Assessment of the current wastewater situation in Lebanon	46
Development of a GIS database	46
Development of South Lebanon Wastewater Master Plan	47
Investment plan and prioritization of projects	47
Chapter Five	
Capacity Building	50
BUILD COLLABORATIVE PLANNING AND NEGOTIATION SKILLS AMONG STAKEHOLDERS	50
COURSES IN ACCOUNTING, FINANCIAL DATA MANAGEMENT AND FINANCIAL MODEL USE	51
COURSE IN ENGLISH LANGUAGE	52
COURSE IN COMPUTER FOR OFFICE USE	52
COURSE IN MAINTENANCE TECHNIQUES AND GOOD PRACTICES	52
COURSE IN HUMAN RESOURCES MANAGEMENT	53
COURSE IN CLIENT SERVICE MANAGEMENT	54
COURSE IN GIS	54
COURSE IN WASTEWATER OPERATIONS	55
Chapter Six	
LWPP Events	56
LAUNCHING WORKSHOP – MARCH 2003	56
FIRST YEAR CLOSING SEMINAR – SEPTEMBER 2003	57
SECOND YEAR CLOSING SEMINAR – SEPTEMBER 2004	59
YEAR THREE CLOSING SEMINAR – SEPTEMBER 2005	61
YEAR FOUR CLOSING SEMINAR – MARCH 2007	62

Chapter Seven

Obstacles, impacts and recommendations	63
OBSTACLES AND CHALLENGES	63
Lack of a clear vision regarding PPP in Lebanon.....	63
Lack of personnel	64
Lack of accurate operational data in the water establishments	65
Lack of accurate financial data in the water establishments due to obsolete financial systems	65
Manual records and lack of computerization.....	66
Lack of local firms specialized in the development and implementation of financial and accounting systems	66
Lack of commitment from BMLWE	66
VAT and custom problems associated with the meters.....	67
LWPP ADDED-VALUE	67
LESSONS LEARNED	68
Keys to success.....	68
Things to avoid.....	69
RECOMMENDATIONS AND NEXT STEPS.....	69

List of Acronyms

ABA	Allied Business Advisors
AFD	Agence Française de Développement
ALLC	American Lebanese Language Center
AWWA	American Water Works Association
BMLWE	Beirut/Mount Lebanon Water Establishment
BOD	Board of Directors
BOO	Build Own Operate
BoQ	Bill of Quantity
BPM	Business Process Mapping
BPR	Business Process Reengineering
BWA	Beirut Water Authority
BWE	Bekaa Water Establishment
CAPEX	Capital Expenses
CAS	Central Administration for Statistics
CDR	Council for Development and Reconstruction
CEO/DG	Chief Executive Officer / Director General
COA	Chart of Accounts
COP	Chief of Party
CSM	Client Service Management
DAI	Development Alternatives, Inc.
DAM	Dar Al Mouhassabah
DG	Director General
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FAS	Financial Accounting System
GIS	Geographic Information System
GM	General Manager
GoL	Government of Lebanon
GPS	Global Positioning System
H.E.	His Excellency
HRM	Human Resources Management
HRMS	Human Resources Management System
IAS	International Accounting Standards
IRM	Information Resources Management
ISO	International Standards Organization
IWRM	Integrated Water Resources Management
JAA	Jleilaty Accountant and Auditors
IAS	International Accounting Standards
IP3	Institute for Public-Private Partnership
ISDN	Integrated Services Digital Network
IT	Information Technology
ITEC	Information Technology Engineering and Consulting
LAN	Local Area Network
LAU	Lebanese American University
LRA	Litani River Authority
LWPP	Lebanon Water Policy Program
MDS	Middleware Data System
MEW	Ministry of Energy and Water

MoSA	Ministry of Social Affairs
MOU	Memorandum of Understanding
MP	Member of the Parliament
MS	Microsoft
MSC-IPP	Management Support Consultant – Investment Planning Program
N/A	Not Applicable
NGO	Non-Governmental Organization
NLWE	North Lebanon Water Establishment
NSC	National Steering Committee
O&M	Operation and Management
OPEX	Operational Expenses
PC	Personal Computer
PIP	Performance Improvement Program
PM	Program Manager
PPP	Public-Private Partnership
PSP	Private Sector Participation
REK	Rafic El Khoury and Partners
RfP	Request for Proposals
RTWG	Regional Technical Working Group
SLWE	South Lebanon Water Establishment
TDST	Tariff Decision Support Tool
TNA	Training Needs Assessment
ToR	Terms of Reference
UNDP	United Nations Development Program
UPS	Uninterruptible Power Supply
USA	United States of America
USAID	United States Agency for International Development
VAT	Value Added Tax
WAN	Wide Area Network

Chapter One

Introduction

BACKGROUND

The Lebanon Water Policy Program (LWPP), funded by the United States Agency for International Development (USAID), is an ambitious program working on sensitive policy and financial issues related to public private partnerships, water utility management and tariff pricing at the national and local levels.

During its four years of operations (September 2002 – March 2007), LWPP worked at both the national and regional levels with the Ministry of Energy and Water (MEW) and Lebanese water establishments to provide assistance in the following four areas: (1) technical assistance; (2) institutional strengthening; (3) policy making and; (4) capacity building.

Close coordination took place between the program, the funding agency and the beneficiaries to make the best use of the tools provided by the program and maximize results. LWPP pursued a demand-driven approach based on continuous communication with the beneficiaries to assess their needs and adapt operations. This was the major reason to increase the credibility of the program in the eyes of the beneficiaries, especially during the critical change period in the water sector following the approval of the by-laws of the newly formed water establishments.

OBJECTIVES

The main objectives of LWPP are to identify the needs of the water sector in Lebanon and increase efficiency. In particular, LWPP identified the following specific objectives:

- Provide opportunities to key decision makers in the GoL to assess best practices in sector reform and appropriate water policy options;
- Assist the GoL in creating a consensus for the most suitable approaches for private sector participation and related water sector reform;
- Assist the Water Establishments in implementing PPP options and efficiency models for costing water services;
- Strengthen newly formed water establishments;
- Assist the SLWE in proper accounting for water produced;
- Assist the SLWE develop a wastewater master plan for its service area.
- Encourage local level participation in water management and promote water accountability culture through facilitated agreements and awareness.

APPROACH

The rapidly changing developments in Lebanon's water sector – including decentralization, institutional restructuring, private sector participation, and renewed concern about resource mobilization – require informed decision-making, utmost flexibility, and consensus on the best course of action by key stakeholders.

It was essential that the senior officials in the Ministry of Energy and Water have a thorough understanding of the issues involved in selecting the proper approaches to sector reform since they are the central players in water policy reform. At the same time, the four recently established regional water establishments now manage their own affairs, in most aspects, at an operational level. This responsibility makes them key actors in preparing for private sector initiatives in the water and wastewater sector. The work of preparing for and designing approaches needs to focus on both the national and regional levels – for policy at one and operations at the other.

The Lebanon Water Policy Program worked closely with the Ministry of Energy and Water and the regional Water Establishments on the development of scenarios for pricing water services, business plans for the South and Beirut/Mount Lebanon Water Establishments and on defining and implementing a realistic PSP strategy. The program provided also technical expertise for the development of a wastewater master plan for South Lebanon and the supply and installation of production and zone meters in the south based on a water optimization plan to reduce the current number of wells. In pursuing the above, LWPP adopted an approach that includes the following specific elements:

- The core of the program is collaborative planning which is based on a partnership among the Ministry of Energy and Water, the Water Establishments, and the technical consultant team.
- The program is results-oriented, built on practical goals and clear products agreed on by the partners.
- It is built on a careful examination and analysis of the situation, taking into account the concerns and interests of all stakeholders.
- The success of the program required the participation of a broad range of stakeholders at the national, regional, and local levels so that the agreements reached on policy and operational issues are sustainable, honored, and foster a smooth future course of action for the partners.
- The role of the technical consultant team was to facilitate the process, introduce outside best practices, and provide technical guidance which will lead to the development of an appropriate approach to private sector participation, sector reform, and financial viability.
- The program operated at both the national and regional levels, using experiences in one regional water establishment to help guide or correct efforts in other regions, and ensure that information flows regularly between them so that field operations inform and improve policy reform.

- The program seeks to prepare the Water Establishments institutionally and financially for an appropriate future course of action. The collaborative planning approach created a flexible process which permitted implementation to evolve along the most desirable and reasonable lines.

Chapter Two Policy Making

The policy making component is mainly at the national level, except one activity at the regional level. At the national level, it includes several activities related to Private Sector Participation (PSP) in water management, water tariff strategies, collaborative planning and conflict resolution. At the regional level, it focuses on SLWE and includes awareness activities conducted by LWPP on water conservation.

PRIVATE SECTOR PARTICIPATION IN THE WATER SECTOR

During its four years of operation, LWPP built a knowledge base for PSP in the water sector in Lebanon. The program started this activity through meetings and consultations with different stakeholders involved in the water sector to better understand their interests and concerns and accordingly proceed with the increasing awareness on PSP through workshops, seminars, and study tours to other countries with previous experience in this field.

Conduct situational analysis of stakeholders concerns and interests

The first task under this activity was the assessment conducted by the program's national expert, Mr. Monir Bu Ghanem, on the interests and concerns of stakeholders towards PPP issues and tariffs. The work was conducted over a period of three months where Mr. Bu Ghanem visited all the important political poles in the country, mainly those who are influential in the south. The cornerstone of this assessment was the involvement of major stakeholders in the planning and implementation of new initiatives by building consensus and facilitating agreements on important water policy issues and decisions. The assessment aims at identifying the major interests and concerns of key stakeholders in issues related to water management in the South. It assists LWPP to identify common interests and common concerns regarding the program options for PPP, and to understand more agreements and disagreements among concerned parties and help design the program activities.

Bu Ghanem's work was presented in a detailed [report](#) on the interests and concerns of the stakeholders that served as a starting point in orienting the introduction of PPP.

Deliverables

- Detailed report on the interests and concerns of the stakeholders.

Promote a common vision on PPP and sector restructuring

Following the assessment of the stakeholders' concerns and interests with regard to PSP, the program's international expert, Mr. Philip Giantris, initiated the work to promote a common vision on PPP in Lebanon and the role of the private sector in the provision of water supply and wastewater services. The objectives of this activity can be summarized as follow:

- Build awareness and consensus around the concept of Private Sector Participation amongst the broadest range of stakeholders.

- Provide answers to the questions of the public sector's stakeholders regarding PSP options and the impact on public policy.
- Communicate factors to consider and approaches to involve the private sector in the provision of water supply and wastewater services.
- Assist LWPP in drawing the best possible conclusions on major problems to be tackled when addressing the introduction of PSP into the Lebanese context.

Accordingly, intensive meetings were scheduled by the LWPP team, with the help of Mr. Bu Ghanem, with the different political poles in the country covering the Prime Minister's Office and related MPs and the Speaker of the House office and related MPs ([photos](#)). In addition, intensive meetings were also held with Ministry Officials mainly Director Generals as well as Director Generals of the four Water Establishments ([minutes of meetings](#)). During those meetings Giantris was on one hand learning, at the initial stages, the level of understanding of PPP among the different groups he was meeting and on the other hand, he was exposing to those groups his knowledge and experience about PPP through a tailor made [presentation](#).

Following the meetings and the discussions held with the LWPP team and Monir Bu Ghanem, it was decided that we need to organize a discussion session at the parliament that would contribute to building a common vision on PPP. However, due to political constraints and other considerations taking place at the same time in the country, the session was called off by Speaker Berri.

The follow up was maintained with the Program National Steering Committee members with whom meetings were arranged individually, namely with the Minister, the two Director Generals of the Ministry of Energy and Water (Mr. Hachem and Dr. Comair), the director of the overseeing at the Ministry, Mr. Mahmoud Baroud and the CEO/DG of the SLWE, Mr. Ahmad Nizam.

The work on this task was carried out during the second year of the program. Meetings were organized with different actors in Lebanon working on the Public Private Partnership process in the water sector

- Meeting with the AFD
- Meeting with the European Commission Delegation
- Meeting with CDR Vice President

In addition, a courtesy visit was arranged to Fadi Fawaz, at Prime Minister's office, in order to put him in the picture on the progress achieved by LWPP in the PSP outreach strategy. To support his work Philip Giantris prepared a detailed Memo on the best strategic approach for building awareness on PSP given the present political situation ([Giantris Memo](#)). This task witnessed a very active field work in preparing and delivering seminars to targeted professionals covering the following:

- Lebanese Association for Certified Public Accountants ([presentation](#))
- Order of Engineers ([presentation](#))
- Lebanese Press Order ([presentation](#))
- Economic and Social Council ([presentation](#))
- Syndicate of employees of the water authorities in the north ([presentation](#))

All the above events had a good share of medial coverage by local newspapers ([sample media coverage](#)).

These groups were chosen to initiate a dialogue among the widest possible stakeholders who might play a direct role in the PSP process or can indirectly impact the PSP process. Events organized during the months of February and March 2004 were documented and compiled in one common report submitted to USAID mission ([Feb.04 seminars](#) & [March Seminars reports](#)).

Round table discussions were also organized with leading parliamentary groups from the south as well as other parliamentary committees and individuals ([final presentation for this task](#)).

PPP is a very hot issue now in the country in different sectors. Even though the water sector is not on the top priority list compared to cellular phones and electricity, it is important to note that there are many international actors entering the scene in order to provide assistance to this sector, in the form of funding and technical know-how in an attempt to pave the way for PPP introduction. The World Bank is the leader among the international players interested in the water sector.

Following the meetings and discussions with the stakeholders, Giantris noted the following observations to be taken into consideration:

- Lebanon must set performance standards and targets that can be achieved, and then implement them.
- Water infrastructure investment decision making and management must be de-politicized and put more in the hands of professionals.
- Water utilities must be commercialized and operated as self-financed enterprises whether public or private.
- Private sector involvement in the water sector must increase.
- Review and revise existing laws and regulations that may be a barrier to private sector participation, to allow a greater transfer of risk to the private sector.
- Strongly consider and allow for capital participation and investment risk assumption on the part of the private sector service provider.
- Increase the capacity of the government and public authorities to conduct rational, transparent procurement processes for Private Sector Participation
- Increase the capacity of the government and public authorities to monitor and administer contracts.
- Increase the utilization of consulting experts to provide advice when considering private sector delivery of public services and in structuring transactions.

Deliverables:

An awareness program on PPP in the water sector through meetings and round-table discussions with the following parties:

- The Prime Minister's office
- MPs
- Donor agencies
- CDR
- Economic institutions in Lebanon:
 - Lebanese Association of Certified Public Accountants
 - Order of Engineers
 - Lebanese Press Order

- Economic and Social Council
- Syndicate of employees of the water authorities in North Lebanon

Build knowledge base through exposure to best practices in PPP

In addition to the above, the program team worked very hard, during the course of its first phase, to cover a good portion in building a knowledge base on PPP among key decision makers and government officials. Four study tours were organized for senior and middle management government employees involved directly in the water sector. The study tours were consecutively organized in April and May 2003, and February and August 2004 with destination [Morocco \(report\)](#), [Tunisia-Morocco \(report\)](#) and [Jordan 1](#) and [Jordan 2 \(February report and August report\)](#) respectively, where actual implementation of Public-Private Partnership in managing water services was very successfully introduced.

Complementing the study tours, the LWPP team was assisted by the international consultant, Mr. Philip Giantris, in further enriching the knowledge base of those decision makers and government officials at all levels. Accordingly two seminars were organized for this purpose on [June 19 \(report\)](#) and [July 30 \(report\)](#) 2003 where Mr. Giantris presented the theory of PPP and its implementation supported by actual facts and examples currently running world wide. Mr. Giantris was able to contribute substantially to this knowledge building exercise due to his personal involvement in many Private Sector procurement processes.

The program introduced a new approach to further enhance local capacities in PSP knowledge, by sending participants to professional courses on PSP at the IP3 Institute in Washington, DC. Ahmad Nizam attended a 2-week course from August 9th to 20th, 2004 entitled “**Public Private Partnership (PPP) Policies and Strategies**”. ([material given at the IP3](#))

Along the same lines of building capacities, Ahmad Nizam was also invited to attend the Manila workshop on “**Innovative Water and Wastewater Financing Workshop for the Asia and Near East Region**”, intended, as its title indicates, to introduce innovative financing tools for water and wastewater initiatives.

Deliverables:

- Study tour to Morocco
- Study tour to Morocco – Tunisia
- Two study tours to Jordan
- Training at the IP3 institute in Washington to the CEO/DG of the SLWE and participation in the Manila workshop on “**Innovative Water and Wastewater Financing for the Asia and Near East Region**”.

Identify and reach agreement on drivers of PSP

Following the series of activities related to PSP at the national and regional levels, LWPP, assisted by its international consultant, Philip Giantris, agreed with the SLWE management towards the introduction of some form of PSP. The second phase of LWPP

focused on this issue to drive the SLWE towards introducing the private sector to the management of well defined services.

