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Lebanon
Country Water Sector Assistance Strategy

2012-2016

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CURRENCY EQUIVALENTS

(Exchange Rate Effective August 9, 2010)

Currency Unit	=	Lebanese Pound
LBP1	=	US$0.00066
US$1	=	LBP 1,507.5

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AAA	Analytic and advisory activities
BCM	Billions of cubic meters
BMLWE	Beirut Mount Lebanon Water Establishment
BOD	Biological oxygen demand
CDR	Council for Development and Reconstruction
CPS	Country Partnership Strategy
CWSAS	Country Water Sector Assistance Strategy
DPL	Development Policy Loan
EIB	European Investment Bank
ESIA	Environmental and Social Impact Assessment
ESW	Economic and sector work
EU	European Union
FY	Fiscal year
GDP	Gross Domestic Product
GIZ	*Gesellschaft fur Internationalischer Zusammenarbeiten*
I&D	Irrigation and drainage
ICR	Implementation Completion Report
IFC	International Finance Corporation
IRMP	Irrigation Rehabilitation and Modernization Project
KPI	Key performance indicator
LRA	Litani River Authority
MCM	Millions of cubic metres
MENA	Middle East and North Africa
MinFin	Ministry of Finance
MoEW	Ministry of Energy and Water
MoE	Ministry of Environment
NWSS	National Water Sector Strategy
O&M	Operation and maintenance
PPP	Public private partnership
SWAp	Sector-wide approach
WBI	World Bank Institute (*the Bank's learning and capacity building arm*)
WE	Water Establishment

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Country Director	:	Hedi Larbi
Sector Director	:	Junaid Kamal Ahmad
Sector Manager	:	Francis Ato Brown
Task Manager	:	Parameswaran Iyer

Lebanon: Country Water Sector Assistance Strategy
2012-2016

Table of Contents

Chapter 5. Adding value: a proposed Bank approach and program

Boxes

Tables

Annexes

Preface

Sources

This Country Water Sector Assistance Strategy (CWSAS) builds on the last decade of government and World Bank dialogue and implementation in the water sector. It draws on material gathered during a mission to Lebanon in July 2010 conducted by Param Iyer with Mohamed Benouahi, Yoshi Kobayashi and Christopher Ward, on discussions with government and donors held in Beirut in June 2011, and on further discussions in Beirut in October 2011. The report also draws on project experience, including the *Implementation Completion Report* for the World Bank-financed Irrigation Rehabilitation and Modernization Project and appraisal and supervision reporting for three ongoing World Bank-financed projects in the sector. The 2010 *Water Sector Public Expenditure Review* provided significant material for the diagnostic of progress on the sector reform program as well as economic and fiscal analysis. The 2007 *Economic and Social Impact Analysis* (ESIA) informed the social impact analysis. Further material on water resources and irrigation came from the 2003 *Policy Note on Irrigation Sector Sustainability* and from several short policy briefs. The 2010 *Country Partnership Strategy* provided in-depth assessment of the political economy context and a clear statement of government-Bank strategy. Government's *National Water Sector Strategy* (March 2012) provided detail on sector background and on Lebanon's strategy for water sector reform and investment.

Acknowledgements

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The study was conducted under the leadership of Param Iyer (Senior Water and Sanitation Specialist, MNSSD, World Bank) and Claire Kfouri (Senior Water and Sanitation Specialist, MNSSD). The team is also grateful to the contributions it received from the peer reviewers of the study (Vijay Jagannathan, Rafik Hirji, Alexander Bakalian) and to Caroline van den Berg (MNSSD), who provided insightful comments. The report was written by Christopher Ward (Institute of Arab and Islamic Studies, University of Exeter, Consultant). Further research and editing support was provided by Dr Isabelle Learmont.

Lebanon: Country Water Sector Assistance Strategy

Executive Summary

The CWSAS and the context of Lebanon

The core objective of the *Country Water Sector Assistance Strategy* (CWSAS) is to define an operational plan for World Bank involvement in Lebanon's water sector 2012-2016 in support of implementation of national water strategy. In March 2012, the Lebanese Government officially adopted its *National Water Sector Strategy* (NWSS), which was prepared by a high-level team of Lebanese experts and debated amongst stakeholders. Drawing on lessons learned from past Bank involvement (both projects and sector work), and on the Bank-Government *Country Partnership Strategy* (CPS), the CWSAS looks at the water sector through the lens of economic growth, poverty reduction and sustainability, identifying in Government's strategy how investment might play a transformative role, accompanying and helping to drive key institutional reforms. Recognizing that restrictions of political economy are real and must be taken into consideration, the CWSAS highlights how implementation of the strategy might be prioritized and sequenced, how ownership might be strengthened through further stakeholder involvement, especially at the local level, and how capacity building within institutions could bring greater likelihood of successful reform implementation. This combination of targeted investment and capacity building accompanying step-by-step implementation of a sequenced and consensual set of priority reforms could have a transformational impact on service delivery and on growth, poverty reduction and sustainability.

Lebanon's water sector: problem statement and underlying issues

Despite its relatively high per capita water endowment (1,000m^3/capita, making the country the fourth best-endowed in MENA), Lebanon is already using two thirds of its available water resources, high by global standards (averaging 10-30% for other regions), and there is significant groundwater mining. There is a seasonal mismatch between supply (at its peak in the rainy winter) and demand (peaking in the hot, dry summer months). Factors exacerbating this seasonal water imbalance are the very low water storage capacity (6% of total resources, compared to the MENA average of 85%), the deficiency of water supply networks and, on the demand side, fast rising demand from the municipal and industrial sectors. These seasonal imbalances are likely to lead to chronic water shortages. Already, dry season shortages are emerging and water quality is deteriorating. . If no actions are taken to improve efficiency, manage demand and increase storage capacity, the country would depend in the long run on mined groundwater or on high cost desalination for incremental resources.

Despite Lebanon's relatively high level of income, development of water services has lagged. Water supply services are below the levels expected in a middle income country. Although network coverage is relatively high (79%), there are big regional differences, whilst unaccounted for water averages 48%, and supply continuity is low. For example, in summer water is supplied for as little as three hours a day in the capital service area where over half the population live. The poor record is due largely to the low efficiency of public expenditures and to the slow implementation of the reforms begun under Law 221 of 2000 that were intended to create the Water Establishments (WEs) as autonomous, efficient and integrated water service providers. Due to capacity and institutional constraints, WEs have not been able to apply key measures to improve water supply reliability or to improve their financial viability. Flat rate tariffs provide no incentives to consumers to save water or to the WEs to improve service delivery. The intended increased role for private capital and management has not materialized.

MoEW has responsibility for strategic planning of water resources management, including the preparation of the water master plan, regulation and conservation of surface and groundwater resources, and design and implementation of large projects and dams. MoEW also has the mandate to supervise the WEs in their planning and formation of strategies for water monitoring and distribution. Until recently, there has been no accepted overall water resources master plan or strategy for development of water storage. MoEW has had weak capacity in water resources planning, allocation and regulation. The regulation of groundwater abstraction, including the issue of permits for well drilling, is currently not enforced, with a large number of wells reported as illegal. Little has so far been done to anticipate the effects of climate change on water resources or on water supply and irrigation, or to plan for adaptation and mitigation. Meanwhile, demand has not been moderated by management measures such as regulation and pricing.

An expensive but poorly sequenced investment program and absence of a viable business model for wastewater have left 92% of Lebanon's sewage running untreated into watercourses and the sea. Responsibility for irrigation was supposed to be transferred to the WEs, but this has not happened, and proposals to decentralize management to user associations and to increase cost recovery have not been implemented. More than half or the irrigation schemes lack adequate O&M. Returns to water ($/drop) are low and the country is missing opportunities to increase production and trade in high value crops.

Underlying these poor sub-sectoral performances is the sector-wide issue of accountability. Reforms initiated under Law 221 of 2000 were designed to increase accountability between public agencies and between WEs and customers. The institutional and legal framework envisaged has not been effectively implemented, creating institutional uncertainty over sector responsibilities. Coordination within government remains poor, in particular between MoEW and the CDR, with continued fragmentation of responsibilities for investment planning and execution, and consequent low efficiency of public expenditures. The (partial) implementation of a delegated model of service provision has not been complemented by a parallel effort to strengthen central government oversight over the water sector. Reciprocal accountability between WEs and clients remains weak, as WEs are not adequately empowered to improve service levels.

Overall, the water sector is delivering poor services at a high fiscal and household cost. The WEs have to overcome tough economic and socio-political challenges if they are to become efficient and accountable service providers. In the meantime, water sector inefficiencies (particularly low collection of tariffs and high water losses) and environmental damage are costing the economy the equivalent of almost 3% of GDP annually.

Lebanon's National Water Sector Strategy (NWSS) and priorities for implementation

The Lebanese government has made reform of the water sector a national priority and has prepared a *National Water Sector Strategy* (NWSS), which was adopted by the Council of Ministers in March 2012. The NWSS goal is 'to ensure water supply, irrigation and sanitation services throughout Lebanon on a continuous basis and at optimal service levels, with a commitment to environmental, economic and social sustainability' The CWSAS provides a summary of the proposed NWSS investments and measures organized according to six key outcomes, together with a commentary on priorities for implementation. Highlights of this discussion are as follows:

1. Improved, sustainable and affordable water supply

NWSS measures. The NWSS targets improved, sustainable and affordable water supply by: (i) d*eveloping infrastructure to ensure continuous access to high-quality service* through increased coverage, reduced unaccounted-for water and optimized network management; (ii) *transformation of the WEs progressively into autonomous and accountable utilities* by moving them to a service orientation, strengthening their administrative and financial autonomy, and involving them in project planning and implementation; (iii) *moving the WEs towards financial sustainability* by applying over time tariff structures that cover costs and contribute to demand management; and (iv) *increasing the role of private capital and management* by developing an enabling environment for PPP.