Evaluate options for private sector participation

The work under this task was developed by a national legal expert, Issam Issmail, who compiled the existing legal texts ([Index of Laws](#)) that could support or hinder any PSP intervention in the south. Consequently, the legal expert finalized and presented a complete compilation of all legal texts ([compilation document](#)) related to water, wastewater and sector privatization. Following the compilation work, the expert presented a legal analysis ([legal analysis study](#)) in this respect showing how the texts can allow such a move and what laws do support this initiative. The major conclusions that resulted from this work are summarized as follows:

- Complete harmony between PSP and the Lebanese economic system.
- Water being a public domain does not exclude the possibility of PSP.
- Constitutional decision # 4/2000, dated 22/6/2000 stated that it is possible to privatize public utilities under 3 conditions:
 - Any PSP should be conceived through a special law
 - Any PSP should primarily serve public interest
 - Any PSP should be concluded against a fair remuneration

Consequently, water being a public property does not mean that it cannot be privatized, and public utilities managing water sector are investment utilities and not administrative or constitutional utilities.

However, the study did point out few obstacles that might cause difficulties in introducing PSP. These obstacles are summarized in the following:

- Multiplicity of institutions working in the water and wastewater sectors.
- Unclear Water pricing.
- Legal and illegal water uses.
- Legal framework in the water sector.

Deliverables:

- Index of laws and regulations related to the water sector and privatization in Lebanon

Support the creation of a PPP support unit at the Ministry of Energy and Water

LWPP carried on the PPP activities during its second phase through the creation of a PPP support unit at the Ministry of Energy and Water. Following the ministerial decision for the nomination of MEW staff as members of the PPP unit, the expert under this task, Philip Giantris, started preparing an assessment sheet that was filled by each member of the unit. The sheet constituted a first evaluation of the members' qualifications based on their current positions within the MEW and the water establishments, their previous experience in PPP and their English and computer skills ([assessment sheet & results](#)). LWPP then conducted three training sessions for these participants.

First training for the PPP support unit

As a second step, LWPP conducted a series of presentations ([photos](#)) for 21 employees from the MEW and water establishments between December 6 and December 10, 2004 ([agenda](#) and [list of participants](#)). The presentations covered the following subjects:

- General overview on PPP ([English](#), [Arabic](#)).
- PPP options and applications ([English](#), [Arabic](#)).
- Essential elements of PPP procurement process ([English](#), [Arabic](#)).
- Essential elements of PPP negotiation process ([English](#), [Arabic](#)).
- Essential elements of PPP monitoring compliance under PPP contracts ([English](#), [Arabic](#)).

Following these sessions, Giantris updated the [staff assessment summary table](#) to select the initial candidates for the PPP support unit. A detailed [report](#) on the minutes of this session was also prepared and submitted to USAID.

Second training for the PPP support unit

A second training session took place between January 31 and February 11, 2005 covering “Laws and Regulations Governing PPP in Lebanon”, “Financial Analysis and Performance Indicators in Evaluating PPP Contracts” followed by a workshop on selected PPP case studies from other countries ([agenda](#) and [list of participants](#)).

The training started with two sessions given by Ahmed Al Azzam and Nabil Chemaly ([photos](#)) to present the financial cost recovery model as a tool for analyzing the financial situation of the water establishments and for the evaluation of PPP contracts ([presentation](#)). Another session was given by the legal expert on the program, Issam Ismail, presenting the legal basis for PPP in the water sector, as well as the legal and administrative procedures to implement PPP in Lebanon ([material presented](#)). Finally, two sessions were conducted under the direct supervision of Philip Giantris to analyze three case studies on PPP: a joint venture in Cartagena, Colombia ([English](#), [Arabic](#)), a management contract in Gaza, Palestine ([English](#), [Arabic](#)) and a BOO contract in Sydney, Australia ([English](#), [Arabic](#)). Clear [guidelines](#) for the analysis of these case studies were prepared by Giantris, and translated into Arabic by the program team.

The participants formed three groups and a case study was assigned to each group ([participants assignment to case studies](#)) to analyze and prepare a presentation ([participants' conclusions](#)) showing the context of PPP, the tendering process, risk sharing and management, the contract performance and the lessons learned from the case study. The case studies exposed the participants to different types of PPP options in different contexts, and the (positive or negative) results obtained from these contracts. After analyzing the case studies, the participants had to share their comments and compare the different options and results. Finally, during the last day of this training, Philip Giantris gave a wrap up presentation summarizing the key features of the PPP options detailed in the three case studies, the risk management and the lessons learned (wrap up presentation in [English](#) & [Arabic](#)).

This training (1) prepared the participants to be able to use the cost model as a tool for financial analysis and as basis for decision-making, (2) provided awareness on existing

laws and regulations that will affect decision-making process, and (3) introduced success stories from around the world. As a result, the [trainees' assessment sheet](#) was updated based on the analysis and the presentations prepared by them. The number of candidates was reduced from twenty-five to fourteen, which will allow for more focused trainings and better preparation. A [report](#) on this training was prepared as well by LWPP and submitted to USAID mission.

Third training for the PPP support unit

After thorough discussions with USAID and the beneficiaries, LWPP decided to slow down the assistance for the creation of the PPP support unit. This was due to the unstable situation in the country and the unlikelihood of getting a commitment from the MEW concerning the creation of a task force to follow up PPP issues. In the current ministry's [organigram](#), a PPP unit is nonexistent, and is not expected to be established in the near future. Even if the participants are not expected to start preparing tender documents for PPP cases immediately, we believe that the added value of the trainings will show on the long run. A third training session was therefore conducted in April 2005 ([photos](#)) to present PPP case studies from Lebanon to continue momentum of the work previously done with the candidates ([list of participants](#) & [agenda](#)). The training was led by the program director, Bassam Jaber, and the presentations were given by practitioners from the MEW, CDR and Ondeo-Liban highlighting the obstacles and challenges regarding the following PPP contracts:

- O&M contracts prepared by MEW – Eng. Yasser El Hajj Sleiman - MEW ([Arabic presentation](#))
- Tripoli management contract, management perspective – Eng. Amer Faydallah – CDR ([Arabic presentation](#))
- Tripoli management contract, operator perspective – Mr. Jean-Claude Seropian – Ondeo-Liban (presentation [Arabic](#))
- Service contract for O&M of water and sewerage in the Baalbeck – Nabi Chit region – Zuhair El Hassan – CDR (presentation [English](#) & [Arabic](#))

A wrap-up session led by Mr. Jaber highlighted the differences between the different PPP options presented to propose recommendations for future PPP applications and a list of performance indicators to be used for evaluating and monitoring such contracts. A [report](#) on this training session was prepared by LWPP and submitted to USAID.

Following this last training session, no activity has been undertaken under this task. USAID, the SLWE and LWPP agreed to keep all activities related to PPP on hold due to the absence of a clear vision regarding PPP in the country. However, the language in the statements made by Dr. Fadi Comair at the Water Sector Reform Workshops prior to the Paris III meeting continue to speak of PPP as an accepted policy of the GoL. Dr. Comair's statements include such key points as:

- Establishing a new concept of Private Public Partnership for managing the water sector.
- Ensuring that Operations & Maintenance (O&M) of the water supply and sanitation services are contracted out to private operators.

In light of this, and possible conditions that could be placed by the donors on the significant funds coming from the Paris III meeting, the Ministry (GoL) should commit to create the PPP Support Unit that was started in 2005.

Deliverables:

- Three training sessions for the potential PPP support unit at the MEW

Assist in implementing identified PPP options in the south

Outsourcing of FAS management

Parallel to the assistance provided by LWPP for the creation of a PPP support unit at the MEW, the program started working with the SLWE to identify opportunity areas for potential PPP interventions based on the [PIP](#) mentioned in the business plan prepared for SLWE (see the institutional strengthening component). Several meetings were held between LWPP management and SLWE management to identify potential opportunity areas for PPP interventions and prepare justification documents to be presented to the overseeing body. The most suitable area for private sector intervention was the management of the newly developed financial and accounting system for the SLWE (see the institutional strengthening component). Accordingly, LWPP facilitated the preparation of a [mutual agreement](#) between the SLWE and ITEC, an Oracle JD Edwards certified company in Lebanon to manage the FAS. ITEC/eDimension was responsible for the supply and implementation of the FAS software and will provide 18 employees, 15 for accounting and finance and 3 for IT to manage the system. This contract is fully funded by the SLWE.

Propose amendments to existing legal texts related to the water sector and privatization

As mentioned under the activity entitled “Evaluate options for private sector participation” above, the program’s legal expert, Issam Ismail, reviewed all legal texts related to the water sector and privatization during the first phase of LWPP. He compiled all these texts in a comprehensive study that was distributed to all concerned parties to get their feedback. Following this review, Ismail started identifying the gaps of the existing laws related to the water sector and also the missing links between these laws and privatization laws. Once these gaps have been identified, LWPP proposed amendments to these legal texts to facilitate the private sector involvement in water management, taking into consideration the international conventions signed by Lebanon. Once the proposed amendments to existing legal texts are complete, the program distributed these laws and regulations to all concerned stakeholders and arranged meetings and work sessions with them to get their feedback and make sure all interests and concerns have been addressed. The list of concerned parties includes but, is not limited to, the following:

- The Ministry of Energy and Water
- The Ministry of Environment
- The Ministry of Public Health
- Water Establishments
- The Higher Council for Privatization

Accordingly, Issmail included all the comments in the proposed [amendments to legal texts](#). The following are the major two results of this task:

- A general legal framework to allow the GoL different forms of PSP contracts in the provision of water supply and wastewater services and the modification of all legal texts hindering PSP.
- Preparation of a project decree – “legal framework for PSP contracts in water supply and wastewater services” including details related to the procurement process (preparation of tender documents, evaluation of proposals, contract awarding and preparation, negotiation, and monitoring).

This document constitutes a tool for the MEW during the modification of its current organizational structure and for the modification of all laws and regulations related to the preparation of tender documents for the procurement of private operator’s services in the provision of water supply and wastewater services.

Deliverables:

- Outsourcing contract for the management of the newly developed FAS for SLWE
- Amendment to legal texts related to the water sector and privatization

TARIFF STRATEGIES FOR WATER ESTABLISHMENTS IN LEBANON

Develop a framework for a National Tariff Strategy

Another important activity under the policy making component of LWPP was the development of a tariff strategy for water establishments in Lebanon. During the first phase of LWPP, the work of the expert under this activity, Roger Melki, was limited to the development of a framework for a tariff strategy in Lebanon based on meetings and contacts with other experts on the program, mainly Ahmed Al Azzam and Philip Giantris, and contacts inside the MEW. Repetitive meetings took place with the Director Generals of the MEW, Mr. Hassan Hachem and Dr. Fadi Comair to ensure the incorporation of the thoughts and visions of senior government officials in tariff strategies. Other meetings at lower level as well were organized in order to collect as much information as possible on the actual situation and the system used for the current tariff settings. These meetings also helped gathering statistical data and trends on tariffs in Lebanon.

Outside the ministry, Melki met more than once with the Ministry of Finance, mainly the advisors of the Minister, to discuss tariff strategy matters and components covered under the framework. This whole process was accompanied by regular meetings and orientation sessions between Melki and the LWPP team. Melki presented the results of his work in a [detailed study](#) that incorporates the entire framework of the National tariff Strategy.

Following USAID mission recommendation, work was reoriented during the second year of the program to focus on the south. Roger Melki started the work by conducting meetings with experts and with the CEO/DG of the SLWE for the proper identification of the scope of the South Tariff Strategy. In addition, regular meetings took place with program financial experts on financial data reconciliation between the figures used for

developing the tariff scenarios and the financial cost recovery model (see the institutional strengthening component).

To develop the regional tariff strategy, the expert began with an assessment of the current situation in the South. He then identified the major components of the tariff strategy and presented his results in a detailed Tariff Strategy report for the South ([Strategy Report](#)). He proposed different scenarios based on realistic assumptions which rely on the financial data provided by LWPP and compiled in the business plan.

The different scenarios were presented, discussed and finalized with the CEO/DG of the SLWE, Ahmad Nizam ([scenarios](#)). Major work was being done to coordinate the different financial figures used under three different program outputs namely the business plan, the financial cost recovery model and the financial tariff strategy scenarios.

The new tariff scenarios were based on tariff blocks identified and analyzed using the financial cost recovery model. The following table shows the impact of each of the identified tariff scenarios on the cost recovery percentage of the Establishment ([final presentation for this task](#)).

Table 1. Cost recovery for the different scenarios – South Lebanon Water Establishment

	Number of subscribers	Water consumption in M3 per year	Total billing / year in LL	Total Collection in LL (Collection rate 65.9%)	Cost recovery of Operation and Maintenance charges	Cost recovery of Total charges
Current situation	115,558	44,799,318	25,249,210,770	16,647,212,403	61.7%	57.6%
Scenario A	115,558	30,132,907	32,068,748,307	21,143,443,629	78.3%	73.1%
Scenario B	115,558	30,132,907	35,049,682,764	23,108,821,854	85.6%	79.9%
Scenario C	115,558	30,132,907	38,030,617,221	25,074,200,080	92.9%	86.7%
Scenario D	115,558	30,132,907	41,011,551,678	27,039,578,306	100.2%	93.5%

Deliverables:

- Water tariff strategy and tariff scenarios for the SLWE.

Develop a tariff strategy for water establishments in Lebanon

During its second phase, LWPP initiated the work on this activity by conducting several meetings with the CEOs/DGs of water establishments in Lebanon, mainly in the North, Bekaa and Beirut/Mount Lebanon, as well as with Ondeo-Liban working under the Tripoli water supply. The objective of these meetings was to present the work LWPP intends to execute for feedback. Following the meetings, the expert under this task, Roger Melki, prepared a questionnaire that was distributed to all water authorities forming these establishments to collect data such as the number of subscribers, the total annual expenses and revenues, etc. for the development of different tariff scenarios ([questionnaire](#)).

Due to the disparities in the quality of data provided by the different water authorities, Melki relied on the data in hand to make projections. After compiling all the data already collected, Melki and the LWPP team met with the CEOs/DGs of North Lebanon, Bekaa and Beirut/Mount Lebanon Water Establishments, as well as with the GM of Ondeo-Liban to discuss the data and the assumptions made and get their feedback ([data sheets](#)). Team members met also with senior staff from the Ministry of Finance to present the program's work under the National Tariff Strategy.

A meeting was held with USAID in July 2005 to present the methodology adopted for the development of the tariff scenarios based on previous experience in the South. A presentation was given in the presence of USAID's Mission Director, Raouf Youssef, to show the objectives of this task, the methodology adopted, sample financial results in the South as well as the obstacles and challenges faced ([presentation](#)). Accordingly, this activity has been redefined in a more result-oriented way showing that the tariff scenarios can serve the establishments' decision-makers as management tools supporting their decisions (**Tariff Decision Support Tool, TDST**).

The next step was the development of water tariff strategies for the Bekaa, North and Beirut/Mount Lebanon Water Establishments based on the questionnaires distributed in the different establishments and the data collected. Once the scenarios and the strategy in place, LWPP arranged meetings with the CEOs/DGs of the three establishments to discuss the approach and the initial results, and get their feedback. Melki included their comments in his work and finally the program delivered a final water tariff strategy for the Beirut/Mount Lebanon, Bekaa and North Lebanon Water Establishments. The final strategies and associated scenarios were delivered in both Arabic and English showing the differences between the former water authorities forming these establishments, the different scenarios and their assumptions, and the impact of each scenario on the financial results of the establishments. The strategies included also recommendations for the good application of this tool (tariff strategies for Beirut/Mt Lebanon ([English, Arabic](#)), Bekaa and North Lebanon ([English, Arabic](#))).

The tables below show the impact of each of the scenarios on the cost recovery ratios.