Priorities for implementation. In implementing these measures, the priority alongside infrastructure investment will be the proposed WE autonomy and accountability. This will require empowering institutions. In the short term, the priority is to expand the WEs authority in critical areas such as hiring of technical staff and procurement of works. A step by step approach may need to be taken, depending on the context, with particular attention to strengthening internal and external accountability, for example through benchmarking, performance monitoring and communications and transparency of information. Each WE is different, and approaches to each would need to be tailored. As the context and potential vary, each WE (and the LRA) needs to prioritize in its own business plan the investments in infrastructure and operational improvements that increase both financial viability and operational efficiency – reducing physical losses and other unaccounted-for water and, in the medium term, developing sustainable new water sources, and increasing collection rates. Tariffs need to be set in the context of progressive service improvement, in the light of the local circumstances, and with a view to long term financial autonomy. In the near term, some operating subsidies may be needed, but they should be results-based and temporary. PPP can help introduce needed know-how and capital but has run into difficulties in the past. The best approach in the short term is probably a low-key gradualism (e.g. outsourcing), whilst preparing the political, legal and institutional ground for more ambitious models (e.g. BOT) at a later stage.

2. Sustainable water resources management and allocation to priority uses

NWSS measures. To achieve sustainable water resources management and allocation to priority uses (essentially M&I), the NWSS proposes creation of an *enabling environment for integrated water resources management and sector regulation*, combined with development of *water resources infrastructure*. MoEW will be responsible for strategic planning, major investment, conservation and regulation; the WEs and LRA will be responsible for water monitoring and distribution. The target is to (i) maximize the potential and improve the quality of surface water resources; (ii) improve the management and protection of groundwater as a strategic reserve, control and manage its abstraction, and promote conjunctive use of surface and groundwater, including artificial recharge; and (iii) to meet deficits through ground and surface water, prioritizing surface water storage wherever possible.

Priorities for implementation. In addition to prioritized infrastructure investment, the key here will be to strengthen the water resources regulatory and planning functions. The NWSS envisages an improved operating model between the WEs and MoEW, but it will clearly take time to develop the needed capacity. Investment in storage is an imperative, and here the priorities have been identified in the recently-prepared *Strategy for Surface Water Storage*. However, investment should be made within an overall master plan framework that is based on both supply development and demand management and which identifies long term resource needs and sources and provides for institutional measures and physical investment to

be made in conjunction. In the medium term, strengthening oversight functions and enforcement powers over water resources management, particularly groundwater is a priority.

3. Putting wastewater on a sustainable footing and protecting the environment

NWSS measures. The NWSS proposes a series of investments and measures to put wastewater on a sustainable footing and to protect the environment: (i) *developing wastewater infrastructure* to increase coverage of collection networks and treatment capacities, optimizing treatment processes and sludge disposal, and ensuring reuse where possible; (ii) *improving wastewater management* by implementing an institutional and business model for wastewater collection, treatment and reuse; and (iii) *environmental protection* by promoting and improving water quality management, and protection of recharge zones.[1] In addition, climate change will be factored into water resources planning and operations, and flood control and mitigation integrated into strategies for recharging depleted or stressed groundwater aquifers. An evaluation of the environmental consequences of the NWSS is also proposed.

Priorities for implementation. Given the very difficult situation in wastewater, the priority is to assign clear responsibilities and to bring on line the significant installed capacity and to develop appropriate regulatory capacities and standards to safeguard against potential public health hazards. This would need to be accompanied by the development of a feasible business model for wastewater and by steps to progressively develop standards, apply wastewater tariffs, conduct capacity building, and agree results-based and time-bound subsidies. Regarding environmental issues, priorities are to conduct the sectoral environmental assessment, improve knowledge on climate change and factor the results into planning, including addressing flood mitigation.

4. Profitable and sustainable irrigated agriculture

NWSS measures. Investments and measures proposed in the NWSS to encourage profitable and sustainable irrigated agriculture include: (i) *improving irrigation infrastructure* to improve water control and to increase efficiency through modern water-saving irrigation technology; (ii) *improvements in the performance and sustainability of the irrigation sector*, through decentralization, stakeholder participation, demand management and cost recovery; and (iii) *possible expansion* on 15-30,000 ha.

Priorities for implementation. The irrigation improvement and associated institutional measures are in line with global best practice. Prior to investment, a technical, economic and institutional assessment of the irrigated agriculture sector is required in order to: (a) identify the specific comparative advantage of Lebanon's irrigated agriculture and match that with agricultural policies and services and the scope for product and market development: (b) develop an institutional strategy and financial sustainability mechanisms; and (c) prepare a phased investment program.

5. Strengthened sector capacity for oversight and reform implementation

NWSS measures. The NWSS addresses the need for strengthened sector oversight and reform implementation by setting out measures for restructuring and equipping MoEW to take on policy-making, planning and regulatory roles, and by building human capacity in the sector through recruitment and staff development and training.

[1] Lebanon's environmental legal framework is set out in the *Framework Law for the Protection of the Environment* (2002). Source: *CEA: xxxiv*.

Priorities for implementation. These measures will have to be undertaken within the context of a public service where providing flexible incentives, career development and responsive management is difficult. The challenge is to transform the good strategic capacity and energy assembled for the preparation of the NWSS into a permanent capability. This would require definition of core functions and an action plan for MoEW, including a program for recruitment, incentives for retention, capacity building and long term 'advisory staff', perhaps supported by a long term capacity building arrangement with a donor organization.

6. Improved efficiency of public investment

The core of the NWSS measures is to improve the efficiency of public expenditure, building from the bottom up, and then prioritizing and phasing. Given the constraints to expanding the investment program, the priority for implementation would be to improve the quality and efficiency of investment rather than volume. In the short term, better horizontal coordination is needed to ensure an effective sequencing of investments and alignment of capital and O&M expenditures. In the longer term, the NWSS proposes increasing the role of the WEs and the LRA in investment planning and implementation, a move that has been recommended in the context of World Bank-financed projects. There is also need for strengthened donor harmonization and alignment.

Four sector-wide constraints to NWSS implementation

The CWSAS identifies four major sector-wide constraints to NWSSIP implementation:

Weak accountability is likely to dull the impact of other measures and investments unless priority is given to improvement measures that will *clarify the respective obligations and rights of public agencies for the delivery of water services* and *empower the WEs*. The most important measures are to: (i) complete the institutional and legal framework for WE autonomy; (ii) improve internal accountability through regulation and performance monitoring; and (iii) streamline arrangements for investment planning and implementation. At the same time, the WEs and their boards have to work hard on raising service standards and cost recovery in tandem.

Investment needs to be reconciled with fiscal realities, linked to key reforms, and targeted at priority outcomes. The NWSS projects an overall cost 2011-2015 of US $5 billion (US$ 1 billion annually), which far exceeds likely fiscal headroom, implementation capability and availability of finance. In Lebanon's currently constrained fiscal circumstances, public resources can provide only a fraction of this financing, and alternatives of increased user or private financing are not near-term options. Detailed planning will have to prioritize investments within realistic financial ceilings, ensuring that the highest impact investments are undertaken and are linked to accompanying reforms.

Improvements in investment and operational efficiency depend on restructuring and building implementation capacity in a practical, prioritized way. The NWSS provides for numerous measures to define responsibilities, restructure and strengthen agencies, empower, resource and staff agencies etc. However, capacity can only grow gradually, and implementation will have to be prioritized and sequenced within available capacity.

Past sector reform in Lebanon lagged due to a complex of factors, largely political economy factors. Increasing ownership of sector reform – and reflecting back stakeholder concerns and political economy realities into fine-tuning the NWSS - is thus important. Lebanon could follow worldwide best practice in reform implementation by initiating a targeted engagement strategy of broad dialogue and outreach to increase ownership of the reform program.

Overall assessment of the NWSS

The NWSS is a relevant program. Implementation will require breaking the NWSS down into 'bite-sized pieces' and phasing its implementation according to priority and funding availability. The implementation program should take account of the social, political and institutional constraints, prioritizing measures and investments according to impacts, adopting proposals to overcome or by-pass constraints, and setting out a plan to ensure the needed support of champions, key political actors, stakeholders and financiers. Taking a step by step approach, tailoring reforms to local realities, and testing out reforms on a small scale could also help.

Adding value within the NWSS: a proposed Bank approach and program

Supporting reform and investment within the NWSS is a priority because of the high economic, social and political costs of current performance. Improved water service delivery would help reduce poverty and inequity, and contribute to GDP, exports and employment growth. At the same time it is important to consider the risks associated with an ambitious program by defining Bank support within the 'priorities for implementation' suggested above. Key points where the Bank can make a contribution in Lebanon's water sector are:

- At the strategic level, helping through analytic and advisory activities (AAA) and dialogue to fine-tune NWSS sector strategy, prioritize the reform measures and investment opportunities, hone implementation arrangements, and help government to align and harmonize donor support.

- At the macroeconomic level, helping government through AAA and dialogue to fit the NWSS and its implementation planning within the overall macroeconomic, planning and fiscal framework.

- At the implementation level (1) supporting the design and implementation of key reforms through AAA and dialogue; (2) investing in key operations linked to priority NWSS outcomes; and (3) helping the Lebanese government ensure readiness of the water sector to receive private financing through PPPs.

Five general criteria for the Bank to intervene in Lebanon's water sector are proposed: (1) high impact on key NWSS outcomes; (2) consistency with the CPS criteria of contribution to growth, strengthening of fiscal stability, and reinforcement of social cohesion; (3) realistic promotion of the NWSS reform agenda; (4) ownership and political economy considerations; and (5) sustainability, including environmental and social sustainability. Applying these criteria, a program of Bank-supported AAA and investment is proposed, as set out in the attached table. A full rationale and detail for each of these proposals is presented in Chapter 5.3 of the main report.

The proposed AAA services would be programmed annually, and could be delivered either through fast-response 'just-in-time policy notes', or through larger studies under the Bank's economic and sector work (ESW) program, or programmed under Bank-financed investment operations. In addition, Bank services may be programmed jointly or in complement to larger exercises carried out by government and/or other development partners.

The proposed investments would typically be delivered through a Sector Investment Loan. Ideally, Bank investments would be made within an integrated program of financing, for example in the case of support to a WE, where all financing sources could be integrated in support of the WE's own business plan. Possibilities of results-based lending or of a joint government/donor programmatic approach (SWAp) within the NWSS framework could also be considered.

IFC advisory services

If government wishes to proceed with expanded private sector participation, IFC could be invited to provide advisory services as it has done successfully in many countries, in water supply, sanitation and irrigation.

Possible Bank-supported activities and links to sector outcomes (with indicative start years)

Key sector outcomes	Bank-supported AAA	Bank-supported investment
1. Improved, sustainable and affordable water supply	*[Possible IFC advisory services on the PPP agenda: 2012*]	***5. A time slice investment in one WE: 2013*** The objective would be to complete reforms, raise service levels, and bring one selected WE to financial viability. The investment could cover all hardware and software needs to bring the WE to agreed results. A results-based loan could be appropriate, or a programmatic approach grouping all support to the WE within one program driven by the WE's own business plan and investment program.
2. Sustainable water resources management and allocation to priority uses	***2. Support to water resources management: 2012*** This includes support to updating the national water master plan and capacity building, together with the detailed work needed to support the identification and preparation of a Bank-financed investment in storage.	***6. An investment in storage: 2014*** The objective would be to increase water security, resolve supply constraints and – if irrigation could be included – increase employment, incomes and exports from high value agriculture. MoEW has already carried out a multi-criteria prioritization of surface water storage investments that could provide an objective basis for project selection subject to all appropriate assessments.
3. Putting wastewater on a sustainable footing	*[Possible IFC advisory services on the PPP agenda: 2012]*	
4. Profitable and sustainable irrigated agriculture	***3. Economic and institutional assessment of the irrigation sector: 2012/2013*** This could include assessment of the institutional reforms needed and development of an irrigation sector investment program in preparation for a Bank-financed investment in irrigation. *[Possible IFC advisory services on the PPP agenda: 2012]*	***7. A free-standing irrigation project: 2015*** The objective would be to support irrigation sector reforms, particularly decentralization of operation and maintenance responsibilities, empowerment of water user associations, and cost recovery, together with investments to validate the new management model and to increase productive capacity and efficiency.
5. Strengthened sector oversight and reform implementation	***1. Support to implementation of the NWSS: 2011*** This could cover some of the key steps in implementation of the NWSS.	
6. Improved efficiency of public expenditures	***4. Support to restructuring institutional arrangements for investment planning and implementation: 2013*** This activity could include strengthening of capacity for investment planning, financing and implementation, including in MoEW, the WEs and the LRA..	

Lebanon: Country Water Sector Assistance Strategy

Chapter 1. The CWSAS and the context of Lebanon

The core objective of the *Country Water Sector Assistance Strategy* (CWSAS) is to define an operational plan for World Bank involvement in Lebanon's water sector 2012-2016 in support of implementation of national water strategy. In March 2012, the Lebanese Government officially adopted its *National Water Sector Strategy* (NWSS), which was prepared by a high-level team of Lebanese experts and debated amongst stakeholders. Drawing on lessons learned from past Bank involvement (both projects and sector work), and on the Bank-Government *Country Partnership Strategy* (CPS), the CWSAS looks at the water sector through the lens of economic growth, poverty reduction and sustainability, identifying in Government's strategy how investment might play a transformative role, accompanying and helping to drive key institutional reforms both for utilities and for the irrigation sector. Recognizing that restrictions of political economy are real and must be taken into consideration, the CWSAS highlights how implementation of the strategy might be prioritized and sequenced, how ownership might be strengthened through further stakeholder involvement, especially at the local level, and how capacity building within institutions could bring greater likelihood of successful reform implementation. This combination of targeted investment and capacity building accompanying step-by-step implementation of a sequenced and consensual set of priority reforms could have a transformational impact on service delivery and on growth, poverty reduction and sustainability.

Chapter 2. Lebanon's water sector: problem statement and underlying issues

Although its per capita water endowment is relatively high, Lebanon is on the threshold of water scarcity, with surface water largely exploited and groundwater already in overdraft. Sustainability of bulk supplies is uncertain.

Lebanon is relatively well-endowed with diversified water resources compared to neighbouring countries (1,200m3/capita), making the country the fourth best-endowed in MENA – better resourced than Egypt (827m3/capita) or Morocco (964m3/capita), and significantly better off than the really water scarce countries of the Region such as Jordan (165m3/capita). Annual surface water diversions and groundwater extraction total about 1.6 BCM against theoretical availability of 2.7 BCM. Groundwater is over-extracted (0.7 BCM against total recharge of 0.5 BCM). Lebanon is thus already using two thirds of its available water resources and demand is rising. Although in line with the MENA average, this rate of water withdrawal is very high by global standards (averaging 10-30% for other regions), and it contains a significant component of resource mining, depleting Lebanon's water capital. The risk is aggravated by the seasonal mismatch between supply (at its peak in the rainy winter) and demand (peaking in the hot, dry summer months). Factors contributing to this seasonal water imbalance are the very low water storage capacity (6% of total resources, the lowest in the Region and less than one tenth of the MENA average of 85%)[2] and the consequent high rate of losses to the sea, combined with the deficiency of water supply networks and, on the demand side, fast rising demand from the municipal and industrial sectors.

These seasonal imbalances are likely to lead to chronic water shortages. Already, dry season shortages are emerging and water quality is deteriorating. By 2020, total demand could be approaching 2.0 BCM, and by 2030 could be nearing the theoretical total availability of 2.7

[2] Source: *MENA Water Report: 35*

BCM. Demand from the municipal and industrial sectors (M&I) are expected to rise particularly fast. If no actions are taken to improve efficiency, manage demand and increase storage capacity, the country would depend in the long run on mined groundwater or on high cost desalination for incremental resources.

Despite its relatively high level of income, Lebanon has poor quality water services

The last decade has seen significant changes in Lebanon's water sector, including major reforms to create autonomous and accountable utilities ('Water Establishments', WEs) and considerable investment to expand and improve services. However, the reforms are not yet fully in place, and the efficiency of investment has been relatively low. As a result, Lebanon's water services have not yet reached the standards expected in a middle income country.

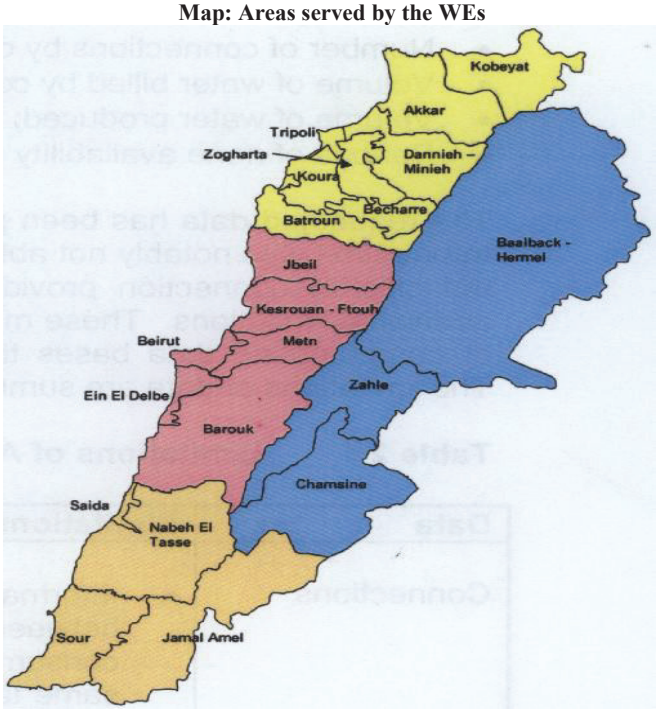
This chapter assesses the efficiency, equity and sustainability of Lebanon's water services and analyses the causes of the relatively poor quality of those services. Drawing on past Bank sector work and on the recently prepared *National Water Sector Strategy* (see Chapter 3 below), the chapter reviews in turn: (1) water supply services; (2) water resources management; (3) wastewater and the environment; (4) irrigated agriculture; (5) sector governance, oversight and institutional capacity; and (6) the efficiency of public expenditures.

2.1 Water supply services

Water supply services are below the levels expected in a middle income country.

Lebanon has a slightly higher rate of household connections (79%) than the average for the MENA Region (75%), but trails behind many countries of the region: Egypt and Algeria 80%, Morocco 90%, Jordan 98%. There are marked differences amongst different areas of Lebanon, with as many as one household in three in the Northern and Beka'a service areas without access to network water. Despite institutional reforms and high levels of investment, public network service delivery standards are poor, with water supplied for as little as three hours daily in summer in the BMLWE service area, where more than half the population lives (see the pink shaded area on the map). Total unaccounted for water is 48% (MENA average an already high 37%). Households spend three times as much sourcing water from private suppliers as they pay for network water. The four WEs show significant weaknesses on non-revenue water and bill collection, which are crucial to financial sustainability. Collection rates in 2010 averaged only 47%. There are wide differences among the four, with BMLWE showing potential for operating as a self-sustaining and autonomous organization, the Northern and Southern WEs with overall weaker performance

Map: Areas served by the WEs



Source: Jacobs Gibb 2002

but some promise for improvement, and Beka'a WE (collection rate in 2010 only 18%) showing little sign that it can be run on business lines under present circumstances.

The poor record is due largely to the low efficiency of public expenditures and to the slow implementation of the reforms begun under Law 221 of 2000 that were intended to create the WEs as autonomous accountable efficient integrated water service providers.

Investment in water supply has been high - about $100 million annually – but results have been disappointing

There has been no comprehensive and integrated investment plan for water supply[3] and the fragmented and donor-driven nature of investment planning has contributed to disappointing results in terms of connection rates and service delivery performance. Absorptive capacity has been low.

The WEs have not been empowered as managerially and financially autonomous agencies

WEs are not delivering the expected efficiency gains in service delivery. Delays in implementing reforms, and inertia and opposition to empowering the WEs, have left them with limited autonomy and accountability to operate as professional service providers.

The WEs lack the staff and skills needed to provide quality water services

Unlike utilities in many other countries of the Region, Lebanon's WEs are not overstaffed in terms of numbers - staffing levels of about 1.9 employees/1000 connections (2010) are below global benchmarks (2/1000 connections). The issue is rather staff quality, with an excess of lower level staff and a marked lack of technical staff and skills. Currently, two thirds of posts in the WEs are vacant. WEs lack experience or capacity in wastewater, and have little ability to implement investment programs.