Table 2. Cost recovery of the different scenarios – Beirut/Mount Lebanon Water Establishment

	Number of subscribers	Water consumption in 000 M3 per year	Total billing / year in 000 LL	Total Collection in 000 LL (Collection rate 73.1%)	Cost recovery of Operation and Maintenance charges	Cost recovery of Total charges
Current situation	403,531	211,000	85,670,779	62,623,488	132.7%	80.0%
Scenario A	403,531	109,585	102,789,404	75,136,832	159.2%	96.0%
Scenario B	403,531	109,585	113,748,024	83,147,347	176.2%	106.2%
Scenario C	403,531	109,585	130,315,595	95,257,883	201.9%	121.7%
Scenario D	403,531	109,585	141,274,085	103,268,302	218.9%	131.9%

Table 3. Cost recovery of the different scenarios – Bekaa Water Establishment

	Number of subscribers	Water consumption in M3 per year	Total billing / year in LL	Total Collection in LL 50% collection rate	Total cost recovery	O&M cost recovery	Total Collection in LL - 65% collection rate	Total cost recovery	O&M cost recovery
Current situation	62,118	30,000,000	7,393,875,158	3,697,289,980	20.4%	41.8%	4,806,018,853	26.5%	54.4%
Scenario A	62,118	16,986,773	15,776,657,428	7,889,080,648	43.4%	89.2%	12,621,325,942	69.5%	142.7%
Scenario B	62,118	16,986,788	17,475,346,350	8,738,506,071	48.1%	98.8%	13,980,277,080	77.0%	158.1%
Scenario C	62,118	16,986,788	20,068,524,378	10,035,218,679	55.3%	113.5%	16,054,819,502	88.4%	181.6%
Scenario D	62,118	16,986,788	21,767,203,206	10,884,639,054	59.9%	123.1%	17,413,762,565	95.9%	196.9%

Table 4. Cost recovery of the different scenarios – North Lebanon Water Establishment

	Number of subscribers	Water consumption in M3 per year	Total billing / year in LL	Total Collection in LL 50% collection rate	Total cost recovery	O&M cost recovery	Total Collection in LL - 65% collection rate	Total cost recovery	O&M cost recovery
Current situation	93,930	50,000,000	12,384,377,500	6,127,110,025	23.1%	49.4%	8,049,845,375	30.4%	65.0%
Scenario A	93,930	25,686,074	23,856,232,206	11,802,753,874	44.6%	95.2%	15,506,550,934	58.6%	125.1%
Scenario B	93,930	25,686,098	26,424,857,250	13,073,568,515	49.4%	105.5%	17,176,157,213	64.9%	138.6%
Scenario C	93,930	25,686,098	30,346,059,030	15,013,563,863	56.7%	121.1%	19,724,938,370	74.5%	159.2%
Scenario D	93,930	25,686,098	32,914,668,810	16,284,370,953	61.5%	131.4%	21,394,534,727	80.8%	172.6%

Deliverables:

- Water tariff strategy and tariff scenarios for the BMLWE
- Water tariff strategy and tariff scenarios for the BWE
- Water tariff strategy and tariff scenarios for the NLWE

ASSIST IN IDENTIFICATION, ANALYSIS AND RESOLUTION OF VILLAGE BASED WATER ISSUES

The purpose of this exercise lied mainly behind fulfilling one of LWPP's objectives in introducing a collaborative planning and conflict resolution approach among the different stakeholders in the water sector. The work conducted by the team followed a set of guidelines in order to identify the real conflict and intervene in the best possible way. Those guidelines are represented in the following:

- Conduct situational analyses of specific village-based water issues of general importance and application;
- Identify the most eminent among them in collaboration with the concerned parties;

- Conduct a series of meetings and interviews with the different parties of the conflict;
- Develop a case study that reflects the different perspectives of the conflict;
- Intervene in solving the water issues by facilitating discussions to explore interests, concerns and positions and evaluate options;
- Design collaborative planning mechanisms for encouraging sustainable solutions.

As per the above mentioned guidelines, the Hasbaya case has been identified as the most important conflict at present in the SLWE service area.

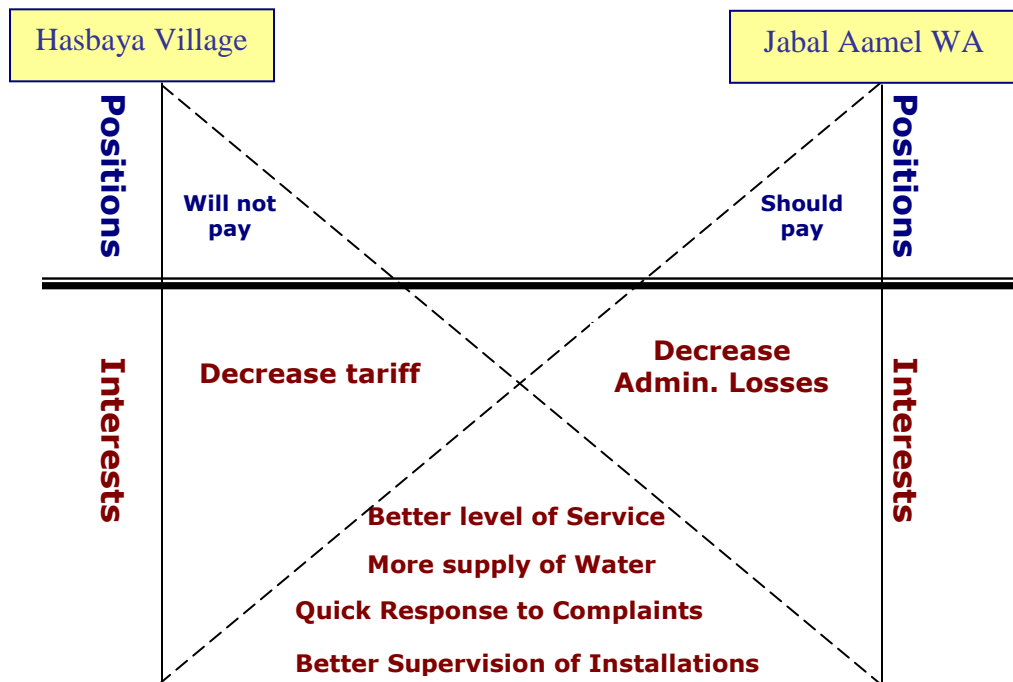
Leading this process was the national expert Mr. Monir Bu Ghanem, who took the initiative in coordinating the work related to this case and facilitating all the meetings held. During the process, many meetings were organized with the different actors involved in the conflict. This would include:

- The Mayors of Hasbaya (Moukhtar)
- The municipality of Hasbaya (old and new Board)
- Director of Jabal Aamel Water Authority
- CEO/Director General of the SLWE
- Member of Parliament Mr. Anwar Al-Khalil
- Leading religious personalities among the Druze society

The work was conducted mainly through a series of lengthy interviews with the above parties. Interviews were conducted casually to get the informal feedback that would allow for a better understanding of the conflict roots and its dimensions.

The interests, concerns, and positions of those individuals and their associated institutions were documented in a comprehensive report analyzing the case and the associated details and recommending intervention modalities ([report](#)).

The following diagram represents in brief the whole conflict and the positions and interests of both parties:



Deliverables:

- Report on the Hasbaya case and recommendation of intervention modalities.

IMPROVING PARTICIPATORY APPROACHES IN WATER MANAGEMENT

This activity was designed for the second phase of LWPP. Its objective was to introduce SLWE as a modern water utility with its mission statement to international organizations and visiting partners, and to increase awareness on water conservation in the south through the production and distribution of awareness material for water subscribers and activities for students within the SLWE service area.

Design friendly brochures/leaflets to be disseminated to subscribers

The experts under this task, Monir Bu Ghanem and Jean Karam, worked together in close coordination with the SLWE on the content of these brochures that were completed in August 2005. LWPP produced around 120,000 copies of the brochures including [illustration tips](#) on water conservation in Arabic to be disseminated together with customers' bills ([Arabic brochure](#)). These brochures are currently distributed together with subscribers' bills and handed over to subscribers in the clients' service outlets of SLWE. The experts designed also a [logo](#) for the SLWE.

Design friendly material to be disseminated to SLWE partners/visiting organizations

Bu Ghanem and Karam worked as well on the design and production of 5,000 copies of a [brochure](#) for the SLWE in English introducing the establishment as an institution stating its mission, objectives, scope of work and its management plan in a friendly way.

Conduct different awareness activities in schools

The objective of this task was to address the next generation's attitude towards water consumption. The strength of this approach is based on the transfer of conservation knowledge directly to students and to their parents indirectly.

With the help of the awareness expert, Monir Bu Ghanem, LWPP designed and produced the following awareness material that was distributed in schools in the south.

- 10,000 [pamphlets](#) for high school students;
- Activities book for students below 10 years old in [English](#) (2,000) and [French](#) (1,000);
- 1,000 [posters](#) on water conservation;
- 3,000 [stickers](#) for restrooms.

Teachers' trainings

The program arranged several coordination meetings ([minutes of meetings](#)) with the schools participating in the awareness activities of LWPP to prepare two trainings for around 52 teachers from 38 schools in the south. The trainings took place in November and December 2005 and covered subjects related to water conservation ([training material and guidelines](#)). With the end of the trainings, the program distributed an awareness material kit for the participants to be used in their schools. Around 3,000

students from different schools in the south benefited from this material. LWPP prepared a [report](#) on these trainings that was submitted to USAID ([photos](#)).

Following the two trainings, the program arranged a meeting with SLWE and the teachers to explore the different alternatives of cooperation between the two parties in an attempt to ensure sustainability of this activity. SLWE committed during this meeting to provide assistance during the students' field visits to the SLWE's facilities and conduct lectures in schools ([minutes of meeting](#)).

Lectures and field visits for students in the south

In this perspective, LWPP assisted the participating schools in the awareness activities in organizing field visits to the SLWE's facilities and lectures for their students to understand the different phases of water production, treatment and distribution, along with the costs associated with these processes. Around 400 students visited the SLWE's facilities where the LWPP program director and the SLWE's employees provided the necessary information on water ([field visits photos](#)). Another 500 students attended the different lectures conducted by the LWPP program director in different schools in the south to provide basic information and knowledge about the importance of reducing water consumption ([lectures photos](#)). The field visits and lectures helped the teachers and their students during the preparation of the water competition that was held for the occasion of the World Water Day, on March 23, 2006.

Water competition – World Water Day

As mentioned above, LWPP conducted on March 23, 2006 a water competition at the Rafik El Hariri High School in Saida for the occasion of the World Water Day. Around 300 students representing 22 schools in the south participated in this event and prepared projects on water conservation. With the end of the fair, the organizers (USAID, SLWE and LWPP) distributed prizes to the participating schools. The program distributed three Globe Water Kits for the three winning schools for regular hydrology measurements by the students, and five teachers were trained on hydrology measurement techniques (temperature, salinity, water quality, etc.) to guide their students in their experiments. LWPP prepared a report following the water fair that was submitted to USAID (water fair [report](#) and [photos](#)).

Design awareness material targeting heavy consumers in the south

To reach all water consumers in the south, LWPP designed and produced awareness material on water conservation targeting heavy consumers in the south such as hospitals, restaurants, hotels, etc. Around 2,000 [posters](#) and 10,000 [stickers](#) were delivered to LWPP in July 2006. The distribution of this material in the south was delayed due to the prevailing political and security situation in the country following the 2006 summer's events. The program delivered the posters and stickers to the SLWE that will be responsible for their distribution.

Deliverables:

- Arabic brochure on water conservation targeting water subscribers (120,000 copies)
- English brochure introducing SLWE targeting partners / visiting organizations (5,000 copies)

- Pamphlets for high school students (10,000 copies)
- Activities book for students below 10 years old in English (2,000 copies) and French (1,000 copies)
- Posters on water conservation (1,000)
- Stickers for restrooms (3,000)
- Two teachers trainings
- Posters (2,000 copies) and stickers (10,000 copies) on water conservation targeting heavy consumers

Chapter Three

Institutional Strengthening

The institutional strengthening component includes activities at the regional level, focusing on the South Lebanon Water Establishment and the Beirut/Mount Lebanon Water Establishment.

The work in the south consists of several activities as follows:

- Assist in the development of a new organization structure and staffing plan
- Conduct a small level of service survey
- Develop a business plan
- Develop a financial cost recovery model
- Develop and implement a new FAS

The work in Beirut/Mount Lebanon consists of replicating previous work done in the south, mainly the development of a business plan and financial cost recovery model for the BMLWE.

FACILITATE THE CREATION AND SUPPORT THE OPERATION OF THE REGIONAL TECHNICAL WORKING GROUP (RTWG)

A first step towards ensuring a smooth progress of the activities and tasks under LWPP was the creation of a National Steering Committee (NSC) through a Ministerial [Decision](#) No. 4582 for the program. The Committee members were:

- The Minister (Dr. Baydoun)
- The Director Generals of MEW (Dr. Fadi Comair and Mr. Hassan Hashem)
- The CEO/DG of the SLWE (Mr. Ahmed Nizam)
- The Director of the overseeing department (Mr. Mahmoud Baroud)

In spite of the several attempts by the program management, it was very difficult to organize a meeting that would assemble all the Steering Committee Members at one common time. However, we succeeded in meeting with each and everyone of them individually on various aspects of the program.

In addition to the NSC, a Regional Technical Working Group (RTWG) was also created through a CEO [decision](#) No. 330 and a Board of Directors [approval](#). The RTWG was made up of the directors of the four former Water Authorities in the South and members of the Board of Directors. Coordination with the RTWG was very active during the course of the four years where they participated to all the events that were organized by the program in addition to the bilateral meetings with them on technical issues as well as the intensive sessions organized in the process of developing the five-year business plan for the SLWE.

Another important activity that the RTWG attended was the collaborative planning training workshop which contributed directly to the operations of the members of the RTWG especially on issues that relate to water services and the relationship with the partners and the customers.

REACH AGREEMENT ON INSTITUTIONAL REQUIREMENTS FOR SLWE

Another major task that was completed under this component was the one related to the institutional requirements of the SLWE in terms of restructuring its organizational chart and preparing the supporting terms of reference for each of the newly created departments with their staffing requirements. This work was performed by a national expert, Mr. Jean Karam, with whom several meetings and discussions were organized in order to reach a consensus on the final form of the organigram, taking into consideration the budget and staffing constraints that the government is imposing on all public service utilities. The final organigram was presented, in [English](#) and [Arabic](#), along with the supporting documents related to the project Decree ([Marsoum](#)) and the tables ([JADAWEL](#)) of positions to be filled.

Deliverables:

- New organizational structure and staffing plan for the SLWE.

UNDERTAKE A SMALL SURVEY OF SERVICE LEVELS

The objective of this activity was to measure the level of satisfaction of the subscribers in terms of quality of water, quantities supplied and support provided. The results of the survey constituted basic data that provided an input into the assessment of real consumers' demand, losses in the system and consumers' attitude towards tariff increment. Simple geographically displayed data on service levels provided also important information for the strategic visioning effort.

The survey was limited to the former Saida Water Authority service area given that outside this service area, water supply is neither continuous nor metered. Based on LWPP's discussions with SLWE, we have determined geographical areas served by the former Saida Water Authority characterized by different socio-economic classes (low and high income mainly) and type of activities (residential, commercial, etc.). A sample of 900 subscribers has been chosen for the survey, representing around 5% of a total of 18,000 subscribers in the former Saida Water Authority. Around 768 interviews took place during the period extending from March 24 until April 29, 2003.

The work started with the development of a [questionnaire](#) for the survey that was tested and adjusted outside the Saida service area. The questionnaire focused on the following:

- Category of subscription (residential, commercial, etc.).
- Water quality at source, network, destination.
- Level of service taking into account:
 - Supply continuity
 - Intermittency
 - Response to complaints
- Purchase of water from other suppliers (mineral water, tankers, private wells, etc.)
- Willingness to pay for service improvement.

The results of the survey were presented in a [report](#) and submitted to the SLWE and USAID. Table 5 below summarizes the results of the survey.

Table 5: Results of the level of service survey

Supply continuity	Response to complaints	Water quality	Other suppliers	Willingness to pay for better services
Yes - 96%	Good - 28%	Bad - 52%	Yes - 49%	Yes - 36%
No - 2%	Bad - 6%	Fair - 24%	No - 51%	No - 57%
N/A - 2%	N/A - 3%	Good - 24%		N/A - 7%
	Never complained – 63%			

Deliverables:

- Report on the level of service within the former Saida Water Authority.

BUSINESS PLAN FOR SLWE

Conduct strategic visioning effort leading to a business plan

Another major activity under the institutional strengthening component was the development of a business plan for the SLWE. For the first time in Lebanon, LWPP participated in the development of a business plan for a water utility. This process was conducted by our international consultant, Philip Giantris, through a “learn as you do” process where the RTWG and the CEO/DG of SLWE participated fully to all the sessions and contributed substantially to the data and information needed for the business plan. LWPP organized several sessions ([photos](#)) where Philip Giantris gave [presentations](#) to the participants explaining each of the steps. In addition, [working sheets](#) were designed and given to the participants during the sessions to be filled and discussed in order to reach a common understanding among all present.

Following the submittal of the preliminary business plan during the first year of LWPP, the program worked on its update and fine tuning through continuous meetings with the CEO/DG of the SLWE, the Board of Directors and the RTWG. Further input was also provided by the financial team on the program concerning the staffing and the five-year budget forecast. Along the process, a round-table discussion was organized with decision makers in November 2003 to expose the business plan among the different actors affecting it ([presentation](#) and [photos](#)). Present in this round table were:

- The Minister
- Ministry of Finance
- CDR vice president
- Litani River Authority
- DG of Hydraulic and Electrical Resources
- CEOs/DGs of the four water establishments
- USAID mission
- LWPP experts
- MEW middle management staff (overseeing directorate).

The result of this work was a [business plan](#) containing a clear mission statement and strategic goals as well as a [Performance Improvement Program](#) for the SLWE. This work included as well a [financial forecast](#) over five years showing in figures the impact of an improved management on the financial situation of the Establishment. This financial forecast and the planned performance improvements were detailed and fine tuned using

data generated from the studies conducted by other experts, like the Hydraulic Master Plan (see technical assistance component) and the financial model.

Develop initial performance targets

Thorough and detailed work was conducted under this activity by elaborating performance targets identified under the business plan for the SLWE. The PIP concentrated on the following aspects of the SLWE activities:

- Financial and accounting system ([detailed description](#))
- Billing and collection system ([detailed description](#))
- Maintenance management system ([detailed description](#))
- Staffing and training program ([detailed description](#))
- Reduction of unaccounted-for-water ([detailed description](#))
- System performance and efficiency ([detailed description](#))

This was done by developing a detailed description of each performance improvement program specifying mechanisms for implementation, time frame and associated budget, in addition to performance indicators to measure their progress.

Deliverables:

- Five-year Business Plan for the SLWE

FINANCIAL COST RECOVERY MODEL FOR SLWE

Examine national pricing policies using analytical tools developed for the water establishment in the south

Another institutional development related activity was the financial modeling. This activity was not a stand alone one; it was a combination of many activities planned under LWPP that would contribute to building the puzzle around the financial model.

These activities were executed during the first phase of the program jointly by an international financial analyst, Ahmed Al Azzam, assisted by a local financial analyst, Nabil Chemaly.

During the first phase of LWPP, an intensive data collection process took place to gather all financial and operational data that would serve during the modeling process. The data collected from the former four water authorities forming the SLWE enabled the experts to initiate analysis of these data and prepare them for the financial model.

Examine costs and revenues at the cost-center level and for various users

In the first phase of LWPP, an intensive data collection process took place to understand the water system in the south and identify cost-centers. Several meetings took place with the technical staff of the SLWE to understand the water system and develop drawings related to the production and distribution network (drawings: [Saida](#), [Nabeh El Tasseh](#), [Sour](#) and [Jabal Aamel](#)). Accordingly, the team was able to identify cost-centers and gather the following information necessary for the financial model.

- Consumables
- Power consumption
- Staff expenses
- Number of subscribers and total water demand (water balance)

All these data were collected and organized according to accrual accounting standards (versus cash accounting practices currently applied in the SLWE) capturing all expenses by cost-center, being paid or not by the establishment.

The quality of the financial data was found to be very dispersed, unreliable and technically not acceptable in international accounting terms. Nevertheless, the financial team pursued the work as planned and tried to improve the quality of the data in order to have figures and reports as close to reality as possible. The first year the work focused on the former Saida Water Authority. The result was the development of the [Saida Financial Cost Recovery Model](#). The financial team moved to cover the remaining three former water authorities, Nabeh El Tasseh, Sour and Jabal Amel.

All the data collected were compiled and reported to the directors of the former water authorities and the CEO/DG of the SLWE for format and content review. The reports presented to the directors covered the following:

- Consumables in each water authority for years 2001, 2002 and 2003 ([Saida Expenses](#), [Sour Expenses](#), [Jabal Amel Expenses](#), [Nabeh El Tasseh Expenses](#), [Wadi Jilo Expenses](#)).
- Power consumption by cost-center in each water authority for 2001, 2002 and 2003 ([Saida power bill](#), [Sour power bill](#), [Jabal Amel power bill](#), [Nabeh El Tasseh power bill](#)).
- Staff expenses in each water authority for the three years ([Saida Staff Expenses](#), [Sour Staff Expenses](#), [Jabal Amel Staff Expenses](#), [Nabeh El Tasseh Staff Expenses](#) and [Wadi Jilo Staff Expenses](#))
- Number of subscribers and total water demand in each water authority for the same years ([Saida Demand](#), [Sour Demand](#), [Jabal Amel Demand](#) and [Nabeh El Tasseh Demand](#)).
- Revenues at each water authority for the three years ([Saida Revenues](#), [Sour revenues](#), [Jabal Amel Revenues](#) and [Nabeh El Tasseh Revenues](#)).
- Volumes of water produced on yearly basis in the entire SLWE service area ([Saida Production](#), [Sour Production](#), [Jabal Amel Production](#) and [Nabeh El Tasseh Production](#)).

Parallel to that, all assets survey and estimations were being allocated to cost centers to be integrated into the cost recovery model. Regular review was ensured by Ahmed Al-Azzam on all collected data and estimates in order to guarantee the quality of the work at each stage prior to importing the data onto the cost recovery model.

The financial team was also assisted by the engineers on the program for the development of a water balance for the SLWE's service area. Due to the lack of data related to flows and pumps run-time, several field visits were conducted to major sources in the south for [flow measurements](#) necessary for the development of the water balance.

Design a regional water services pricing model for the south

The preliminary draft model was first delivered at the end of February, 2004 to be fine tuned as more financial data were made available and problems mitigated. The model was regularly tested in our offices on many applications and usages before it was installed at the Water Authorities. ([final SLWE model](#)).

The model was created based on cost centers to which all expenses were allocated and water balance was created. It constituted an analytical tool for the SLWE allowing the following:

- Calculation of the percentage of cost recovery
- Calculation of the expenses at the cost-center level
- Calculation of the level of unaccounted-for-water
- Calculation of the profitability of each m³ produced/distributed
- Testing scenarios
- Includes a wastewater component with no data given that the establishment has not yet taken responsibility for wastewater disposal and treatment

The complete final version of the model was delivered and installed at SLWE head office in Saida on September 14, 2004.

Prior to incorporating financial data into the designed model, data should be collected in a well defined and organized manner. The team designed special [data entry sheets](#) for this purpose. Those sheets were developed using excel and installed at the four water authorities offices. The sheets were designed to accommodate the following financial data:

- General expenses according to budget items
- Staff related expenses (salaries and benefits) which included an automated calculation formula for indemnities over 3 years
- Electricity expenses
- Number of subscribers and daily demand

Those sheets would facilitate the task on the central unit to incorporate the financial data into the actual model installed at head office in Saida.

To facilitate the understanding of the model, the financial experts developed a flow chart for the model operations and linkages between the different parts ([link to the flow chart](#)).

Very close follow-up by the LWPP team ensured that the SLWE staff conducted the data entry and data compilation according to the norms set forth by the model and in conformity with the trainings conducted. This is the best way to ensure sustainability of the work done by LWPP.

A model User Manual and Reference Book were developed also. These documents consisted of six chapters detailing all the operations used in the model and the details related to the concept for trouble shooting ([user manual](#)).

Develop efficiency scenarios

This task was introduced in order to demonstrate the efficiency of the financial cost recovery model developed for the SLWE. During the presentation of the model to the SLWE's decision makers, Ahmed Al-Azzam introduced different scenarios on improving efficiencies to the financial cost recovery model to show how each of these scenarios can impact the financial situation of the establishment and the cost recovery performance. The team consulted with the SLWE and agreed on the following scenarios:

- Improving collection rate
- Improving efficiency of the water system and consequently reducing electricity consumption
- Increasing the tariff
- Reducing the cost of electricity
- Increasing the number of staff
- Comparative analysis between running the operations on fuel or electricity
- Testing between cost centers to see which is most cost effective
- Shut down selected cost centers to test the impact on the financial situation
- Different scenarios and their impact on the cost per cubic meter

Propose and assess scenarios for restructuring tariff

The work done under this activity contributed directly to the formulation of the south tariff strategy (see the policy making component above). This activity was executed in joint efforts between Melki, Al-Azzam and Chemaly by evaluating the different tariff structures used for developing the scenarios and analyzing the impact of each on the establishment's revenues.

The revisions presented by Melki on the 16 different tariff scenarios were discussed and integrated into the Financial Cost Recovery Model. Every tariff scenario entered into the model would project the impact of each of those scenarios on the revenue sheet of the model. The table below shows how the tariff was structured based on well identified blocks and with fixed and variable components.

Table 6: Tariff scenarios tested

	Price in L.L. / m ³			
	Scenario A	Scenario B	Scenario C	Scenario D
Block 1 (from 0 to 40 m ³ / year)	350	450	550	650
Block 2 (from 41 to 100 m ³ / year)	550	650	750	850
Block 3 (from 101 to 300 m ³ / year)	650	750	850	950
Block 4 (over 300 m ³ / year)	750	850	950	1,050
Connection fees / subscriber – in L.L. (Fixed Fee)		120,000		
Average water consumption / year / subscriber in m ³		261		
Average water consumption (liters/capita/day)		143		

Deliverables:

- Cost-center based Financial Cost Recovery Model for the SLWE.

REPLICATING WORK ACCOMPLISHED AT SLWE IN OTHER WATER ESTABLISHMENTS

Following the development of a Business Plan and a Financial Cost Recovery Model for the SLWE during the first phase of LWPP, USAID received official requests for assistance from other water establishments in Lebanon, mainly the BMLWE and the NLWE. Accordingly, and based on previous successes of the program in the south, USAID allocated funds during the second phase of LWPP for the replication of previous work accomplished at SLWE in other water establishments, mainly the development of a Business Plan and Financial Cost Recovery Model for the BMLWE.

Business plan for BMLWE

The business planning process in the BMLWE was initiated during the last year of LWPP. The same approach used in the south was applied for the development of the BMLWE business plan. The process was conducted by our international consultant, Philip Giantris, through a “learn as you do” process. The CEO/DG of the BMLWE nominated five senior employees from different departments of the establishment (finance, client service, production and distribution) to participate in the business planning sessions and contribute to the data information needed.

LWPP conducted several sessions with the establishment’s employees who provided the necessary input for the development of the business plan. [Power Point presentations](#) and [work sheets](#) were prepared by LWPP to facilitate the process, gather the necessary information and develop the following sections of the business plan:

- Mission statement ([link](#))
- Priority problems ([link](#))
- Strategic goals ([link](#))
- Water Demand Management ([Arabic](#), [English](#))
- Organizational structure ([Arabic](#), [English](#))
- Performance Improvement Program (PIP) ([Arabic](#), [English](#))
- Capital investment program
- Budget forecast and revenue needs ([link](#))

Following these sessions, the program arranged several meetings with the CEO/DG of the BMLWE, Joseph Nseir, to discuss the findings and present the different pieces of the business plan. Mr. Nseir provided his input and added the necessary modifications to the information provided by his employees. Accordingly, Philip Giantris was able to prepare a final business plan for the BMLWE that was submitted in [Arabic](#) and [English](#).

It should be noted that the financial team working on the BMLWE’s financial cost recovery model provided all necessary financial and operational data during the business planning process, especially for the development of the Water Demand Management and the budget forecast and revenue needs sections.

LWPP faced several technical and organizational issues during the development of the business plan. The major two issues were (1) the inaccurate data related to population in the BMLWE’s service area and (2) the BMLWE employee’s limited knowledge of the entire service area, its problems and needs. LWPP tried to overcome these two problems using different sources of data and consultations with the BMLWE

management, and through continuous meetings and consultations with the CEO/DG of the establishment to make sure our approach and results are in line with his vision. The different issues were highlighted in the memos prepared by Philip Giantris after each visit to LWPP ([Giantris' memos](#)).

Deliverables:

- Five-year Business Plan for the BMLWE.

Financial Cost Recovery Model for BMLWE

The work on the financial model started in Beirut/Mount Lebanon with the start of the second phase of LWPP. The BMLWE is formed by the following six former water authorities:

- Beirut
- Jbeil
- Metn
- Barouk
- Ein El Delbeh
- Keserwan

The work focused on the former Beirut Water Authority before it was extended to the remaining five water authorities. The first step undertaken by the two financial analysts working on the model, Nabil Chemaly and Mitri Abi Jreiche, was to meet with the technical staff of the former Beirut Water Authority to present the work, collect information on the water system design in the service area and prepare schematic drawings of the system ([schematic drawing of BWA's system](#)). Accordingly, the team was able to identify the cost-centers in the former BWA's service area and initiate the financial data collection process covering the following items for 2003 and 2004:

- Power expenses
- Staff expenses
- Consumables
- Fixed assets
- Revenues
- Number of subscribers and total demand

All these data were compiled in data sheets showing the revenues and expenses of the authority by cost-center ([data sheets – BWA](#)). The team collected also the necessary operational data for the development of a water balance for the former BWA.

In parallel, the senior financial analyst, Ahmed Al Azzam, completed the design of the former BWA's model assisted by Chemaly and Abi Jreiche and started the preparation of the model. The first draft was presented to the CEO/DG of the BMLWE in June 2005 to get his feedback. Mr. Nseir was satisfied from the model design and results, but requested some additional features that were added to the model ([final model for BWA](#)).

Following the completion of the work in the former BWA, the financial team started the work in the remaining former water authorities forming the BMLWE. The financial department of the BMLWE provided us with GIS maps on the water system in the

service areas. Accordingly, LWPP team was able to prepare schematic drawings and identify the cost-centers of the following water authorities:

- Jbeil ([schematic](#))
- Metn ([schematic](#))
- Barouk ([schematic](#))
- Ein El Delbeh ([schematic](#))
- Keserwan ([schematic](#))

The next step was the intensive financial data collection process in the above mentioned water authorities covering the same items as in Beirut Water Authority and including the following data for 2003 and 2004 (data sheets [Jbeil](#), [Metn](#), [Barouk](#), [Ein El Delbeh](#) and [Keserwan](#)):

- Power expenses
- Staff expenses
- Consumables
- Fixed assets
- Revenues
- Number of subscribers and total demand

The financial model being a cost-center based analytical tool according to accrual accounting practices, LWPP financial team captured all expenses, paid and unpaid, necessary for the calculation of the recovery ratios and the exact profitability per m³ in the establishment.

LWPP field engineer, Khaled Malouf, provided technical assistance to the financial team in the preparation of the water balance of the different water authorities. Several field visits took place to major water sources within the service area of the BMLWE for flow measurements given the lack of these data in the establishment ([photos](#)).

Based on the schematic drawings and the water system, Ahmed Al Azzam proposed a design for the complete BMLWE model and started working on it. The first draft of the model was submitted to LWPP in March 2006. Mitri Abi Jreiche started immediately feeding the historical data for 2003 and 2004 in the model to test it, make any required adjustments and analyze results ([BMLWE model](#)). The results of the model were discussed in details and approved by the CEO/DG of the BMLWE, Joseph Nseir.

Following the completion of the financial model for the BMLWE covering water supply services, LWPP team had a meeting with Mr. Nseir to better understand the status of wastewater within the establishment's service area. Accordingly, Ahmed Al Azzam was able to design a model for wastewater ([wastewater model](#)). The wastewater model remains without major financial and operational data given that the establishment did not assume full responsibilities for wastewater collection, disposal and treatment yet. The establishment took over few wastewater operation and management contracts from the central government to ensure a smooth transition of responsibilities, but no data are available yet to feed the model.

Finally, a tariff model was also developed by Al Azzam where the tariff strategy proposed by Roger Melki for the BMLWE can be accommodated and the financial impact of all proposed tariff scenarios on the establishment's revenues can be tested ([tariff model](#)).

Ahmed Al Azzam and Mitri Abi Jreiche prepared a technical and functional user's manual for the BMLWE employees. The manual includes the following:

- The features of the model
- The different reports related to water, wastewater and irrigation that could be generated by the model and how to read them
- Guidelines for data entry
- Technical guidelines for model improvements and updates

The team developed also ten-year data entry sheets including all cost-centers and budget items to be used on a daily basis for the consolidation of all data with the end of the year before feeding them into the model ([user's manual](#) and [data entry sheets](#)).

The financial cost recovery model of the BMLWE included several features and improvements as compared to the model developed for the SLWE. The major features can be summarized as follow:

- The BMLWE model is in three languages (Arabic, English and French) versus two for the SLWE model (Arabic and English).
- The BMLWE includes irrigation activities whereas the SLWE does not include irrigation given that the Litani River Authority (LRA) handles this activity in the south.
- The BMLWE model includes detailed analysis sheets for power and fuel consumption by cost-center given the importance of these two items in the total establishment's expenses. This feature was requested by Mr. Nseir.
- The BMLWE model can accommodate three scenarios for testing at a time, rendering the comparison of these scenarios' results possible.
- Based on LWPP's team accumulated experience and knowledge of the water system in the different Lebanese water establishments, the BMLWE was designed to be applicable in all other water establishments once the cost-centers identified and the historical data available.

In this perspective, LWPP recommends the update of the SLWE model using the improved model of the BMLWE.

Deliverables:

- Historical data sheets for water supply in Beirut/Mount Lebanon for years 2003 and 2004
- Financial Cost Recovery Model for water supply in Beirut/Mount Lebanon
- Financial Cost Recovery Model for wastewater disposable in Beirut/Mount Lebanon
- Tariff model for BMLWE
- Model user's technical and functional manual

FINANCIAL AND ACCOUNTING SYSTEM (FAS) FOR SLWE

During the first phase of LWPP, the team was able to identify many gaps in the current financial and accounting practices in the SLWE and the need to develop and implement a new accrual-based Financial and Accounting System (FAS) according to International Accounting Standards (IAS). Accordingly, DAI conducted a bidding process to procure the services of a local accounting firm for the development of a FAS for the SLWE assisted by our senior financial analyst, Ahmed Al Azzam, and IT expert, Ramez Mallouk, from ABA, and the involvement of LWPP team in this activity given the previous

work done and the knowledge acquired in the establishment. Following the evaluation of the offers, DAI selected Jleilaty Accountants and Auditors (JAA) who declined after the official awarding of the contract. DAI had then to choose the second ranked bidder, Dar Al Mouhassabah (DAM).