WEs have not been able to apply key measures to improve water supply reliability

Lack of planning for - and investment in - storage, and the high rate of system losses contribute to low reliability of water supply. These high losses result from lack of investment, low operation efficiency and inadequate maintenance.

…or to improve their financial viability

Collections are inadequate to cover WE costs, and covert subsidies are provided through non-payment of the electricity bill. WEs are expected to take over and run assets where they have not been involved in investment planning or execution. The WEs may not in practice be able to recover the O&M costs of the new facilities from user charges, and so may have no incentive to operate them. WEs have prepared business plans to provide a basis for financial viability. In the case of BMLWE, this is a comprehensive and well thought through document with detailed performance improvement plans and KPIs. The Business Plan was recently approved by the Board, but arrangements for tracking and supervision of performance are not in place.

[3] Although a number of programs and plans have been prepared, these have never been comprehensive or adopted by government as a whole, and this has negatively affected the ability to prioritize investments based on sector need (*Source: World Bank 2010 para 68*)

Tariffs provide no incentives to consumers to save water or to the WEs to improve service delivery.

The current flat rate tariff structure gives no incentive to consumers for water saving, and no incentive to the WEs to increase supply or spend more on O&M (e.g. on leak detection and repair), as extra water deliveries generate no extra revenue. As a result, maintenance is neglected: at 14% of total O&M expenditures, maintenance expenditures are well below the global benchmark of 20-30%.

The intended increased role for private capital and management has not materialized

Lebanon lags behind other countries of the region in PPP, and the legal framework that would govern PPP is not yet in place. Experience with a private management contract for water supply at Tripoli 2003-7 was positive but ran into institutional and political constraints and was not renewed. There are, however, useful lessons to be drawn, for example for outsourcing and small-scale management contracting (see Box 6 in Chapter 4 below).

2.2 Water resources management

Until recently, little was done to plan for water resources development and management

MoEW has responsibility for strategic planning of water resources management, including the preparation of the water master plan, regulation and conservation of surface and groundwater resources, and design and implementation of large projects and dams. MoEW also has the mandate to supervise the WEs in their planning and formation of strategies for water monitoring and distribution.

Until recently, there has been no accepted overall water resources master plan or strategy for development of water storage. MoEW has had weak capacity in water resources planning, allocation and regulation but is currently implementing new regulations related to groundwater extraction. Little has so far been done to anticipate the effects of climate change or to plan for adaptation and mitigation, and in the longer term, impacts of climate change may pose significant problems for both water supply and for agriculture (see Box 1). Meanwhile, demand has not been moderated by management measures such as regulation and pricing.

Box 1: Climate change may bring a hotter, more arid climate and greater water scarcity

Although there is divergence in projections amongst climate change models, there is agreement that Lebanon will be vulnerable to climate change. Influenced largely by Mediterranean conditions, Lebanon is expected to experience overall a hotter, drier climate, which is likely to accentuate water scarcity. Temperatures are likely to steadily rise, and higher temperatures can be expected in both summer and winter. More frequent and intense heat waves may increase aridity and change evapotranspiration patterns.

The climate is likely to be generally drier, especially in the winter season where precipitation is concentrated. With less precipitation, there will be reduction in soil moisture, run off and groundwater recharge. In addition, there is likely to be an increase in variability and intensity of rainfall. Reduced reliability on timing and quantity of precipitation will make agricultural planning more difficult, and more extreme rainfall events may cause flooding and erosion. Increased frequency of droughts may increase uncertainty in farming and reduce agricultural productivity. Loss of winter precipitation storage in snow pack may reduce run off and stream flow in warmer cropping periods.

Source: Climate Change in the Arab Region (World Bank, forthcoming)

2.3 Wastewater and the environment

An expensive but poorly sequenced investment program and absence of a viable business model for wastewater have left 92% of Lebanon's sewage running untreated into watercourses and the sea

Lebanon is generating large and growing quantities of domestic and industrial wastewater (about 310 MCM annually) which need treatment. There has been huge investment in wastewater facilities over the last two decades (more than $1.4 billion since the early 1990s). As a result of these investments, considerable treatment capacity has been installed and about 60% of the population are connected to wastewater collection networks.

However, only 8% of wastewater is currently being treated (MENA average 32%). Of the twelve large treatment plants planned on the coast to service 65% of the population, only two are operational, and four major plants (Tripoli, Chekka, Batroun and Nabi Younes) are not working as they lack collection networks. Inland, only two medium-sized collection and treatment schemes are operating – and well below capacity (Baalbek 10%, and Yamouneh 50%).

Significant environmental issues have emerged

Regarding environmental functions, MoEW is responsible for pollution control (with MoE), for setting water quality standards (with the Ministry of Public Health), and for enforcing legislation in the environmental aspects of water and wastewater. The WEs are responsible for monitoring and controlling water quality.

Lebanon's environmental challenges have been the subject of recent in-depth analysis in the 2011 *Country Environmental Assessment*. Overall, the cost of environmental neglect and consequent degradation has been estimated at 3.4% of GDP for local impacts, and 3.9% if global impacts are included. The main water-related component of this degradation is water pollution, largely from wastewater, which also has impacts on coastal zones and on soils. Most wastewater collected is discharged raw, without treatment, into watercourses and the sea. Few industries pre-treat their effluent. MoEW and the WEs have little capacity to monitor this problem, and its solution requires a structured and sequenced approach to wastewater treatment. The costs of the current environmental damage from untreated wastewater have been estimated at 1.1% of GDP annually.

Institutional constraints have prevented the efficient development and management of wastewater facilities

The investment program has not been well coordinated, so that wastewater collection, treatment and disposal/reuse investments have not been implemented as an integrated package. Responsibility for planning and implementing projects is split between the Council for Development and Reconstruction (CDR), WEs and municipalities, and the largely donor-driven investment process has resulted in a mismatch between wastewater collection and treatment capacity. Reforms to transfer institutional and financial responsibility for wastewater management to the WEs have been only very partially implemented. WEs lack capacity for wastewater management, and this is currently still carried out largely by the municipalities and unregulated small-scale private operators.

There is no viable business model for wastewater

The operating and financial models for the massive investments that will come on stream in the coming years have not until now been thought through, and WEs have had no incentive to take on a business line that will be a pure loss-maker for them.[4]

There is scope to build synergies between the water and environment sectors

In collaboration with UNDP, the Ministry of Environment (MoE) recently finalized a *Business Plan for Combating Pollution in the Upper Litani Basin*, which comprises many synergies with water strategy, given the strategic significance of the Litani River. Opportunities exist within the framework of the MoE *Business Plan* to identify areas of collaboration between the water and environment sectors for improved efficiency, quality control and integrated water resources management.

2.4 Irrigated Agriculture

Irrigated agriculture is an important sector but potential for further growth is not currently being exploited.

The area equipped for irrigation is about 90,000 ha, of which about two thirds is in publicly supervised schemes and the balance is small-scale private schemes (< 100 ha). Irrigated agriculture is an important sector, accounting for more than 60% of total water diversions, providing incomes and employment for over 100,000 families, and having good potential for expansion into high value products in domestic and regional markets. Irrigated agriculture has comparative advantage for high value products in domestic and regional markets.

However, the sector is underperforming, and could do more to contribute to GDP and to rural poverty reduction. Despite extensive use of improved irrigation techniques – 21,000 ha equipped for sprinkler, 13,000 ha for micro-irrigation – returns ($/drop) are low and Lebanon is not taking advantage of the profitable local and regional opportunities for production of high value cash crops. Network efficiencies are low as open canals and flood irrigation account for more than 70% of the area.

Incomplete reforms have contributed to below par performance and loss of potential for growth in the irrigation sector

Responsibility for water resources development and bulk water supply for irrigation has nominally been transferred to the WEs and the LRA, but the WEs lack experience and capacity. In practice, operation and maintenance of irrigation works continue to be conducted by local committees and Irrigation Boards as they were before the reforms. Local interest and capacity for decentralized management have not been captured, for example in water user associations, and cost recovery remains low. As a result, more than half of irrigation schemes do not have adequate O&M. There is no strategy at present to develop more efficient institutional models or to invest further in infrastructure, productivity or market development.

Underlying these poor sub-sectoral performances are two sector-wide issues: weak sector accountability (2.5), and the low efficiency of public expenditures (2.6).

[4] In December 2010, MoEW issued its *Strategy for the Wastewater Sector*, designed to tackle the whole range of wastewater issues.

2.5 Weak sector accountability, oversight and institutional capacity

Reforms initiated under Law 221 of 2000 were designed to increase accountability between public agencies and between WEs and customers

Global experience demonstrates the relation between quality and sustainability of water services and the levels of accountability within the sector.[5] The institutional reform program set in motion by Law 221 was designed to increase accountability for results at two levels. First, it was to *clarify the respective obligations and rights of public agencies for the delivery of water services*: WEs were to be empowered by the local governance structure and financial and managerial autonomy that would allow them to raise the efficiency of expenditures and services, human resource effectiveness and motivation, benchmarking etc., and thereby to deliver quality water services, and government would provide investment resources, supervision and support. Second, the reforms were designed to *create a reciprocal accountability* between the WEs (for quality service provision) and customers (to respect the rules and pay their bills).

However, accountability remains weak a decade after the reforms were initiated

Significant delays and weaknesses have emerged to impede the workings of this framework. Regarding the first aspect of accountability – obligations and rights of public agencies - three weaknesses have emerged: (1) the institutional and legal framework envisaged has not been effectively implemented, thus leading to an unfinished reform agenda and creating institutional uncertainty over sector responsibilities; (2) coordination within government remains poor, in particular between MoEW and the CDR, with continued fragmentation of responsibilities for investment planning and execution; and (3) the (partial) implementation of a delegated model of service provision has not been complemented by a parallel effort to strengthen central government oversight over the water sector. Regarding the second aspect of accountability – reciprocal accountability between WEs and clients – the WEs cannot be held accountable for providing services when they are far from empowered to do so. Even where WEs have raised service standards, local factors have sometimes frustrated the expected response from customers.