Business Process Mapping (BPM)

The team started the work on the FAS with the start of the second phase of LWPP. The first step was the preparation of a detailed work plan for the FAS activity showing the different steps of the work and the responsibilities. Once the work plan ready, LWPP arranged a kick-off meeting ([minutes of meeting](#)) with the SLWE to present the work plan to the management ([FAS work plan](#)). The CEO/DG of the SLWE formed a steering committee from the establishment to follow-up the work progress and provide assistance to the FAS team where required.

Once the work plan approved, DAM started the review of previous work done by LWPP and the by-laws of the SLWE to better understand the establishment's business and work flow. LWPP prepared BPM guidelines and templates for DAM to use during this phase ([BPM templates](#)).

The FAS team started then its field work through intensive meetings with employees from different departments in the SLWE to understand the current financial policies and procedures of the establishment and document them for all financial cycles. The BPM phase was complete in June 2005 and covered the following business cycles:

- Overall SLWE business
- General ledger
- Cash management
- Revenue and accounts receivables
- Purchasing and accounts payables
- Human resources and payroll
- Stores and inventory
- Fixed assets
- Projects
- Budget
- Chart of Accounts (COA)

The team compiled all policies and procedures related to these cycles, the recommendations and the associated flow charts in a report to form the current financial system manual that was submitted to SLWE for review and approval. LWPP organized also a meeting with the SLWE's financial employees to present the findings of the BPM, get their feedback and adjust the work flows accordingly ([final BPM report](#)).

In parallel, DAM's team conducted an assessment of the current IT infrastructure in the SLWE. Several field visits took place to all SLWE offices to check the existing IT equipment, network, databases and applications and prepare an adequate platform for the implementation of the new system. The team explored the different options to connect the remote offices to the headquarters in Saida. All these findings were compiled in a report and submitted to LWPP ([IT assessment report](#)).

Another task conducted by DAM during this phase was the Training Needs Assessment (TNA) of the SLWE employees in terms of accounting and computer use. The objective

of this task was to evaluate the employees' skills and capacities to operate the new system, and accordingly tailor training programs for them. A questionnaire was prepared by DAM and a survey was conducted with all financial employees. The findings of this assessment were compiled and submitted to LWPP ([TNA results](#)). The results showed that in addition to the limited number of available employees in the establishment, the skills of the existing ones are limited in both accounting and computer.

Redesign of the financial cycles - Business Process Reengineering (BPR)

Following the BPM phase, the FAS team started the redesign of the SLWE's financial cycles based on the recommendations presented in the BPM. The objective of the BPR was to render the SLWE current work flow more efficient, fully automated and increase control measures. New policies and procedures were proposed for this reason to enforce the existing ones, in line with the SLWE's by-laws. Ahmed Al Azzam took the lead on this task assisted by DAM's team and Nabil Chemaly and Mitri Abi Jreiche from LWPP. The redesign included the following:

- General ledger
- Cash and banks
- Revenues and accounts receivables
- Purchasing and accounts payables
- Stores and inventory
- Fixed assets
- Maintenance
- Human resources and payroll
- Budget

The BPR phase was complete in August 2005 and all SLWE's policies, procedures and associated flow charts were compiled in a report and submitted to SLWE's management for review and approval ([final redesigned cycles](#)).

FAS software: solution acquisition and customization

Once the redesign ready, our IT expert, Ramez Mallouk, started the preparation of a Request for Proposal (RfP) for the procurement of a FAS software to operate the newly designed FAS for the SLWE. The [RfP](#) included all operational features of the FAS software. In parallel, DAI advertised in local newspapers and in the USA to receive company profiles for the supply and implementation of a FAS software for the SLWE. Eleven companies submitted their profiles, of which only seven were qualified. LWPP released the RfP to these companies, and received three proposals on February 1, 2006. DAI formed an evaluation committee with representatives from the MEW and SLWE who reviewed the proposals thoroughly. The results of the evaluation showed that eDimension, an Oracle JD Edwards certified company in Lebanon, was the most qualified bidder for this assignment. LWPP team had however to negotiate eDimension's financial offer and postpone the implementation of the human resources and payroll modules until additional funding is available due to budget limitations ([evaluation process report](#)).

DAI received USAID contract office's and USAID/IRM approval and prepared the subcontract agreement with eDimension to initiate the work on the system

implementation. eDimension started the business analysis phase in June 2006 by reviewing the establishment's by-laws and redesigned financial cycles by LWPP.

The second step was the preparation of business analysis documents showing the standard features of the system and the modifications/customizations undertaken by eDimension, and how they satisfy the business requirements of the establishment. Ahmed Al Azzam and Ramez Mallouk reviewed the business analysis documents and provided their comments for the customization and set-up of the FAS software ([business analysis documents](#)).

During this period, Dar Al Mouhassabah (DAM) undertook an intensive data collection process to gather all necessary information for the opening balances according to the opening balance methodology prepared by LWPP and approved by SLWE ([opening balance methodology](#)). The data collection was a long and time consuming process due to the lack of historical data in the establishment, and the inaccuracy of the available data. The team was able however to prepare data sheets including the following ([Data for opening balances](#)):

- List of all fixed assets with their aging and current value (the assets listing is based on the hydraulic assessment conducted previously by LWPP)
- List of all stores items with their current market value
- Receivables for the entire SLWE's service area
- Accrued power expenses per year
- Accrued VAT for municipalities
- Accrued expenses for the National Fund for Social Security

Based on the listing of all fixed assets and stores items, Mitri Abi Jreiche worked with eDimension to develop a new coding system for the SLWE, in line with Oracle JD Edwards features, with a coding manual to be delivered with the system ([coding manual](#)).

Mitri worked also with eDimension to prepare a new Chart of Accounts (COA) for the SLWE, the foundation of the new FAS for SLWE. The COA was reviewed by Ahmed Al Azzam, Ramez Mallouk and DAM to make the necessary adjustments and translated into Arabic ([SLWE COA](#)). Mitri performed also the mapping of the establishment's cash budget into the COA to make sure the system responds to both cash (according to the GoL's requirements) and accrual accounting standards (according to IAS).

FAS hardware: procurement and installation

Based on the IT assessment report prepared by DAM, Ramez Mallouk prepared a Bill of Quantity (BoQ) for the procurement of FAS hardware. The BoQ was reviewed by eDimension and adjusted according to the system's needs. Mallouk conducted also several visits to the SLWE offices in South Lebanon to determine the different options to connect the remote offices to the headquarters in Saida, and prepared an [RfP](#) for the procurement of FAS hardware and networking needs (WAN and LAN).

DAI advertised in local newspapers and in the United States to receive expression of interest from qualified hardware vendors for the supply and installation of the FAS hardware. We did not receive any company profile from the USA. Only five local companies expressed their interest, and the RfP was released in June 2006. Two of the

five short-listed companies submitted a proposal. Following the review of the proposals, the evaluation committee formed by representatives from the MEW and SLWE in addition to DAI, selected MDS for the supply and installation of FAS hardware ([assessment report](#)). Following USAID approval, DAI prepared a subcontract agreement with MDS who supplied the necessary equipment and installed the network in the SLWE. MDS subcontract included the supply and installation of the following equipment and hardware:

- Four rack-mounted servers
- One central UPS for the servers
- Ten PCs
- Associated software for the servers and PCs (MS Windows, SQL, Exchange server, MS Office, Anti-virus and back-up)
- Five laser printers
- Two dot matrix printers
- Eight switches
- Six routers
- LAN installation in Saida, Nabatieh, Jezzine, Tefehta and Wadi Jilo offices
- WAN in Saida and Nabatieh

It should be noted that the three remaining offices of SLWE (Sour, Marjeoun and Bint Jbeil) were not connected to the headquarters in Saida given that the establishment is relocating these offices soon. Accordingly, and after consultation with SLWE, LWPP decided to keep these three offices not connected for the time being.

Although all the infrastructure is ready in Jezzine, Tefehta, Wadi Jilo and Saida, LWPP recommended that the SLWE follows-up with the telecommunication company, OGERO, to install four ISDN lines in the these locations for data transfer. The program made its best to install these lines before the end of the task order, but this was impossible given that OGERO does yet not support ISDN lines (except in Saida). OGERO's management confirmed however that these lines will be available in the coming few months. No other option for data transfer was proposed in these locations given the very limited number of transactions per day compared to the high cost of any other solution.

Go-live and FAS operation

As mentioned earlier in this report, LWPP completed the implementation of the new FAS and the establishment is still not able to hire new qualified employees to manage the system. The CEO/DG of the SLWE decided to outsource the FAS management to eDimension who was responsible for its implementation. LWPP facilitated the preparation of this service contract as an application of PSP in the water sector, and to ensure the sustainability of LWPP's work. A description of this activity can be found under "**Assist in implementing identified PPP options in the south**" page 13 in this report.

Deliverables:

- BPM manual
- BPR manual
- Coding manual
- NEW COA for SLWE

- Fully operational FAS
- FAS hardware and network

Chapter Four

Technical Assistance

The technical component of LWPP focuses on the South Lebanon Water Establishment. It includes the following activities:

- Conduct a hydraulic survey and assets assessment to generate GIS maps and database on the SLWE's hydraulic components
- Develop a water optimization plan to reduce the existing production points and power consumption
- Procure and install production and zone meters
- Develop a wastewater master plan

CONDUCT HYDRAULIC ANALYSIS AND ASSETS ASSESSMENT

This activity started during the first phase of LWPP. It was conducted by a team from the Lebanese American University (LAU) led by Dr. Jean Chatila, assisted by a group of engineers. The objective was to conduct a comprehensive survey on hydraulic and asset assessment of the SLWE. The survey covered the four former water authorities' service areas of SLWE.

The survey consisted of intensive field work over a period of two and a half months compiling data on the present situation of the different assets as well as the population and many other aspects that can be linked or related to the water system operation. The activity covered the following tasks:

Asset Assessment and Hydraulic Analysis

The scope of this part was the widest covering all kinds of information related to the [characteristics](#) of the area under study, the administration, the population, the legislation, the water demand, the water supply, the geography and the climate. In addition, it included an extensive field work ([photos](#)) for the collection of information on water systems, pumps, resources booster stations, reservoirs and networks of the four former water authorities, [Saida](#), [Nabeh El-Tasseh](#), [Jabal Aamel](#) and [Sour](#). All these data were compiled under a GIS system through the use of a GPS providing the coordinates (X, Y, and Z). Those coordinates were later used as a data base for the development of the hydraulic Model.

The final list of assets for the SLWE was laboriously prepared in coordination with the technical staff at the ministry and at the four former water authorities in the south. An assessment process for the assets financial values was carried out based on available data on the equipment from the ministry, water authorities and/or through consultations with private suppliers in the market.

The purpose behind this work was mainly to introduce the value of the SLWE assets into the financial cost recovery model in order to account for their depreciation in calculating the yearly cost recovery rates ([complete list of assets](#)).

In addition to assets assessment, thorough field work was conducted to gather water flow measurements at multiple locations under the four former water authorities. The

flow measurements were then compiled to develop the water balance which in its turn constitutes an integral part of the cost recovery model.

Maps and digitizing

All existing maps on water systems and networks were collected from different sources, some good and others in bad condition, in order to be digitized and used as base for plotting the GPS coordinates taken during the field survey. The result of this work was a set of digitized maps containing the actual water network over the entire SLWE service area which are the basis for developing the hydraulic model for the area.

Deliverables:

- Complete list of SLWE's assets by cost-center with their value
- GIS maps and database for the hydraulic components of SLWE

IDENTIFY INVESTMENT REQUIREMENTS AND DEVELOP ACTION PLAN FOR SYSTEM IMPROVEMENTS

LWPP purchased a very sophisticated hydraulic software called H₂O-MAP that was used for the development of a hydraulic model for the SLWE based on the data collected from the hydraulic survey. This task consists of introducing the compiled maps and data in the aforementioned software in order to establish a geographic information system on the existing water network of the SLWE service area.

Accordingly, the expert on this task, Dr. Selim Catafago, elaborated a water resources optimization plan in the south area and for the former four water authorities, Saida, Nabeh El-Tasseh, Sour and Jabal Aamel. In the process of developing the optimization plan, Dr. Catafago dealt very closely with both the field engineer, Khaled Maalouf and the GIS/Draftsman, Gaby Moujally, to refer to the field data collected and the maps being developed and registered ([network maps](#)). A major contribution to this work was the network maps that were created with the help of the Dr. Jean Chatila, and later corrected and registered by the GIS Expert, Gaby Moujally. Working on the network maps demanded intensive effort and field verification trips to provide information as close as possible to reality.

The approach for the development of the water optimization plan was to study the contribution of all the production points to supplying many suburbs. This approach is done on the scale of each one of the four former water authorities that represent the SLWE (Water Optimization Plan in [French](#) & [English](#)).

It is worth noting that due to the complicated water system / subsystems and the non-reliability of data, the work was complicated. However, all systems were studied and a model designed to identify the different options under each water system in order to optimize the use of water resources for the entire service area.

The adopted approach is comprehensive; it suggests concentrated consumption demand and seeks to find a better combination of concentration centers to reach the minimal electrical cost. Different solutions are conceived:

- Developing certain resources.
- Reducing pumping by favoring supply by gravity.
- Resorting to new production points.

It turned out that these improvements lead to electrical savings in addition to operation savings. However, in certain cases, additional investments and expenses are necessary such as those related to distribution lines, pumping and treatment plants, complementary pumping and water treating.

Optimal allocation of water resources in order to reduce electrical expenses showed that developing certain production points, reducing these points number as well as resorting to new resources could reduce the annual electrical cost in important proportions: about 28% for the whole region reaching up to 43% in Jabal Amel. The total saving is inclusively about \$ 2.5 Million. This corresponds to about 3.5 cents per produced m³ and about 5.3 cents per subscribed m³ at the moment.

However, saving is not only linked to the electrical energy but also to the technical services and maintenance required by the wells. These costs are inclusively estimated at about \$ 1.1 Million; about 1.5 cents per produced m³ and 2.3 cents per distributed m³.

There is a good reason to notice that the fact of stopping a number of production points does not mean the absence of all maintenance expenses. In fact, these resources should be able to respond to every solicitation.

Consequently the total annual saving is about \$ 3.6 Million, about 5 cents and 7.5 cents per produced and distributed m³, as described in the following table:

Table 7. Annual amount saved by system improvement

	Electricity saved per year (\$)	Services saved per year (\$)	Technical saved per year (\$)	Total savings per year (\$)
Jabal Amel	1,458,127	100,800	159,600	1,718,527
Sour	469,586	129,600	205,200	804,386
Nabeh El Tasseh	431,298	182,400	288,800	902,498
Saida	153,941	24,000	38,000	215,941
Total	2,512,952	436,800	691,600	3,641,352

Another important aspect of this work is the possibility of introducing its results into the financial model in order to calculate its impact on the financial situation of the establishment.

The outcome of the optimization plan provided substantial data for the finalization of the SLWE business plan.

Deliverables:

- Water Optimization Plan for the SLWE

PROCURE AND INSTALL PRODUCTION AND ZONE METERS IN THE SOUTH

Following the development of a Water Optimization Plan for SLWE during the first phase of the program, USAID funded the procurement and installation of production and zone meters in the south to have a well documented piping system. During its previous work, LWPP had to deal with a major problem - the lack of data related to flow measurements of the major water sources. In this perspective, the program suggested the installation of production meters on major sources identified in the Water Optimization Plan.

As for the zone meters, LWPP agreed with SLWE's management to cover the city of Saida given that the former Saida Water Authority's service area is the only one equipped with consumers' meters in the south. In addition, the water system in Saida forms a closed loop adequate for zone meters installation and monitoring of water distribution.

Field survey to inspect locations

The work on this activity started with a field survey in South Lebanon to visit the locations for potential meters installation ([photos](#)). The survey was conducted by our field engineer, Khaled Malouf, who visited the major 70 water production sources identified in the optimization plan to check the existence of a meter or not, and the specifications of the locations where a meter is needed.

The field survey covered also the city of Saida where Malouf arranged several meetings with the technical department of the SLWE to collect maps related to the water system in Saida, agree on the locations for zone meters installation, and determine the specifications of these locations. Accordingly he prepared an AutoCad map representing the area with the locations where the meters will be installed ([Saida map](#)).

In parallel, Malouf started identifying potential suppliers on the local market and comparing the meters' specifications with international standards, primarily those of the American Water Works Association (AWWA) and the International Standards Organization (ISO).

The objective of this task was to determine the best types of meters for each location and prepare tender documents with a clear Bills of Quantity (BoQ) to allow potential meters' vendors provide the best solution per location.

Procurement of production and zone meters

Based on the data collected from the field survey, Khaled Malouf prepared a detailed [BoQ](#) showing the specifications of each meter per location and associated accessories. He assisted LWPP in the preparation of the tender documents for the procurement of the meters that included technical guidelines to bidders ([RfP](#)). Accordingly, DAI advertised in a local newspaper and in the United States to receive expression of interest from qualified companies for the supply and installation of 86 meters in the south.

DAI did not receive any interest from US companies. Ten local companies submitted their profile. Only six were qualified, the RfP was released in April 2006 and the proposals received in May 2006. The evaluation committee, formed by representatives

from MEW and SLWE, in addition to DAI, reviewed the proposals and selected Hattab Bros. Engineering Est. for the supply and installation of the meters ([evaluation report](#)).

Following USAID approval to subcontract Hattab Bros. Engineering Est., the project manager in charge conducted a field survey to South Lebanon to check all the locations where the meters will be installed and update the BoQ. He noted several changes in some locations due to the works undertaken by the establishment, and/or due to the 2006 summer's events in the south. Once the list of locations and specifications updated, the subcontractor ordered the shipment of 86 meters (53 production and 33 zone). The final list of equipment LWPP procured for the SLWE included the following:

- 66 mechanical water meters
- 19 electromagnetic flow meters (insertion type)
- 1 electromagnetic flow meter (flanged type)
- 86 single channel data loggers
- 11 lightening protection systems
- 5 hand held units for data extraction

It should be noted that this activity suffered from major delays due to the late extension of the MOU between the MEW and USAID given the political situation prevailing in the country and the impossibility to get the Council of Ministers' approval for exemption from taxes and custom duties associated with the procurement of the meters. The first two shipments of meters and associated accessories stayed in Beirut port and airport for more than a month before they were cleared following the help of the MEW and the SLWE.

Installation of production and zone meters in South Lebanon

Once the meters cleared, Hattab started immediately the installation works in specified locations in the south. The engineer in charge worked intensively on the configuration of the data loggers in parallel to the installation of the meters, under the supervision of LWPP. Hattab designed also an anti-vandalism enclosure for the data loggers installed with the zone meters in Saida. He also performed the civil works associated with the installation of the meters ([Photos](#)).

Given the lack of personnel to perform a regular reading of the meters in the SLWE, LWPP requested from the CEO/DG of the SLWE to contract a local company to provide one or two employees who will be responsible for meters reading, data collection and management. These two employees will be trained by Hattab on the use of the hand held units to download the data and export them into excel files. The objective of this training is to ensure the sustainability of LWPP work.

Deliverables:

- 53 production meters and associated accessories installed in South Lebanon
- 33 zone meters and associated accessories installed in South Lebanon
- 86 data loggers installed with each meter

DEVELOP A WASTEWATER MASTER PLAN FOR SOUTH LEBANON

With the approval of law 221 of May 2000 to restructure the water sector in Lebanon, wastewater disposal and treatment became the responsibility of the newly formed water establishments. That is why LWPP included the development of a wastewater master plan for South Lebanon as an activity of SLWE's business plan, and included this activity during its second phase of operations. The following is a description of the tasks performed under the wastewater component of LWPP and its major results.

Procurement of services for the development of the master plan

The team initiated the work by conducting meetings with stakeholders involved in the wastewater sector and reviewing existing documents, reports and studies on wastewater in the south to determine the level of coverage in South Lebanon. As a result, LWPP proposed to hire the services of a local consulting firm for the development of the master plan. Accordingly, DAI prepared the Terms of Reference ([ToR](#)) for the development of the master plan and discussed them with SLWE for approval.

DAI advertised in Lebanon to receive company profiles for the development of the South Lebanon Wastewater Master Plan. We received nine company profiles. Only six were qualified. The team prepared an [RfP](#) for the development of the master plan and released it in August 2005. We received five proposals in response to the RfP.

The evaluation committee formed by representatives from the MEW, the SLWE and DAI reviewed the proposals and selected Rafik El Khoury and Partners (REK) for the development of the wastewater master plan ([evaluation results](#)).

Assessment of the current wastewater situation in Lebanon

The first step of the work was to assess the current wastewater situation in the country by reviewing the existing documents and reports related to wastewater and meeting with major stakeholders involved in the sector. Once this phase complete, REK prepared an inception report and a priority action plan detailing step by step his methodology for this assignment. The action plan was presented to the SLWE's BOD for approval ([inception report](#) and [priority action plan](#)).

Development of a GIS database

Based on the collected information from the different sources, REK developed a GIS-based general layout for the South Lebanon Wastewater Master Plan where 32 schemes are presented with all the associated networks, treatment plants, pumping stations and sea and river outfalls.

To avoid any duplication of efforts, REK included the existing projects and ongoing studies in his master plan without any modifications, and proposed new projects for the areas not covered by previous studies. The team conducted several field visits to take GPS readings in specific locations and update the existing maps. LWPP arranged several meetings with our GIS expert, Gaby Moujally, to coordinate with REK's team and provide the existing layout for potable water. Accordingly, the GIS package was delivered to LWPP with a user's manual to facilitate the update of the existing map in the future. ([GIS map](#) and [manual](#)).

Development of South Lebanon Wastewater Master Plan

Parallel to the development of the GIS package, REK's team proposed new wastewater projects for the areas not covered by previous studies in South Lebanon. To do so, it was necessary to estimate the population in all villages within the service area of the SLWE, based on different sources of statistics: the Central Administration for Statistics (CAS) and the Ministry of Social Affairs (MoSA). These population figures were projected to the year 2030 to take into consideration population growth and future demand.

In this perspective, the entire SLWE's service area was divided into 32 schemes based on technical, operational and environmental criteria (IWRM approach), supported by a legal and environmental framework as well.

The scheme approach was considered for operation reasons and for project requirements. The 32 schemes constitute operationally standalone and complete zones. Completeness of a scheme (i.e. a project) means that in one wastewater basin, there will be a sewer network that coexists with one or more treatment plants and one or more pumping stations all located and distributed to have full containment of the wastewater generated. It is to be noted that the scheme size is dictated by the topography and extent of the wastewater basin.

Each scheme included proposed projects to ensure a proper wastewater disposal and treatment and consists of the following:

- A number of localities (cities, towns, villages and small farms)
- A network of main collectors starting at the externals of the localities
- In-locality collection networks for the concerned localities
- One or more pumping stations (if any)
- One or more treatment plants
- Sea or river outfall – an effluent discharge point.

For remote areas, standalone small communities and agricultural farms which are not connected to any public local or regional sewer network, septic tanks were proposed in order to provide full containment and sound management of the wastewater discharged in these areas ([wastewater master plan](#)).

Investment plan and prioritization of projects

Following the development of the master plan, it was necessary to develop an investment plan showing the cost of the proposed projects and the priority of each of the projects. Practically, this work included the determination of both **capital expenditures** and **operational expenditures** for the proposed wastewater schemes. The following parameters were taken into consideration in the preparation of the investment plan:

- Population scenarios
- Cost of network (Main Collectors + In-Locality Collection Network)
- Cost of treatment plants
- House connections
- Network maintenance-associated equipment and facilities
- Operational costs of network and treatment plants

- Revenue payback period
- Prioritization criteria for project implementation

The costs used in the investment plan were based on average and fair price estimates of recent CDR projects.

As previously mentioned, two different sources of population figures, namely CAS and MoSA, were considered for the development of the investment plan. Three population scenarios were tested then: scenario 1 where the population figures determined are based on CAS figures; scenario 2 and scenario 3 where the population figures determined are based on MoSA figures. A more conservative approach for pipeline diameters of the main collectors was adopted however for scenario 3, affecting the investment cost.

The purpose for the development of the three scenarios was to obtain different investment costs and thus to determine which scenario would be the most suitable to adopt in terms of the total investment costs (capital expenditures plus operational expenditures).

The results of the [investment plan](#) are summarized in the tables below:

Table 8. Comparative table for CAPEX of the three scenarios (in US \$)

Scenarios	Network cost	Treatment plants cost	House connections	Networks associated maint. cost	Contingencies	Total cost
Scenario 1	403,704,610	170,293,389	91,782,000	4,650,000	140,747,014	811,177,009
Scenario 2	403,502,530	116,151,829	91,782,000	4,650,000	128,793,794	744,880,150
Scenario 3	404,999,310	116,151,829	91,782,000	4,650,000	129,175,528	746,758,664

Table 9. Comparative table for OPEX of the three scenarios (in US \$)

Scenarios	Population 2005	OPEX Network Cost	OPEX Treatment Plant Cost	Total Cost
Scenario 1	1,037,306	130,680	2,323,385	2,454,065
Scenario 2	729,508	130,680	1,560,489	1,691,169
Scenario 3	729,508	130,680	1,560,489	1,691,169

The prioritization of the projects showed that 10 out of 32 schemes have been classified as having low to medium urgency as these areas are not highly populated and impacts on the environment are expected to be nominal; 21 out of 32 schemes have medium to high urgency. Saida scheme is found to have the highest urgency being the most populated scheme. None of the schemes have low urgency. The table below summarizes the criteria taken into consideration in the prioritization.

Table 10: Prioritization Scoring Table

Parameters	Value	Score
Social and Environmental		
Current % Connection	> 80%	1
	50 – 80%	2
	20 – 50%	3
	< 20%	4

Parameters	Value	Score
Social and Environmental		
Degree of urbanization	Rural	1
	Semi rural	2
	Semi-urban	3
	Urban	4
Environmental urgency	Non-vulnerable	1
	Low vulnerability	2
	Medium vulnerability	3
	High vulnerability	4
Technical		
Age of existing network	< 20 years	1
	> 20 years	4
Status of study	None	1
	Preliminary	2
	Feasibility	3
	Detailed design	4
Age of study	> 15 years	1
	11 – 15 years	2
	5 – 10 years	3
	< 5 years	4
Financial		
Cost per capita (\$)	1500 – 2000	1
	1000 – 1500	2
	500 – 1000	3
	< 500	4
Revenue payback period (years)	> 60	1
	41 – 60	2
	21 – 40	3
	< 20	4
TOTAL (out of 32 points)		Lowest score = 8
		Highest score = 32

A final report was submitted to LWPP with the end of this assignment summarizing the findings and major obstacles and challenges ([REK final report](#)).

Deliverables:

- GIS package for all existing and proposed wastewater projects for the south with manual
- Wastewater master plan
- Wastewater investment and prioritization plan

Chapter Five Capacity Building

Since its start in 2002, LWPP worked on a variety of activities with the water establishments in Lebanon. The program team members were in regular interaction with employees from different sections at different staff levels, ranging from the management to data entry staff.

This close interaction between the program and the water establishments gave us a clear picture of the staff's qualifications, which has helped us to identify areas to enhance and improve the establishments' performance, as part of a human resources capacity development program that constitutes a main part of the strategic objectives expressed by the SLWE management team in the course of developing the business plan.

In addition, the priority areas identified were directly linked to the activities undertaken by the program to allow the establishments make the best use of the tools developed for them and ensure the sustainability of LWPP work, mainly in the areas related to accounting and financial management.

BUILD COLLABORATIVE PLANNING AND NEGOTIATION SKILLS AMONG STAKEHOLDERS

The objective of this activity was to introduce the concept of collaborative planning and improve the negotiation skills of the different stakeholders involved in the water sector, especially in water planning and development issues.

A first workshop was organized by LWPP assisted by two experts, Monir Bu Ghanem and Oussama Safa in August 2003, with 28 participants from the Ministry of Energy and Water, the Lebanese water establishments and municipalities of South Lebanon ([photos](#) and [list of participants](#)).

The workshop was a very interesting exercise in two aspects, the understanding of the audience, who showed some unexpected reactions during such an uncommon training, and the capacity building aspect of the task which was totally new to the participants. A detailed report in [English](#) and [Arabic](#) on the minutes of this workshop was prepared and distributed to the participants.

A second, more advanced workshop took place in April 2004 ([agenda](#), [list of participants](#) and [photos](#)). LWPP defined a detailed collaborative planning scope for the organization of the second workshop on collaborative planning and conflict management ([scope of work](#)). It was designed to impart to the participants effective skills in negotiations and collaborative planning, to assist them in dealing successfully with the daily conflicts they encounter at work, and to help them prevent disruptive disputes.

The two-day training workshop was designed and delivered in a participatory approach that focused on engaging the 30 trainees in plenary discussions, small groups and role play simulations. The overall objective was to utilize their experiences with real life examples while experimenting new skills and techniques that will help them address common daily problems at work ([complete workshop material](#)).

The curriculum included short but specific theoretical lectures to equip trainees with the necessary guiding principles to negotiate and deal with conflicts constructively and introduce the strength of collaborative planning that could be introduced in water issues ([workshop report](#)).

Certificates for this workshop were prepared and signed by the program's COP and PM and distributed during the closing seminar of year 2, on September 16, 2004, to all participants eligible for this certificate ([sample certificate](#)).

Deliverables:

- Two workshops on Collaborative Planning and Negotiation Techniques for stakeholders involved in the water sector

COURSES IN ACCOUNTING, FINANCIAL DATA MANAGEMENT AND FINANCIAL MODEL USE

Along with the financial model in SLWE and BMLWE, supporting activities were undertaken to ensure a smooth transition of the model between LWPP and the establishments' staff. These activities are represented through the capacity building process that LWPP designed for the establishments' staff. Several trainings took place and covered many areas.

In SLWE, the following trainings took place:

- Excel course delivered by the ALLC in Saida for 9 participants from SLWE in November 2003 ([list of participants](#), [photos](#) and [certificates](#)).
- Data management training for 7 participants from SLWE in December 2003 ([training material](#) and [photos](#)).
- Introduction to modern accounting practices delivered by Ahmad Al-Azzam to 12 participants from SLWE in February 2004 ([presentation](#) and [photos](#)).
- Model training delivered by Ahmad Al-Azzam and Nabil Chemaly to 12 participants from SLWE in June 2004 ([training material](#) and [photos](#)).
- Model training for SLWE's decision makers in June 2004 ([trainings report](#), [photos](#)).
- Model training for 12 financial operators from SLWE in July 2004 ([photos](#)).
- Final model training for 9 SLWE's financial operators in September, 2004 ([photos](#)).
- Accounting training for 13 SLWE's financial operators in February 2005 ([training material](#), [report](#) and [photos](#)).
- Model training for 12 SLWE's financial operators in July 2005.

It should be noted that all these trainings were followed by continuous on-the-job trainings conducted by LWPP financial team working with seven operators from the SLWE who were responsible for financial data management on a daily basis and annual update of the model.

In BMLWE, the following training took place:

- Financial data management and model training delivered by Mitri Abi Jreiche and Nabil Chemaly for two financial operators from BMLWE in December 2006 ([training material](#) and [report](#)).

Deliverables:

- Training courses in Excel, accounting, financial data management and model use for SLWE and BMLWE employees.

COURSE IN ENGLISH LANGUAGE

The program conducted a course in English language during 2005 for the SLWE employees to allow them better use the tools developed by the program and facilitates computer use. It contributed also to improving their English skills in case they have to deal with external and/or international consultants visiting the establishment.

Five English courses took place for seven employees at the ALLC in Saida. The different levels were as follow:

- Level 100 A for six employees
- Level 100 B for six employees
- Level 101 for seven employees
- Level 102 for five employees
- English speaking course for five employees

With the end of each course, the participants received certificates of achievement from the ALLC ([photos](#) and [sample certificates](#)).

Deliverables:

- English language course for seven SLWE employees.

COURSE IN COMPUTER FOR OFFICE USE

Another training conducted within the capacity building program of LWPP is the computer for office use course conducted in May 2006 for nine employees from SLWE. The objective of this course was to improve the SLWE employees' computer skills to allow them update and use the financial cost recovery model and later on, get trained on the newly developed FAS ([photos](#)).

The course covered the following:

- Windows
- Internet use
- Excel (beginner and intermediate)

Deliverables:

- Computer course for nine SLWE employees.

COURSE IN MAINTENANCE TECHNIQUES AND GOOD PRACTICES

As part of LWPP's efforts to assist the SLWE in its tasks through providing professional technical assistance in critical sectors, and based on the program's team observations

during site visits while conducting the hydraulic survey in SLWE that revealed malpractice in more than one application, LWPP set forward a training course for around 22 operators of pumping stations and treatment plants in SLWE on “**Maintenance Techniques and Good Practices**” ([list of participants](#)). The course consisted of six sessions that took place in July and August 2005. The topics tackled issues that describe the major components in pumping stations and emphasize on the proper maintenance practices related to these components. The concept of preventive maintenance - rarely adopted in any water utility in Lebanon - was presented in details and encouraged ([presentations](#)), and a manual was prepared and distributed to the participants ([course manual](#)).

The course was prepared by our field engineer, Khaled Malouf, and the program invited selected speakers with known experience in the water sector to share their knowledge with the participants ([photos](#)). The interest of the speakers in contributing to the sessions emanated from their will to contribute to the development of SLWE from one side and benefit from the opportunity to expose their products to potential customers from the other side.

With the end of this course, LWPP prepared a report on the minutes of the training sessions that was submitted to USAID ([report](#)).

Deliverables:

- Training on maintenance techniques and good practices for 22 SLWE employees.

COURSE IN HUMAN RESOURCES MANAGEMENT

Following the approval of the new by-laws and organization structures of the water establishments in Lebanon, it was essential to develop a training program for the employees to introduce new concepts of water utility management in line with the new structures. In addition, and as part of the implementation of the different performance improvement programs stated in the SLWE’s five-year business plan, LWPP developed and conducted a training course in Human Resources Management (HRM) for ten senior managers from the SLWE to introduce basic concepts of HRM and improve the relations between the establishment and its employees ([list of participants](#)).