MoEW is only now developing the capacity and instruments to fulfil the role intended for it under the reforms

At the level of policy-making and strategic planning, MoEW has until recently lacked the capacity to facilitate and guide the reform process or to oversee sector performance. Sector investment has been planned and programmed outside of the ministry by the CDR. The ministry has been seriously understaffed, with less than 20% of established posts filled.[6] From 2010, the ministry has taken a more active role through the setting up of task teams of advisers and consultants and the preparation of strategies. A Water Code defining sector responsibilities and fiscal policies has been drafted but is not yet approved.

[5] See the discussion of accountability in Chapter 4 of *Making the Most of Scarcity* (MENA Development Report, World Bank 2007)

[6] In February 2010, MoEW water staff in post were 112, out of an establishment of 597 (*Source: NWSS*)

2.6 The low efficiency of public expenditures

The size and efficiency of public investment has been low

Public water and wastewater investments are estimated to equal about 0.5% of GDP each year, below the average for MENA middle income countries (0.8%), and well below the levels of less affluent countries such as Egypt (1%) and Tunisia (1.2%).[7] Up to now there has been no comprehensive and integrated investment plan, and institutional responsibility for investment has been fragmented. In the absence of capacity in MoEW and the WEs, the CDR has continued to take responsibility for investment planning, programming and implementation. The huge pipeline of water investments ($1.6 billion across 321 projects) has been largely donor-driven and often poorly coordinated (as in the wastewater sector, see 2.3 above).[8] Absorptive capacity and spending efficiency have been low. There has been only loose coordination of donors, and no harmonization or alignment of donor investment programs. In the government's own recent assessment, 'investments have a low return with a poor execution rate and low asset utilization, due to inadequate sequencing and resource misallocation.'[9]

2.7 Summary and outlook

Overall, the water sector is delivering poor services at a high fiscal and household cost. The WEs have to overcome tough economic and socio-political challenges if they are to become efficient, accountable service providers. In the meantime, water sector inefficiencies (particularly low collection of tariffs and high water losses) and environmental damage are costing the economy the equivalent of almost 3% of GDP annually.

Looking ahead, on present trends, despite its relatively good endowment of water resources, Lebanon is facing chronic year-round water shortages unless actions are taken to complete reforms in the water sector and to increase the efficiency of investment.

[7] Source: PER: 35 and *Country Environmental Assessment*: 13 (World Bank 2011).
[8] NWSS: 82 records 321 completed, ongoing and planned projects 2001-2015 for a total investment cost of $2.45 billion. Of these, 14% are complete, 21% are ongoing, and 65% are in the pipeline for 2011-2015.
[9] Under the NWSS process, change is beginning (see Chapter 3 below), with MoEW undertaking preparation of prioritized sub-sector investment programs and regional investment master plans.

Chapter 3. Lebanon's National Water Sector Strategy (NWSS)

3.1 NWSS goal and outcomes

Government has prepared a new strategy for the water sector

Largely sharing the above assessment, the Lebanese government has made reform of the water sector a national priority and has prepared the *National Water Sector Strategy* (NWSS). The NWSS was adopted by the Council of Ministers in March 2012. The overall goal of the NWSS is 'to ensure water supply, irrigation and sanitation services throughout Lebanon on a continuous basis and at optimal service levels, with a commitment to environmental, economic and social sustainability'.

The strategy targets key outcomes that would improve water services and make them more financially and environmentally sustainable

This goal is to be attained through a combination of infrastructure and policy and institutional initiatives. Broadly these initiatives are aimed at the following principal outcomes within the broad overall goal:

1. Improved, sustainable and affordable water supply by:

Developing infrastructure to ensure continuous access to high-quality water supply through increased coverage, reduced unaccounted for water and optimized network management

Transformation of the WEs progressively into autonomous and accountable utilities by moving them to a service orientation and increasing accountability and administrative and financial autonomy, allowing them to operate as professional service providers, and involving them in project planning and implementation

Moving towards financial sustainability by increasing efficiency and applying over time tariff structures that cover costs and contribute to demand management

Increasing the role of private capital and management by developing an enabling environment for PPP

2. Sustainable water resources management and allocation to priority uses by:

Developing water resources infrastructure to: (i) maximize the potential and improve the quality of surface water resources; (ii) improve the management and protection of groundwater as a strategic reserve, moderate its abstraction and promote artificial recharge; and (iii) meet deficits through ground and surface water, prioritizing surface water storage wherever possible.

Improving water resources management by creating the enabling environment for integrated water resources management and sector regulation

3. Putting wastewater on a sustainable footing and protecting the environment by

Developing wastewater infrastructure to increase coverage of collection networks and treatment capacities, optimizing treatment processes and sludge disposal, and ensuring reuse where possible.

Improving wastewater management by implementing an institutional and business model for wastewater collection, treatment and reuse.

Environmental protection by factoring in climate change, and improving water quality, flood mitigation, and protection of recharge zones

4. Profitable and sustainable irrigated agriculture by:

Developing irrigation infrastructure to provide adequate quantity and quality of irrigation water, and to increase efficiency through modern water-saving irrigation techniques

Improvements in the performance and sustainability of the irrigation sector, through stakeholder participation, demand management and cost recovery

5. Strengthened sector oversight and reform implementation by restructuring and equipping MoEW to take on a policy-making, planning and regulatory role, and by building human capacity in the sector through recruitment and staff development.

6. Improved efficiency of public investment by integrating investment planning, financing and implementation

The 'initiatives' (specific management measures and investments) proposed in the NWSS to achieve these outcomes are summarized in Box 2 below.

3.2 The NWSS investment budget

The NWSS contains a simulation of the capital and operating budgets 2011-2015 that would result from NWSS implementation. The capital budget (Table 1) reflects proposed investment by the four WEs and by MoEW on: (1) additional water resource mobilization ($1.4 billion 2011-2015); water supply ($1.4 billion); wastewater ($1.9 billion); and irrigation ($340 million).[10] The total is $5.0 billion, and the annual average spending would be about $1.0 billion. Expenditures would be spread across the four areas: BML 40%; Northern 23%; Southern 21%; and Beka'a 15%.

Table 1: Capital expenditures proposed in the NWSS for 2011-2015 (US $ millions)

	2011	2012	2013	2014	2015	Total	Annual average	Annual average 1994-2008
Additional water resource mobilization	191	271	313	367	242	1,384	277	n.a
Water supply	221	285	302	305	282	1,395	279	97
Wastewater	326	372	473	386	338	1,895	379	32
Irrigation	37	42	87	91	86	343	69	13
Total	**775**	**970**	**1,175**	**1,149**	**948**	**5,017**	**1,003**	**[142]***

*Source: NWSS. * Annual average 1994-2008 excludes additional water resource mobilization*

This proposed investment is about seven times the historical annual average investment in the sector 1994-2008 ($142 million, see Table 1). The suggested investment level is also considerably higher than current investment plans. CDR programs for 2009-2013 for water supply and sanitation range from $100 million per annum to $300 million per annum, and average about $200 million. For water supply and sanitation, therefore, NWSS proposals, averaging $660 million annually, are over three times the CDR plans.

Box 2: NWSS management and infrastructure initiatives arranged by outcome and problem to be solved

[10] The additional cost for implementing the 'management initiatives' ($55 million) is not included.

1. Improved, sustainable and affordable water supply

The WEs have not been empowered as managerially and financially autonomous agencies.

- Perform all priority actions required to complete the restructuring of WEs and address potential limitations, mainly: (1) revised and improved organization structures for WEs; (2) revised WE organization bylaws; (3) implementation of the restructuring of WEs; and (4) providing needed support for WEs to gradually reach full administrative and financial autonomy. (Management Initiative # 1.1)
- Improve on the operating model between WEs and MOEW through: (1) improvement in coordination; (2) ensuring an integrated management of water resources; (3) providing operational and financial empowerment of WEs together with proper mechanisms for performance management; and (4) ensuring the involvement of WEs in project planning and implementation. (Management Initiative # 1.2)

Sector agencies lack the staff and skills needed to provide quality water services.

- Provide the required manpower levels and capabilities to ensure an appropriate operation and maintenance of assets and the delivery of water at optimal service levels, through (1) reduction of current vacancies; and (2) continuous development of staff through proper training. (Management Initiative # 1.6)

WEs cannot apply key measures to improve water supply reliability or to improve their financial viability.

- Improve on the performance efficiency of WEs to reflect: (1) more focus on irrigation and wastewater responsibilities; (2) more suitable organization for technical functions; and (3) improvements to support functions (including strategic planning and business planning, and water demand management. (Management Initiative # 1.3)
- Conservation initiatives on domestic and industrial demand (Management Initiative # 5.1)

Tariffs provide no incentives to consumers to save water or to the WEs to improve service delivery.

- Implement progressively consumption-based tariffs with fixed and variable (volumetric) charges. No tariff increase before services are improved. Tariffs to initially cover O&M cost as a first stage. (Management Initiative # 2.1)

The intended increased role for private capital and management has not materialized.

- Develop the adequate legal, institutional and regulatory setting to promote PSP, including: (1) legal texts; and (2) ensuring readiness on institutional, organizational, financial, legal and regulatory aspects. (Management Initiatives # 2.4, 2.5)

Infrastructure investment (Infrastructure Initiative # 1.4)

Water supply transmission

- Replacement of existing over-aged transmission systems and associated equipment and bulk meters
- Leakage detection/rehabilitation and partial replacement of damaged systems and equipment
- Expansion of transmission systems to meet growing demand including district metering
- Rehabilitation/replacement of existing storage tanks including hydraulic equipment and flow meters
- Construction of new storage tanks to meet growing demand and achieve 0.5 and 1 day retention time for BML and other WE's respectively including hydraulic equipment and flow meters
- Construction of Awali – Beirut and Canal 800 (WS share only) conveyors, transmission systems and equipment

Water supply distribution

- Replacement of existing over-aged distribution networks including house connections
- Rehabilitation and partial replacement of damaged networks, supported by leakage detection campaigns
- Expansion of distribution networks and house connections
- Installation of customer water meters. Metering targets by 2015: BML 95%; North/South 85%; Bekaa 75%

Box 2: NWSS management and infrastructure initiatives by outcome and problem to be solved *(continued)*

2. Sustainable water resources management and allocation to priority uses

Little is being done to plan for water resources development and management.