The six-session training course took place in April 2006 and was conducted by our institutional expert, Jean Karam, at the SLWE’s headquarters in Saida ([photos](#)). LWPP compiled all the presentations to form a reference manual that was submitted to the participants ([manual](#)). The course covered the following topics:

- Overview on HRM and the Recruitment Process
- Compensation plans
- Performance Management
- Relations with the employees and HRMS
- Benefits and Capacity Building
- Conflict resolution

With the end of the sessions, the participants evaluated the course and gave recommendations ([evaluation](#)). LWPP prepared a report on the minutes of the training that was submitted to USAID ([report](#)).

Deliverables:

- Course in Human Resources Management for ten SLWE employees.

COURSE IN CLIENT SERVICE MANAGEMENT

In the same perspective, and in an attempt to introduce new concepts to water utility management, LWPP conducted a four-session course on Client Service Management (CSM) for thirteen employees from different departments of the SLWE ([photos](#)). The course was conducted in December 2006 by our institutional expert, Jean Karam, and was tailored in a way to fit with the scope of work of the “Customer Service and Marketing” section of the SLWE.

LWPP compiled the presentation of the four sessions to form a reference manual that was distributed to the participants ([manual](#)). The sessions covered the following topics:

- Introduction to the concept of customer service
- Importance of efficient communication with customers
- Providing services to the customers
- Problems solving: time and stress management

With the end of the course, LWPP prepared a report on the minutes of the training that was submitted to USAID ([report](#)).

Deliverables:

- Course in Client Service Management for thirteen SLWE employees.

COURSE IN GIS

LWPP included a GIS course in its capacity building program to train employees from the SLWE on the use of the GIS procured for the establishment by updating the databases generated by the program and produce maps. The program’s GIS expert, Gaby Moujally, prepared a manual for the GIS users that was discussed with LWPP ([GIS manual](#)).

After consulting with the SLWE management, the CEO/DG of the SLWE recommended only one employee to attend the course and manage the GIS database in the future. Due to the unavailability of the assigned employee, and given that a parallel project to LWPP, the IPP – water project, conducted a training for the same person from SLWE on GIS use, LWPP decided to submit the prepared manual to SLWE and provide support upon request in order to avoid any duplication of effort.

Deliverables:

- GIS manual

COURSE IN WASTEWATER OPERATIONS

As part of its capacity building program, LWPP planned to conduct a training on wastewater operations to the SLWE’s employees given that this activity is new to the establishment following the approval of the by-laws. However, and given that the establishment was not able to hire new qualified employees for its wastewater department, the course could not be conducted.

The following table summarizes the different tasks/trainings conducted under the capacity building program for the SLWE along with the number of beneficiaries.

Table 11: List of trainings and number of beneficiaries

Training area	Number of beneficiaries
Collaborative planning and negotiation techniques	30
Excel	9
Accounting	12
Financial data management (+ on-the-job trainings)	12
Financial cost recovery model	7
English language	5
Computer for office use	9
Maintenance techniques and good practices	20
HRM	10
CSM	13
GIS	1
Wastewater operations	N/A
Total	126

Chapter Six

LWPP Events

During its four years of operations, the program conducted many workshops to present its results and outputs to the different stakeholders involved in the water sector in Lebanon, discuss its approach and get their feedback.

The different parties invited to these workshops are in general key ministries and public institutions involved in the water sector such as the Ministry of Energy and Water, the Ministry of Environment, the Ministry of Public Health, the Ministry of Finance, the Council for Development and Reconstruction, regional water establishments, donor agencies such as USAID, EU, AFD, UNDP, ESCWA, NGOs and universities.

In addition to all program activities, seminars and trainings conducted previously by LWPP on different subjects such as PPP, financial modeling, etc. with different stakeholders involved in the water sector, this chapter gives an overview about five major events conducted by LWPP during the course of its implementation.

LAUNCHING WORKSHOP – MARCH 2003

The first national workshop of LWPP was conducted in March 2003 under the auspices of H.E. Minister of Energy and Water Dr. Mohamad Abdel Hamid Beydoun.

The objective of the workshop was to expose the future plans of the newly founded SLWE. It further aimed at describing the technical and administrative support LWPP is providing to the establishment in terms of water sector policy reform and tariff restructuring.

The workshop was designed to have three sessions in addition to the opening ceremony, each session with a certain objective.

The first session was intended to introduce the concept of Public Private Partnership (PPP) in the water sector in order to build a knowledge base among the different stakeholders and government officials on this issue. It also exposed the LWPP mission and objectives.

The session started with a presentation by Eng. Bassam Jaber, LWPP program director, who presented the LWPP objectives, approach and outputs.

The General Director of the Hydraulic and Electrical resources at the Ministry of Energy and Water, Dr. Fadi Comair, gave an analysis of PPP based on applications from different countries. He pointed that PPP could lead to a sharp improved managerial practices and higher operating efficiencies, but the private sector is not able at the short term to overcome the inefficiency and under-investment inherited from the public sector. Therefore, complementary reform is required to accompany the private sector participation.

The General Manager of ONDEO-Liban, Mr. Jean-Claude Seropian, gave an overview about the Tripoli water authority management contract awarded to his company, the

findings ONDEO-Liban encountered after taking over and the contract objectives and conditions for success.

The second session was designed to expose the vision of the newly formed SLWE. It further introduced LWPP showing the different activities of the program in the south. It explained the progress and the intended results as well as ways and means through which the program will help the SLWE implement its vision.

This session started by a presentation by the CEO/DG of the SLWE, Mr Ahmed Nizam, who presented the current situation and concerns of the water establishments, the objective of SLWE that is the design of a master plan to minimize as much as possible the unnecessary expenses, and a brief background on the initiation of the LWPP and the need for its work.

The second presentation was given by Mr. Bu Ghanem, LWPP's collaborative planning expert who presented his findings after assessing the stakeholders' interests and concerns concerning water pricing and public private partnership.

The third presentation was given by Dr. Jean Chatila, LWPP's senior engineer on the hydraulic and asset assessment study who presented the problems faced by the water sector in Lebanon, some suggestions for improvement and the conditions for their success. He then explained the scope of his work, the conditions for success of this study and the commitment and contribution of each party involved.

The fourth presentation was given by Dr. Selim Catafago, one of the senior engineers working with the LWPP in providing technical assistance to the SLWE. His presentation exposed the scope and objectives of his work for the evaluation of the existing main supply network, identification of development needs and the development of a rehabilitation strategy with the estimate of the cost of a 24-hour supply.

The third session had as purpose to share the process of implementation and collect the feed back of stakeholders in an attempt to introduce a collaborative planning approach in improving water services and create a link between the stakeholders and the SLWE.

A report on the minutes of this workshop was prepared and submitted to USAID, along with all the presentations ([report](#), [presentations](#) and [photos](#)).

FIRST YEAR CLOSING SEMINAR – SEPTEMBER 2003

Before closing its first year of operations, LWPP organized a one day seminar sponsored by H.E. the Minister of Energy and Water, Dr. Ayoub Homayed and attended by the representative of the USAID Mission Director in Lebanon, Ms. Sana Saliba Khoury, to expose the operations of its first year's activities. The objectives of this seminar were as follows:

- Ensure program transparency
- Coordinate with all stakeholders in the water sector
- Avoid duplication of efforts among donors and actors
- Information sharing for better future orientation

The seminar was divided into three sessions and an opening one. The sessions were divided according to the assistance components provided by LWPP, i.e. the national activities component, the institutional component, and the technical component.

Under each component, a number of experts were performing the tasks allocated to them and planned for the first year of operations.

The opening session was inaugurated by the program director, Eng. Bassam Jaber, who went through an explicit expose on the progress of work during the first year of operations.

Following Mr. Jaber, Ms. Saliba Khoury delivered the USAID word about the program components and the challenges faced in addition to a quick overview over the successful outputs that she presented as practical results and not studies to be put on the shelves. She terminated by a request for further cooperation from the concerned parties in developing national policies wishing that by the beginning of next year (2004), all Water Establishments would have had their By-laws approved by the Council of Ministers.

From his side the Minister thanked USAID for their support and assistance in such a pioneer program which among its objectives should pave the way to the proper introduction of Public Private Partnership into the water sector in Lebanon. He expressed as well his interest on replicating the work of this project on other water establishments. He emphasized on the fact that the government cannot deal with water as a commercial commodity. Water is a need, he said, and the government should act on supplying it regularly, which means that we should properly manage it, exploit it and create partnership with the private sector to maintain a good service. He finally ended by supporting all future cooperation with USAID and looking forward to widening its scope.

The first session on the national activities of the program started with a presentation by Philip Giantris who presented the scope of his work in building awareness around PPP and his approach that consists on providing knowledge. He pointed out the steps that Lebanon should follow to properly manage its water resources such as the preparation of proper legislations, capacity building, etc. and the reasons why international trends are encouraging PPP in water management. Finally, he spoke about the different meetings he had with key stakeholders in the water sector to discuss PPP issues in Lebanon and his projected scope for the following year.

The second presentation in this session was given by Monir Bu Ghanem who spoke about the first collaborative planning workshop conducted by LWPP as a part of its capacity building program.

The third presentation in this session was conducted by the program's financial analyst, Roger Melki, on the framework for a tariff strategy developed at the national level. He stressed on the need to implement a strategy that takes into consideration all the expenses of the establishments. He spoke also about the current tariffs, the lack of accurate financial data for proper pricing and the major recommendations and suggestions that should be adopted when setting a new tariff strategy.

The second session covered the activities under the institutional component of the program. It started with a presentation on the financial model development in Saida Water Authority as a pilot project by Ahmed Al Azzam and Nabil Chemaly. The presentation covered the objectives and structure of the model, the data collection process, the challenges and obstacles of this activity and the deliverables and next steps.

The second presentation of this session was conducted by Philip Giantris who spoke about the business planning process in the SLWE. He presented the approach and steps of the process, the mission statement of the establishment, the elements of a business plan and the issues that need to be resolved.

The last presentation of this session was conducted by LWPP's institutional expert, Jean Karam, who explained his scope of work related to the development of a new organization structure for the SLWE, the importance of a new structure for the establishment, the methodology and approach adopted, the obstacles and challenges and the output of his work along with its added value.

The last session of the workshop covered the activities under the technical component of LWPP. It started with a presentation by Dr. Jean Chatila who exposed the data collection process related to the hydraulic survey and asset assessment in the SLWE and the analysis of the water system in the south.

Following Dr. Chatila, Dr. Salim Catafago presented the actual problems faced by the SLWE at different levels: technical, administrative, financial, planning and legal. He then explained the actions undertaken through his scope of work in order to be able to reach a comprehensive study on optimal use of water resources in the south. He ended the presentation by an explicit description of the solutions that will be proposed with their economic implications.

A report on the minutes of this workshop was prepared and submitted to USAID including all the discussions and presentations ([report](#), [presentations](#) and [photos](#)).

SECOND YEAR CLOSING SEMINAR – SEPTEMBER 2004

The second year closing seminar took place in September 2004 to present the different activities and outputs of the first phase of LWPP.

The opening session of the seminar was inaugurated by the LWPP's COP, Dr. Peter Reiss who welcomed the attendees and thanked the Ministry of Energy and Water represented by H.E. Dr. Ayoub Hmayed, for all the support provided to the program as well as USAID mission director, Mr. Raouf Youssef.

LWPP program director, Eng. Bassam Jaber, followed and went through an explicit expose on the progress of work during the second year of operations. He explained all the progress at the institutional, technical and policy levels and major outcomes of the second year.

Following Eng. Jaber, the CEO/DG of the SLWE, Mr. Ahmad Nizam, thanked USAID for its support and assistance in such a pioneer program that coordinated with the SLWE before undertaking any action and wished that all grants and projects adopt the

same methodology. He added that what was achieved so far was unexpected and surprising, supporting his request for continuing cooperation with USAID.

USAID mission director, Mr. Raouf Youssef, expressed his support to all future cooperation with the public sector in Lebanon and willingness to widen the scope of LWPP assistance to the water establishments in Lebanon.

The Minister thanked USAID for its support and assistance in such a pioneer program. He listed all the program outcomes emphasizing on the five-year business plan for the SLWE as a unique and pioneer activity in public institutions in Lebanon.

The Opening session ended with the distribution of certificates of achievement to a group of MEW and water establishments employees who participated in the advanced Collaborative Planning and Conflict Management workshop organized by LWPP in April 2004.

The first session of the workshop was dedicated to explain all the field and preparatory work conducted at the technical, administrative, legal and financial levels that were undertaken by the program in order to create solid foundations on which all program activities were based. The first presentation was conducted by the program's field engineer, Khaled Malouf, and GIS expert, Gaby Moujally, who presented the data collection process of all SLWE's fixed assets and databases and maps generation.

The second presentation was conducted by LWPP's legal expert, Issam Issmail, who presented the indexing and analysis legal texts related to the water sector and privatization.

Finally, Philip Giantris presented the different outputs and results of the business planning process in the SLWE and the added value of this work.

The second session of the workshop covered the capacity building program of LWPP that complements the institutional component. It started with a presentation by Roger Melki on the tariff strategy developed for the SLWE, along with the different tariff options and their impact on the establishment's revenues.

The second presentation covered Philip Giantris' work to build awareness and common understanding of PPP in Lebanon. Giantris reviewed the Lebanese water sector's situation and named some essential elements of a solution.

The third and final presentation in this session was conducted by Monir Bu Ghanem on the collaborative planning trainings conducted by LWPP and the identification and analysis of a village based water issue in Hasbaya, as part of the conflict resolution activities on the program.

The third and final session of the workshop covered the tools built by LWPP and delivered to the SLWE.

Ahmed Al Azzam and Nabil Chemaly presented the financial cost recovery model developed for the SLWE along with the capacity building program associated with it to ensure the sustainability of the work.

Dr. Selim Catafago presented the results of the global analysis for optimization of water resources in the south including the number of major resources and quantities needed, the total savings generated by the plan and the required investments.

The seminar ended with a closing statement by the LWPP coordinator, George Akl, who presented the lessons learned during the first phase of LWPP, the major obstacles and challenges and recommendations for next steps constituting the foundation for a second phase of LWPP.

LWPP prepared a report on the minutes of the seminar including all presentations that was submitted to USAID ([report](#), [presentations](#) and [photos](#)).

YEAR THREE CLOSING SEMINAR – SEPTEMBER 2005

With the end of its third year of operations, LWPP conducted a closing seminar like every year to present the major program outputs and results. The seminar was conducted in September 2005 where more than 100 participants from different parties and institutions involved in the water sector in Lebanon.

The seminar started with an introduction on the program's major objectives and impact conducted by the program director, Eng. Bassam Jaber.

Following Eng. Jaber, the CEO/DG of the SLWE, Mr. Ahmed Nizam, thanked USAID for its support stressing on the demand-driven approach of LWPP and requested continuous assistance from USAID.

Ms. Sana Saliba Khoury from USAID listed the program achievements and outcomes at different levels and stressed on the fact that LWPP was a successful program. That is why the work done in the SLWE was replicated in Beirut/Mount Lebanon.

From his side, the DG of the MEW, Mr. Hassan Hachem thanked USAID for its support making the transition phase following the approval of the water establishment's by-laws simple.

The opening session ended by distributing certificates of achievements to a group of SLWE's employees who participated to the advanced English course under the capacity building component throughout the third year.

The first session of the seminar covered the activities under the policy making component of the program. Roger Melki presented the progress under the tariff strategy activity and the major obstacles he is facing in this work with three water establishments: BWE, NLWE and BMLWE. He presented also the revised scope of work if this activity and its objectives.

Our legal expert, Issam Issmail, presented the proposed amendments to legal texts related to the water sector and privatization in Lebanon and the need to adopt these amendments to facilitate PSP and the major stakeholders involved in the water sector who will contribute to commenting these amendments.

Monir Bu Ghanem then presented the awareness activities conducted throughout the year in South Lebanon on water conservation, and the awareness material produced and distributed in the south.

The activities under the institutional strengthening component were presented during the second session. Nabil Chemaly presented the progress under the development of the BMLWE's financial model and the major obstacles faced.

Ahmed Al Azzam presented the progress under the development and implementation of a new financial and accounting system (FAS) for the SLWE. He stressed on the features of the new system that integrated both commercial and cash budgets and is in line with IAS. He presented also the capacity building component associated with this activity that is the core if USAID's objective.

The last session exposed the technical assistance activities and capacity building of LWPP during the year. The program director presented the technical activities of the program during this phase – the supply and installation of production and zone meters in the south and the development of South Lebanon Wastewater Master Plan.

Jean Karam presented the outline and the objectives of two training courses to be conducted during this phase – the Human Resources Management course and the Client Service Management course. He stressed on the importance of these trainings following the approval of the by-laws.

Finally, Nabil Chemaly exposed the overall capacity building program of LWPP targeting more than 100 water establishment's employees. He ended the workshop with a closing statement summarizing the obstacles and challenges faced during the implementation of the activities and the recommendations for next steps ([report](#), [presentations](#) and [photos](#)).

YEAR FOUR CLOSING SEMINAR – MARCH 2007

Chapter Seven

Obstacles, impacts and recommendations

This chapter includes four sections related to the major findings and observations of the LWPP team following four years of intensive work and knowledge building on the water sector in Lebanon.

The first section summarizes the obstacles and challenges faced by the program at all levels – technical, administrative, financial and logistic.

The second session presents the LWPP added value for the water sector in Lebanon in general, and the MEW and water establishments in particular. It highlights the importance of the work carried out by LWPP and how it contributed to meeting the program's objectives: identifying the needs of the water sector and increasing efficiency of the water establishments.

The third section covers the lessons learned from LWPP work at both the national and regional levels, and the things to avoid in the implementation of such programs. These lessons learned will help the funding agency, DAI and the beneficiaries better plan and implement similar projects in the future and make the best use of the available funding and tools developed, and how to ensure the sustainability of the work.

The last section proposes a list of recommendations that could be taken into consideration in the future to carry on the assistance to the water sector in Lebanon and complement the work already started by LWPP with the assistance and support of USAID.

OBSTACLES AND CHALLENGES

In the course of executing the different activities of the program, the LWPP team faced several obstacles and challenges sometimes resulting in delays in the implementation of these activities. The team made its best however to overcome these obstacles and kept both USAID and the beneficiaries aware of these obstacles to solve them and/or take a decision in consultation with other parties involved in the program. We will try to describe in this section the major obstacles faced during the implementation of the program and how the team responded to these obstacles.

Lack of a clear vision regarding PPP in Lebanon

This obstacle was one of the major obstacles affecting the national policy component of LWPP including activities related to Public-Private Partnership (PPP) in the water sector. In its first phase, the program conducted an intensive awareness program to promote PPP among key stakeholders in the water sector in Lebanon and proposed the creation of the PPP support unit at the MEW to assist public institutions in general, and water utilities in particular, prepare and negotiate PPP contracts in an attempt to increase the efficiency of the sector. However, and due to the political situation prevailing in the country and the continuous changes of ministers during the last two years, it was hard for the GoL to define a clear vision regarding PPP and allow LWPP pursue this activity.

In addition, the current organization structure of the MEW does not include a PPP unit filled with qualified employees with a clear job description and responsibilities. It was therefore hard for LWPP to carry on this work and obtain a commitment from the government to establish a unit responsible for PPP issues in the ministry.

In this perspective, and following thorough discussions with the water establishments and USAID mission, LWPP decided to keep this activity on hold and facilitate the preparation of a PPP application in the SLWE for the management of the newly developed FAS. SLWE was responsive in this regard and a local private operator, ITEC, will provide 18 employees in the first phase to manage the FAS for the SLWE, proving that PSP in water management is applicable in well defined areas in Lebanon and contributes to solving some of the major problems of the water establishments in Lebanon.

Lack of personnel

Since the approval of law 221 of May 2000 and its amendments, the water establishments have not been able to hire new qualified employees to improve their operations. In fact, the water establishments are extremely under-staffed, and the existing employees are not qualified enough to respond to the needs of modern water utility management requirements. For example, the new staffing plan of the SLWE includes 870 employees, whereas the establishment has only around 250 working currently in all departments.

In this perspective, LWPP had to work with the existing employees and conduct intensive trainings in order to improve their skills and allow them use the different tools delivered to the establishments. Intensive follow-up was required from the program's team, which delayed the progress of some activities such as the FAS.

With the end of this phase of LWPP and the impossibility to hire new qualified employees, the only left solution for the SLWE was the outsourcing of the FAS management to bring in new qualified employees capable of managing the system properly, and train the newly hired employees once the GoL allows the recruitment.

At another level, and as mentioned earlier in this report, the program had a capacity building component in parallel to the different undertaken activities. The objective of this capacity building component was to ensure the sustainability of LWPP work and make sure the existing employees make the best use of the tools developed for the establishments. The choice of the employees who participated in the capacity building activities was based on their current responsibilities and positions within the former water authorities.

With the merging of the former water authorities into water establishments, the responsibilities of the employees in different departments of the establishments changed. Even the location of these employees changed with the new geographical departments of the establishments. Accordingly, some employees could not continue the work as per LWPP's instructions, mainly financial employees responsible for the update of the financial model. The team had to deal with this issue by conducting more on-the-job trainings to new employees or by recommending the recruitment of new staff to carry on the work where needed.

Lack of accurate operational data in the water establishments

Another major problem that faced LWPP during the implementation of its activities was the lack of accurate operational and financial data in the water establishments affecting many activities of the program such as the hydraulic survey, business planning, financial modeling, the development of tariff strategies and the development of the financial system for the SLWE.

Some of the obstacles faced could be evaded, and others we had to accept. These obstacles had a technical, a logistic and a human nature. The technical obstacles were mainly due to the lack of meters installed at the production and distribution levels of the water system for the preparation of accurate and detailed water balances. The financial team had then to rely on the support of the engineers on the program to conduct instantaneous flow measurements on major sources to estimate the flows needed and conduct projections for the future. Although these data became available, their level of accuracy is still however very limited given that all estimates are based on a one-time reading and do not take into consideration the seasonal fluctuations in the flows.

Another problem related to the operational data was the limited technical skills of the staff overseeing the operations in the locations, whether pumping stations or simple wells visited during the hydraulic survey and data collection for the financial model, and the absence of a recording system related to pumps run-time and preventive maintenance associated with it. One more time, the financial team had to request support from the engineers working on the program and rely on estimates for the preparation of the water balance.

Due to the limited technical skills of the technical staff, the hydraulic assessment conducted in the south and the GIS database and maps based on this survey still lack some technical specifications of the existing equipment and network. Even the specs collected, for some of the pumps that are relatively old, were not reliable due to the lack of technicians on site.

Lack of accurate financial data in the water establishments due to obsolete financial systems

At the financial level, the team had to invest a lot in the data collection process to collect the necessary information for the development of the financial models, the business plans, the tariff strategies, and the implementation of the new FAS in the SLWE. The existing financial systems in the water establishments are all cash-based systems, where only paid expenses are accounted for. Such systems do not allow the calculation of the provisions for the end of service indemnity of the employees and assets depreciation, and lack major unpaid expenses amounts such as power and maintenance expenses. The team had then to inspect all the establishment's offices and conduct meetings with many employees in each office to capture all paid and unpaid expenses and reach acceptable results. Input data were also collected during the meetings and interviews to calculate the provisions of the end of service indemnity of the employees based on their salaries.

In addition, the concept of cost-center is not used in the current systems of the water establishments, which required a lot of efforts from the team members to identify cost-centers and assign each expense to the corresponding cost-center.

The team had to deal with the absence of clear records of the existing fixed assets and their aging to value the capital of the establishments and depreciation costs. The senior financial analyst on the program, Ahmed Al Azzam, played a major role in overcoming this problem through the preparation of a methodology to value the assets according to their nature. This was crucial for the development of the financial models and especially for the financial and accounting system in the south where accurate numbers are needed for the opening balances and the generation of sound financial reports.

Manual records and lack of computerization

The establishments' under equipped offices in terms of IT infrastructure was another major obstacle to the progress of LWPP's work. Most of the records and registers, especially at the SLWE, are still manual with some minor computerization. This constituted a burden on the program's team who had to rely on unclear records to collect the necessary data, especially the data related to the water subscribers and unpaid subscriptions.

The team requested also the help of the IT expert on the program, Ramez Mallouk, to extract the available electronic files and databases in the SLWE including data related to water subscribers and convert these files from Mac format to another format readable with applications on IBM compatible PCs.

Lack of local firms specialized in the development and implementation of financial and accounting systems

DAI conducted a bidding process to hire the services of a local accounting firm to participate in the development and implementation of the new Financial and Accounting System (FAS) for the SLWE. Although several companies participated in the procurement process, the experience of these firms was very limited in the development and implementation of such systems. This was reflected in the quality of the deliverables submitted by the winning company, Dar Al Mouhassabah (DAM), where extra efforts were required from the LWPP long-term and short-term experts to complete the system properly and on time.

However, the level of support and follow up provided by the LWPP team to DAM has become a substantial capacity development exercise and a transfer of know-how. This observation falls directly in the heart of USAID's objectives and vision in building national Lebanese capacities.

Lack of commitment from BMLWE

LWPP had to deal with major delays during the development of the business plan and financial model for the BMLWE.

The employees assigned by the CEO/DG of the BMLWE to participate in the business planning process lacked the overall picture of the establishment and the program had to review all the input provided by them with the CEO/DG to take his feedback/comment and adjust accordingly, which resulted in delays under this task.

The data collection process in the BMLWE was delayed due to the restrictions on some data needed for the model. In addition, LWPP was not able to get a commitment from the CEO/DG of the BMLWE to assign two financial employees to update the model.

VAT and custom problems associated with the meters

Like all grants in Lebanon, LWPP is exempted from all taxes and custom duties related to its activities. However, and due to the current political situation prevailing in the country, DAI and USAID had to make a lot of efforts and wait months before getting the MOU between the MEW and USAID extended and getting exemption from the customs payments associated with the procurement of the production and zone meters. LWPP had to wait around two months to get the necessary approvals and clear the meters and related equipment from Beirut port and airport.

LWPP ADDED-VALUE

LWPP was first designed with a clear general objective, “to increase the efficiency of water establishments in Lebanon”. We believe that the program was able to reach this objective throughout the four years of operation and develop tools and new techniques to help the water establishments become more efficient and modern water utilities.

One of the major results of the program was the development and the introduction of new management and analytical tools in the water establishments to improve planning procedures and the vision of these establishments. Financial tools such as the financial model and the financial and accounting system allow the water establishments generate sound accurate financial reports according to international accounting standards like any other commercially viable entity. The availability of these reports facilitates the analysis of the financial situation of the utilities and the development of an improvement program according to clear and well defined performance indicators. It contributes to increasing the transparency of the establishments.

The tools developed for the water establishments constitute also an infrastructure for more international funding and private investment in the water sector. The business plan for example highlights the problems of the establishments, the actions to be taken to solve these problems and reach the strategic goals, and the means to do it. Such a clear vision, supported by numbers and projections, would attract donors and investors willing to assist water utilities, and can result in demand-driven projects based on the needs of the utilities. Other studies such as the water optimization plan and the wastewater master plan constitute the base for future projects that need implementation and contributes to improving the image of the water establishments.

Another major result of the program was the exposure of key decision-makers in the water sector and water establishments’ employees to other experiences in the water sector through trainings, analysis of case studies, study tours and the experience of the international experts working on LWPP. This falls under the capacity building objective of the program to develop local skills in water utility management and form new water professionals. LWPP went even beyond its scope of work targeting water establishments by building national capacities of its long terms experts, Mitri Abi Jreiche and Nabil Chemaly through their work with the international experts on the program, mainly in the fields of PPP, financial modeling and financial systems. The FAS outsourcing contract

facilitated by LWPP is the best example in this regard. PPP was the only solution to compensate for the lack of qualified employees at SLWE.

Efficiency and image improvement can be reached not only through capacity building and the introduction of new analytical tools, but also through the introduction of new cultures and concepts in water utility management such as accrual accounting, human resources management, customer service management and PPP. These concepts proved that the work conducted by LWPP is the first step toward making Lebanese water establishments modern water utilities and viable commercial entities operating according to international norms and standards and customer service principles.

Finally, one major achievement of LWPP was the support provided to the South Lebanon Water Establishment during the summer 2006 events in Lebanon. The program's team provided the establishment with all necessary maps and information required during the emergency and recovery period upon the CEO/DG request, and collaborated where needed with other institutions and NGOs providing assistance to the establishment to avoid any duplication of efforts and facilitate their mission for the benefit of the SLWE.

LESSONS LEARNED

This section summarizes the lessons learned from our work with the MEW and the regional water establishments. The list of lessons learned is divided into two parts, the first part justifying the success of the program and the second part highlighting the things to avoid in project implementation to reach acceptable results.

Keys to success

The success of the program is first based on the good will of the fund owner in contributing to the development of the beneficiary. Since the start of the program, USAID showed a lot of interest in the water establishments in general, and the SLWE in particular, and was always eager to get positive results from the work in the south. The full support of USAID to the SLWE was an important factor to increase the credibility of the program and the ownership of the beneficiary. This support was obvious through the extension of the program from one year initially to four years.

From its side, the SLWE not only provided all the required support to the program, but participated in the identification of its weaknesses and helped better tailor the program activities to its needs. That is why the program was able to pursue a result-oriented approach, where the direct beneficiary was part of the program design and implementation to better solve its problems.

The above two factors constituted the foundation of the synergy between the project objectives and the beneficiaries needs. The demand-driven approach of LWPP was the base of its success and credibility. The program made sure also to submit clear deliverables, accessible to everybody and in different languages to facilitate their use. This was another factor in building the program team credibility at all levels in the water establishments. LWPP worked as a member of the establishments' team keeping in mind the capacity building objective to make the utilities self-sustaining entities.

Things to avoid

In the course of implementing LWPP activities, the team was able also to point out a list of “things to avoid” for the success of the program. The first thing to avoid is the isolation from the host institution and its departments. LWPP was hosted during the four years of implementation by the MEW and the team was in continuous interaction with the ministry’s departments. LWPP facilitated the creation of a steering committee to follow the program’s work, give comments and report to the ministry. The steering committee members participated in all program events and workshops, and provided input to the program. LWPP team was also always aware of other initiatives in the water sector due to the continuous communication with the ministry and was able to coordinate with other projects and avoid any duplication of efforts. The coordination between LWPP and the MSC-IPP Water project funded by the EU is the best example.

Another thing to avoid is the rigidity in the work plan and implementation. As mentioned above, LWPP pursued a demand-driven approach where all activities were tailored to the establishments’ needs. With the start of the program, the team worked with the beneficiaries, mainly the SLWE to revise the original program design and made the necessary modifications accordingly. This was a major factor in increasing the program’s credibility and optimizing the results.

Finally, and in line with the continuous communication and interaction with both the donor and the beneficiaries, LWPP team always made sure to avoid any delays in identifying problems and reporting them. It was very crucial to highlight all obstacles and join efforts with all partners to solve them. The customs exemption is a very significant example. In fact, LWPP was not able to get customs exemption from the government for the purchase of the production and zone meters without the help and support of USAID, MEW and SLWE. This problem was immediately reported by the team and all parties contributed to solving it through a special authorization from the GoL.

RECOMMENDATIONS AND NEXT STEPS

Although LWPP has done a lot for the water sector in Lebanon since 2002, much more still needs to be done at the national and regional levels. This section describes briefly the recommendations of the program team in terms of future interventions in the water sector in an attempt to ensure the sustainability of LWPP work and increase more the sustainability of water establishments in Lebanon.

At the institutional level, it is crucial to replace the existing financial and accounting systems in all water establishments in Lebanon and implement modern systems according to international norms and standards to allow the utilities become commercially viable entities. This is the only way to attract more international funding and private investments to the sector in the future. The first step was carried out by LWPP in the SLWE. Similar initiatives are needed in the remaining three water establishments to have similar systems and financial statements in all water establishments in Lebanon.

Moreover, it is very important to complete the work already started by LWPP in the SLWE under the FAS and implement two more modules in the south, the human resources and payroll modules to have a complete integrated system. These two

modules have not been implemented by LWPP due to the lack of time and funding in the course of the second phase of the program.

Also at the institutional level, more capacity building is needed for both the ministry's and the establishments' employees. This program should target both the existing employees and the newly recruited employees once the government approves new recruitments. It should expose these employees to other experiences in the water sector to learn more about the current international trends in water utility management.

At the technical level, it is highly recommended to carry on the installation of production, zone and consumers meters to have a well documented piping system and improve water monitoring in Lebanon. In fact, one of the major problems facing all four water establishments in Lebanon is "Non-Revenue-Water" i.e. physical losses due mainly to network leakages and administrative losses due mainly to illicit connections and bad metering. The installation of meters permits to control losses and renew the piping system when needed. It allows also testing and implementing the water tariff strategy developed by LWPP for the four water establishments and bill customers according to what they consume.

Another recommendation at the technical level is the implementation of the master plans already developed by LWPP. The water optimization plan constitutes the foundation to reduce the number of existing wells in South Lebanon and therefore reduce the stress on water resources, maintenance and power expenses. In this perspective, it is crucial to translate this optimization plan into tender documents for procurement and implementation.

The same recommendation is applicable for the wastewater master plan that represents a general vision for wastewater disposal and treatment in the south. It is important to start conducting detailed feasibility studies and design for the implementation of the proposed projects in this plan.

Finally, more activities are needed at the policy level to introduce new internationally accepted concepts in water utility management such as customer service and water demand management. Any future initiative in the water sector should take into consideration these new approaches in water utility management to assist the Lebanese water establishments become world-class utilities.

It is worth noting that all these recommendations fall under the performance improvement programs included in the business plans developed for both the SLWE and BMLWE, two representative water establishments in Lebanon serving more than 60% of the population.