- Improve on the operating model between WEs and MOEW to ensure an integrated management of water resources (Management Initiative # 1.2)
- Improve / refine climate change knowledge, and particularly its implications on the water sector and its vulnerability (Management Initiative # 4.1)

Infrastructure investment (Infrastructure Initiatives # 1.1-1.3)

- Optimization of surface water resources to provide extra 38 MCM by 2015, and a further 30 MCM by 2020.
- Artificial groundwater recharge to provide extra 120 MCM by 2015, and a further 80 MCM 2016-2020
- Surface storage development on a selection from the 46 sites identified as suitable

3. Putting wastewater on a sustainable footing and protecting the environment

Institutional constraints to the efficient development and management of wastewater.

- Progressively apply a new wastewater tariff to cover at a minimum O&M cost. (Management Initiative # 2.3)
- Improve wastewater quality through quality standards for wastewater discharge and reuse in agriculture, and implement pollution control programs. (Management Initiative # 4.4)

Significant environmental issues have emerged but there is little institutional capability to address them.

- Improve water quality and protection of recharge zones, develop flood mitigation measures. (Management Initiatives # 4.2, 4.3)
- Evaluate environmental consequences of the proposed NWSS. ((Management Initiative # 4.5)

Infrastructure investment (Infrastructure Initiative # 1.7)

- Integrated and prioritized immediate investment: (i) completion of already funded projects; (ii) networks for already completed projects (23 inland and 11 coastal plants)
- Preparation of regional wastewater master plans, and capacity building and pilots for wastewater sub-sector
- Economic reuse of treated wastewater and sludge (studies and investment)

4. Profitable and sustainable irrigated agriculture

Incomplete reforms are contributing to below par performance and loss of potential for growth in the irrigation sector.

- Involve stakeholder participation through Water Users Associations (WUAs). (Management Initiative # 1.8)
- Improve irrigation water demand management and cost recovery, and sustainability of irrigation schemes, through: (i) tariffs to cover O&M costs; and (ii) volumetric charges. (Management Initiatives # 1.9, 2.2)
- Conservation initiatives on irrigation water (Management Initiative # 5.2)

Infrastructure investment (Infrastructure Initiative # 1.6)

- Rehabilitation/replacement of existing over-aged irrigation systems and networks
- Implementation of additional 15,000 ha of irrigation schemes up to 2015 and 15,000 ha between 2016-2020

5. Strengthened sector oversight and reform implementation

MoEW has never developed the capacity to fulfil the role intended for it under the reforms.

- Restructure MOEW's organization in line with the requirements of laws 221 and 247 to reflect more focus on policy making, planning and regulatory roles. (Management Initiative # 1.4)
- Provide manpower and capabilities, and develop staff through proper training (Management Initiative # 1.6)
- Finalize the Water Code and follow up for enactment and implementation (Management Initiative # 3.1)
- Strengthen the legal framework in order to improve the performance of the delivery of water and wastewater services and support the implementation of the proposed strategic initiatives (Management Initiative # 3.2)
- Develop the process for performance monitoring and evaluation of WEs, including the monitoring body, performance indicators and targets, and tools and procedures. (Management Initiative # 1.5)

6. Improved efficiency of public expenditures

The efficiency of public investment is low.

- Restructure planning and capital spending responsibilities, where: (1) MOEW is responsible for setting policies, strategies and national planning; (2) CDR, WEs and LRA are in charge of planning and securing financing of capital projects based on national plans; and (3) WEs, LRA and other national entities develop their specific business plans and master plans according to the national plan. (Management Initiative # 1.7)

3.3 The NWSS recurrent budget

The operating budget proposed in the NWSS for 2011-2015 (Table 2) reflects the proposed tariff strategy (Box 3) and the implementation of the proposed initiatives. The projections show that over the five years 2011-2015, total operating costs would be $786 million, and total revenues are expected to be $773 million, leaving a small notional surplus. Water supply would account for about $81 million operating surplus, and irrigation for a deficit of about $82 million.

Because the NWSS proposes progressive efficiency gains and increases in tariffs as services improve, the level of deficit is expected to decline over the five year projection period. By 2015, the annual deficit is projected to turn to a net surplus of $43 million, with water supply and wastewater producing a surplus of $39 million, and irrigation registering a deficit of $15 million for the year. The NWSS does not give the breakdown by WE, so that the projected surplus or deficit of each WE is not available. These are ambitious targets demanding high levels of investment, efficient implementation, and effective application of reform measures.

Table 2: Operating costs, revenues and surplus/deficit 2011-2015 (US $ millions)

		2011	2012	2013	2014	2015	Total	Surplus (Deficit)
Water supply	*Costs*	96	102	108	114	132	552	+81
	Revenues	103	109	119	131	171	633	
Wastewater	*Costs*	12	19	26	33	40	130	-12
	Revenues	2	5	19	33	59	118	
Irrigation[11]	*Costs*	19	19	21	22	23	104	-82
	Revenues	2	3	4	5	8	22	
Total	*Costs*	**127**	**140**	**155**	**169**	**195**	**786**	
	Revenues	**107**	**117**	**142**	**169**	**238**	**773**	**-13**
	Net	**-20**	**-23**	**-13**	**0**	**+43**	**-13**	

Box 3: NWSS policies and targets for tariffs and revenues

Water Supply: Volumetric tariff to be introduced in pilot areas of fully metered connections (25% of customers in 2012) and gradually rolled out (75% of customers by 2015). Rate per m3 to be maintained at an average of USD 0.39 until 2014 and then increased to reach O&M recovery by 2015 and full cost recovery by 2021. Current lump-sum tariff to be temporarily maintained for unmetered customers. Number of subscribers to be increased through improved coverage and customer surveys. Collection to be improved from current national average of 47% to 60% by 2012 and 80% by 2015.

Wastewater: Collection and treatment to at least preliminary level of 80% of wastewater by 2015, and of 95% by 2020. Secondary treatment and reuse of all wastewater by 2020. The new WW tariff (initially 25% of the WS tariff) to be introduced in 2011 to pilot areas where all customers are connected to a sewer network and to a WWTP, and reaching full recovery of O&M costs by 2020.

Irrigation: Tariffs to be adapted to each irrigation scheme (currently assumed: 10% volumetric, 30% per hour, 60% per area). Volumetric metering is the preferred solution wherever applicable (target by 2015: 60% volumetric, 20% per hour, 20% per area). Rate per m3 to be maintained at an average of USD 0.12 until 2014. Rate per hour to be kept at an average of USD 6. Rate per ha USD 400/yr. All rates are to be increased by 20% starting 2015 to reach O&M recovery by 2020. Collection to be improved from current national average of <10% to 30% by 2012 and 60% by 2015
Source: NWSS Roadmap

[11] The deficit on irrigation remains significant throughout the period. For LRA-managed schemes, this deficit has in the past been covered by cross-subsidy from LRA's power generation activity.

Chapter 4. Lessons from experience and considerations for phasing implementation of the NWSS

The NWSS sets out an ambitious program of management and infrastructure initiatives that target key sector outcomes. This present chapter now looks at constraints and opportunities likely to affect planning and implementation in order to highlight the need for prioritization and sequencing of the strategy. Section 4.1 looks at four sector-wide constraints – sector governance and accountability, the fiscal constraint, implementation capacity constraints, and political economy factors – and at ways to ease them. How these constraints apply to each of the six components of the NWSS – and how this affects prioritization – is the subject of the following section (4.2). A final section (4.3) then sums up conclusions on how the NWSS may best be implemented, together with the implications for Bank assistance, as a preparation for the discussion in Chapter 5 of where the Bank might best add value.

4.1 Four sector-wide constraints to NWSS implementation

4.1.1 Constraints of internal and external accountability

Internal and external accountability will remain constraints unless priority is given to improvement measures, even beyond those foreseen in the NWSS

The need to strengthen accountability in Lebanon's water sector is highlighted in Chapter 2 above (2.5), and there are measures in the NWSS designed to achieve this objective. Notable are the measures for internal accountability in urban water services by strengthening WE autonomy, human resources and operational efficiency, by improving cost recovery and linking it to service delivery, and by providing for regulation and performance monitoring of WEs. Streamlined arrangements for investment planning and implementation are also provided for (see below, 4.2.6). However, these measures depend on legal and institutional changes which will take time and will require political support, and some of which will be difficult to implement. Ways to prioritize the agenda are discussed below (4.2.1, 4.2.5, 4.2.6). Weak accountability may thus persist, dulling the impact of other measures and investments for more efficient and sustainable service provision. In addition accountability on the key issues of water resources development, allocation and sustainability is likely to remain limited (see 4.2.2).

4.1.2 The fiscal constraint

Investment needs to be reconciled with fiscal realities, linked to key reforms, and targeted at priority outcomes

The NWSS projects (Table 3) an overall cost to the Lebanese nation 2011-2015 of US $5 billion (US$ 1 billion annually) of investing in water and supplying water services. This total exceeds likely fiscal headroom, implementation capability and availability of finance. The annual total equates to over 2% of GDP, well above the 0.8% typical investment in water for a middle income country, and to 10% of current total government spending. In addition, the revenue levels are based on the assumption that cost recovery will double by 2015 and so cover all O&M costs (and full recovery, including depreciation and debt service, by 2021), very ambitious targets.

Table 3: NWSS projection of sector financial flows and financing requirement 2011-2015 (US $ millions)

	2011	2012	2013	2014	2015	2011-2015
Total revenues	**110**	**122**	**142**	**169**	**237**	**780**
Operating expenditures	127	140	154	170	191	782
Capital expenditures*	775	968	1,174	1,150	948	5,015
Total expenditures	**902**	**1,108**	**1,328**	**1,320**	**1,139**	**5,797**
Total net financing requirement	**792**	**986**	**1,186**	**1,151**	**902**	**5,017**

* *Excludes MOEW expenditure on enabling initiatives of $55 million*

Clearly in Lebanon's currently constrained fiscal circumstances, public resources can provide only a fraction of the financing implied, and in the near term water charges are unlikely even to cover O&M, let alone contribute to investment financing. The alternative of seeking private investment requires political commitment and changes to the legal, institutional and regulatory setting, and so cannot play a significant role for some time.

Now that the NWSS has been completed and is under adoption by the Council of Ministers, detailed planning is being undertaken to prioritize investments and to prepare for reform implementation. This should result in: (1) progressively revised financial projections, linked to a selective, phased investment program matched to an agreed financing plan and to the step-by-step implementation of NWSS reform measures; (2) the definition of outputs e.g. improvements in service level, progress towards sustainability etc. together with the related key performance indicators (KPIs); and (3) practical, quantified proposals for private financing. Considerations that may be taken into account in the process of prioritisation and phasing of NWSS implementation are discussed in the next section (4.2).

4.1.3 The constraint of implementation capacity

Improvements in investment and operational efficiency depend on restructuring and building implementation capacity in a practical, prioritized way

The capacity shortfalls and institutional weaknesses which are pervasive throughout the water sector are discussed in Chapter 2, and the NWSS pays considerable attention to resolving these problems through (i) definition of responsibilities amongst sector agencies, (ii) restructuring and strengthening of MoEW, (iii) measures to empower, resource and staff the WEs, and (iv) restructuring responsibilities for investment planning and capital spending. The measures involved are numerous and to carry them out will take political commitment, planning and sustained attention, and implementation capacity will improve only gradually. The levels of capital spending (Table 1) would also encounter challenges of absorptive capacity, which has proved a considerable problem even at the lower levels of planned expenditure by CDR (see Chapter 2 above). Ways to prioritize and sequence implementation within available capacity are discussed in section 4.2 below.

4.1.4 Political economy constraints

Worldwide best practice in reform implementation is to initiate broad dialogue and outreach to increase ownership of the reform program

Past sector reform in Lebanon lagged due to a complex of factors, largely political economy factors. Increasing ownership of sector reform – and reflecting back stakeholder concerns and political economy realities into fine-tuning the NWSS - is thus important. This could be accomplished through open discussion of the NWSS, using a targeted engagement strategy of policy analysis, public relations campaigns, public education, dialogue platforms etc. Building constituencies - leaders, catalysts, educators, donors – will be important, as will

developing agency capacity for communications and strengthening the voice of key constituencies, particularly weaker interest groups.[12] MoEW has already embarked on this process – for example, introducing the NWSS into schools. An engagement strategy such as this could highlight key aspects such as equity and poverty reduction, which could then influence prioritization of the investment program.

4.2 Achieving the targeted outcomes - priorities for implementation of reforms and investment

In the light of the four constraints discussed above (4.1), this section looks in turn at each of the six NWSS outcomes and the related initiatives discussed in Chapter 3, and discusses considerations that will affect the prioritization and phasing of implementation. Much work is already underway, and the purpose of this discussion is therefore to support and strengthen ongoing processes.

4.2.1 Improved, sustainable and affordable water supply

In the light of the four constraints set out above (4.1), this sub-section discusses possible priorities within the NWSS for reform and investment required to achieve the outcome of improved, sustainable and affordable water supply services, covering: (i) empowerment of the WEs; (ii) finance and subsidy of the WEs; and (iii) the scope for private sector involvement.

WE empowerment

The WE model can improve service delivery, but constraints to institutional development and financial sustainability persist. In terms of implementation, completing the transition of WEs to financially autonomous professional service providers is key

Experience under two Bank-supported water supply projects (Baalbek and Beka'a, see Box 4) has been that implementation of investments can proceed satisfactorily, although with a degree of vulnerability to regional turbulence, but that a tangle of issues stemming from poor service delivery, weak accountability and utility institutional weakness can make the delivery of institutional strengthening and a business-like approach to water and wastewater services difficult. As long as agencies are loss-making and have negative cash flow, financial autonomy cannot be achieved. Financial autonomy is brought by positive net revenues and cash flow. The NWSS priority is to improve institutional autonomy so that WEs can move to the footing of autonomous professional service providers and improve operational efficiency. Early NWSS implementation measures should therefore push ahead as soon as possible with the legal and structural institutional reforms that establish the framework for WE autonomy, introduce empowerment of WEs to run as professional service providers, and strengthen their internal and external accountability.

WE autonomy and accountability require an empowering institutional framework, and sustained commitment – but a step by step approach may be feasible

In completing the reforms under Law 221, it will be essential to ensure that the legal statutes of the WEs provide for 'autonomy' and for related accountability. However, the need for autonomy and accountability is not universally accepted, and there may be countervailing tendencies towards imposing more control (MoEW, MinFin). In the absence of a strong provision for autonomy, a pragmatic but principled approach could still be feasible. For example, discrete steps could help provide a greater measure of management autonomy,

[12] Models for targeted engagement strategies exist in several countries - Australia's water sector reform is a notably successful example. This is an area where the World Bank's WBI could provide support (see below, Chapter 5).

particularly the power to recruit the best candidates and to fill some of the many vacant positions. Similarly, internal accountability can be strengthened step by step by improving efficiency and cost recovery, benchmarking, and performance monitoring. The low-key approach to WE strengthening adopted in the new Bank-supported Greater Beirut (GBWSP) project reflects this lesson (see Box 4 again).

Box 4: Project experience shows institutional issues are key – and solutions need to be adapted to the local context

In a very difficult political and security situation, Ba'albek Water and Wastewater Project targets development of water and sanitation services along with strengthening of institutional capacity, the introduction of metering, and involvement of the private sector in operation and maintenance. The project is proving successful physically but the WE is only slowly moving towards becoming a financially autonomous and accountable service provider. The solution adopted is engagement with stakeholders to underline the quid pro quo of mutual accountability i.e. service improvements need to be matched by fair cost recovery. Although it will plainly be a long haul, this approach is beginning to show success, despite the hugely problematic context.

Baalbek Water and Wastewater Project: Results to date

Result	2001 baseline	June 2011 actual	Target at completion
Collection rate	35%	18%	60% (2011)
Subscriptions	8,900	9,800	29,600 (2011)
Waste water collected	0	2,000 m3 per day	9,000 m3/day (2015)
Population served	79,000	150,000	150,000 (2011)

Beka'a Emergency Water Supply Project, approved in March 2007, is being implemented satisfactorily.. Current issues on the project concern institutional aspects – essentially the need to get customers to agree to subscribe to the network and pay for the water service and thus ensure that the WE can be financially viable and so ensure sustainability. Here again the strategy is engagement with stakeholders and the underlining of mutual accountability.

The Bank's newest project, the Greater Beirut Water Supply Project (GBWSP), addresses key issues on which all segments of the stakeholder community can agree: incomplete coverage of poor districts and households; inadequate bulk water supply; and weak management processes. The context is at once challenging – BMLWE serves over 2 million people, 60% of the nation – and easier than in other WEs: revenues cover costs by more than two times, the collection rate is 90% and margins have been adequate to generate a cash surplus of $170 million. The project development objectives are conservative: (1) to increase service provision with a focus on low-income households; and (2) to strengthen BMLWE in utility operations. Essentially, the project builds on existing viability to improve performance and accountability, and focuses on objectives of equitable and sustainable improvements in service provision without trying to confront the 'big issues' of sector reform which are beyond the control of the WE.

Source: Annex 5

Each water establishment is different, and approaches need to be tailored

Perhaps the most striking lesson from the analysis in Chapter 2 and from the case studies and project experience discussed in this note (see Box 4) is that each WE is different in the constraints it faces and the options for overcoming the constraints. The implementation of reforms should be tailored to the reality of each WE but with a long term vision, linking reforms and investments in a pragmatic way and in particular ensuring that improved service delivery, strengthened accountability and increased revenue-raising keep pace with each other. Financing agencies could tailor approaches to local realities, with each WE assessed separately and treated accordingly. Where utilities perform poorly on business parameters, emphasis needs to be on mutual accountability (as with the Baalbek project, see Box 4), and safeguards need to be built in. Options might include: (1) a step by step conditional approach; or (2) results-based lending, with realistic 'business' results included.

Generating confidence through performance and communications is key

Improved service delivery and value for money can generate political and popular support which helps improve financial performance, strengthen institutional autonomy and attract donor support. WE communications strategies for the transparent diffusion of reliable information can play a valuable part in raising awareness and generating the needed confidence (see Box 4). Ideally each WE would implement measures to improve mutual accountability at the local level amongst local stakeholders/politicians and customers. Communications strategies adapted to each local situation could form part of all WE business plans.

Business plans, finance and subsidy of WEs

Each WE (and the LRA) needs to improve service levels and move towards financial autonomy and accountability within the local political economy context.

WEs and the LRA have varying prospects of improving service levels and achieving the financial autonomy needed to become professional service providers. In addition, this has proved to be much more than a technical challenge, as significant political economy constraints have emerged for all agencies and investments. Part of the 'tailored approach' suggested above will be that each agency will move at its own pace towards financial autonomy, reflecting local realities. Each WE is developing measures for sustainability within its business plan, tailored to its own situation and putting in place arrangements for tracking and supervising performance. Ideally, plans would demonstrate: (1) how each WE and the LRA can move towards the status of financially autonomous and accountable service provider; (2) how the efficiency of both investment and operations will be improved; (3) how services will improve as a result; and (4) how the plan can be implemented in the local context.

The business plans are expected to prioritize the investments in infrastructure and operational improvements that increase both the financial viability and operational efficiency of the WEs – increasing supply, reducing unaccounted-for water, and increasing collection rates - within investment and financial programs tailored to the specific situation of each WE.

Tariffs need to be set in the context of progressive service improvement, in the light of the local circumstances, and with a view to long term financial autonomy

The NWSS makes proposals for tariff adjustments and a switch to volumetric billing to reach full cost recovery in the coming years (Box 3). MoEW is working (with GIZ support) on a tariff structure that should reflect local circumstances and provide adequate protection for the vulnerable, with a view to financial autonomy in the longer term. As discussed above, the situation of each WE is quite different, and the prospects of balancing the books vary sharply. Current fixed fees may in some cases be at levels that would notionally cover O&M costs – it is low billing collection rates, high water losses and other inefficiencies that are the most significant components of WE financial deficits.[13] It is planned to introduce volumetric tariffs, once 24 hour supply, metering and volumetric billing arrangements are in place.

Subsidies are needed, but they should be results-based and
Financially, the only solution into the medium term for three WEs (other than BMLWE) is some form of subsidy, as was provided in 2010 and is now under consideration for 2011. In the event that persistent high levels of deficit are likely to be encountered by a WE, a top level policy decision is required. The alternative – 'muddling through' by not paying for electricity etc. – is likely to contribute to a vicious circle of declining service levels, erosion of consumer

[13] See *World Bank 2010* (PER) para 42 and Figure 23

confidence, loss of local support and ever-weakening financial results. Time bound and results-linked 'smart subsidies' required by deficit WEs should be negotiated for specific transition periods, with clear and workable accountability arrangements for agencies to achieve real financial autonomy. One possibility is to establish a 'competitive fund' to which WEs would have access to the extent they met benchmarks for improved performance.

PPP

Private sector participation can take many forms, and the best approach in the short term is probably a low key gradualism whilst preparing the ground for larger scale private sector participation in due course

The NWSS sees the participation of the private sector as an enabler to incorporate know-how and fresh capital, and so gives priority to achieving a 'holistic reform and a sound institutional, organizational, financial, legal and regulatory environment.' The strategy sees management contracts as a starting point, with more advanced PSP schemes (e.g., BOT) as a later stage. [*NWSS: 67*]

As discussed above (2.1), large-scale PPP tested at Tripoli 2003-7 was discontinued. Many industry professionals still believe that private sector participation in the form of management contracts could be a solution, but there is no consensus on this, and no evident champion (see Box 5 below). Plainly the 'political economy' constraints need to be clearly analysed. This larger scale private sector participation requires support of government, the WE and other stakeholders, and reviving the program will not be easy. There are, however, possible entry points through lower-key forms of PPP, for example outsourcing of various functions whilst preparing the ground for a return to larger scale private sector participation in due course.

Box 5: Lessons from the Tripoli Management Contract 2003-7

Tripoli was selected for the trial of a private sector management contract because it was the town with good water supply service and it had a promising WE. The contract was awarded for four years 2003-7 to Ondeo, with an option for renewal for a further three years.

A bonus was to be paid to the contractor based on several criteria. The criteria of water quality and of 24 hours service were fulfilled within 18 months. Collections performance increased from 30% to 50%, but fell well short of the contracted target of 80%. Reduction in commercial unaccounted for water was to be accomplished by construction of a complete customer data base, but this was not carried out due to 'political sensitivities'. These shortfalls led to reduced performance-related payments to the contractor.

One key weakness was that the contract did not empower the contractor to improve the collection rate, even though this was a performance criterion. Lebanese law does not allow *gestion délégué*, so that the contractor was unable to collect water fees directly. Because the contractor lacked the powers to enable it to raise the collection rate, the financial basis of the contract was undermined. No sustainable model was demonstrated, and the contractor lost money.

Overall, observers assess the experience as technically successful, but with institutional and 'political economy' problems. At the end of the first phase, the Northern WE turned down AFD financing of Euros 3.5 million to finance contract renewal, and Ondeo declined to seek renewal, stating that the venture was loss-making for the company. AFD's proposal to conduct a formal objective evaluation of the experience was not taken up by the Lebanese side.

The NWSS proposes an increased role for private capital and management, proposing revision of legal texts and ensuring readiness on institutional, organizational, financial, legal and regulatory aspects. Given the need to improve performance and to bring more investment into the sector, this is a priority agenda, but it would need to be triggered by strong political support. There may be a need for an improved communications strategy on the potential role of the private sector, for example tailored

learning events on PPP such as those run by the Arab Water Academy.

In addition, other lessons can be learned and applied: the need to align consultant fees with local staff salaries; the need for practical mechanisms for outsourcing billing and collection; and the scope for promoting small-scale enterprises for outsourcing O&M activities.

Source: Annex 4

4.2.2 Sustainable water resources management and allocation to priority uses

It is vital to strengthen water resources planning and investment

As Lebanon approaches water scarcity, it is clear that water is over-allocated and that the regulatory and incentive structure does not foster reallocation between users, efficient use, or sustainability (see 2.2 above). Institutional arrangements for long term water resources planning, development and management are weak. As a result, bulk water supplies for municipal supply and for irrigation are vulnerable, and groundwater is being rapidly mined. The NWSS envisages an improved operating model between the WEs and MoEW, under which MoEW will be responsible for strategic planning, major investment, conservation and regulation, while the WEs and the LRA will be responsible for water monitoring and distribution. The NWSS also envisages investment in optimizing surface water resources, surface storage development and artificial groundwater recharge. The priorities for storage have been identified in the recently-prepared *Strategy for Surface Water Storage*, and investment in storage is certainly an imperative, prioritizing multi-purpose schemes (water supply – hydropower – irrigation). However, investment should be made within an overall master plan framework, based on both supply development and demand management, which identifies long term resource needs and sources and provides for institutional measures and physical investment to be made in conjunction. In the medium term, strengthening oversight and enforcement powers over water resources management, particularly groundwater, is a priority.[14]

4.2.3 Putting wastewater on a sustainable footing

In wastewater, the priority is to resolve the institutional and financial issues and to move rapidly to higher levels of effective treatment.

The problems of the wastewater sector are described in Chapter 2 (2.3). Given the very significant installed capacity, the NWSS argues that rapid increases in rates of wastewater treatment could be achieved by tactical planning and investment for completing ongoing projects and developing networks. Solutions to the wastewater challenge also require the development of a feasible business model.

The NWSS therefore provides for prioritizing investments and actions within the MoEW's *Strategy for the Wastewater Sector* that would assign clear responsibility for wastewater and to bring on line the significant installed capacity within the regional master plans (see 4.1 above). This needs to be accompanied by development of a feasible business model for wastewater and steps to progressively apply wastewater tariffs,[15] conduct capacity building, and agree results-based and time-bound subsidies. Further investment might be prioritized according to the highest cost: benefit ratio in terms of tons of BOD removed.[16] Regarding environmental issues, priorities are to conduct the sectoral environmental assessment,

[14] See *World Bank 2010* (PER): 51
[15] This is Management Initiative # 2.3 in the NWSS
[16] An approach suggested in the *Country Environment Assessment*: 17 (World Bank 2011)

improve knowledge on climate change and factor the results into planning, including addressing flood mitigation.

4.2.4 Profitable and sustainable irrigated agriculture

In irrigation, decentralization, empowered user associations and cost recovery are priorities

Institutional reforms need to be undertaken, particularly to firm up responsibilities for irrigation sector development and management, to decentralize responsibility for lower level operation and maintenance to empowered water user associations, to introduce practical cost recovery arrangements to pay for bulk water delivery, and to move towards a financially autonomous model in order to enhance efficiency and sustainability (see Box 6).[17] Investment is required in both infrastructure and product and market development. The NWSS provides for the needed reforms to address these issues, as well as investment for improvement and expansion. As the last comprehensive sector analysis was conducted in 2003[18], a good place to start would be to conduct a technical, economic and institutional assessment of the irrigated agriculture sector in order to: (a) identify the specific comparative advantage of Lebanon's irrigated agriculture and match that with agricultural policies and services and the scope for product and market development: (b) develop an institutional strategy and financial sustainability mechanisms; and (c) prepare a phased investment program.

Box 6: The LRA case shows the need to move towards a more decentralized, financially autonomous model of irrigation management

The hydropower business of the Litani River Authority (LRA) generates a high level of net revenue, with income covering costs by up to three times or more. Part of this surplus is used to cross-subsidize irrigation water service, as farmers pay below cost for irrigation water service. The farmers do pay their bills – collection rates are excellent (97%). Tariffs are still area-based, but at least part of the network is equipped with hydrants for each farmer, giving the possibility of volumetric charging.

There are several reasons for LRA's success. Its business model covers costs, and so gives a degree of financial autonomy. The organization possesses the legal statute of '*office autonome*' under which it reports to an independent Board appointed directly by the Council of Ministers. There appears to be political and popular support in the LRA service area, as the LRA is providing valued I&D and water supply services. There is also national and donor support because LRA is seen as efficient.

However, the LRA's autonomy is somewhat artificial, depending on the surplus-generating hydropower operation to cross-subsidize the irrigation operation. In addition, LRA autonomy may be eroding as the privileges conferred by the statute of *office autonome* are less and less respected, with the MoEW increasingly interfering and the Ministry of Finance cutting the annual budget.

Experience under the Bank-supported Irrigation Rehabilitation and Modernization Project (IRMP, 1995-2003) was that participatory approaches through water user associations (WUAs) were effective in ensuring cost recovery, in promoting water use efficiency, and in taking over lower level O&M. Clearly, more user responsibility for O&M and higher cost recovery would strengthen LRA autonomy, improve incentives to water use efficiency, and promote sustainability and profitability of irrigated agriculture. However, the post-evaluation of IRMP concluded that WUAs could only be effective if they had legal recognition and institutional support.

Source: Annexes 4 and 5

[17] These changes are in line with the NWSS (see Box 3 above).
[18] Lebanon *Policy Note on Irrigation Sector Sustainability*. Report 28766-LE, November 2003

4.2.5 Strengthened sector capacity for oversight and reform implementation

The requirements for strengthened sector oversight and reform implementation are clearly spelled out in the NWSS, but the proposed restructuring and strengthening of MoEW has to be undertaken within a public service context where providing flexible incentives, career development and responsive management is difficult. An excellent start has been made with the setting up of task teams of consultants, the production of the NWSS, and the start of planning for implementation and investment. The challenge is to transform this capacity and energy into a permanent capability. This would require definition of core functions and an action plan for MoEW for: (1) policy making, implementation of sector reform and overview of sector performance; (2) investment planning and programming; and (3) reform, monitoring and regulation of the WEs. Also required is a program for recruitment, capacity building, and long term 'advisory staff', perhaps supported by a long term capacity building arrangement with a donor organization.

4.2.6 Improved efficiency of public expenditures

The core of the NWSS has been to improve the efficiency of public expenditure, building from the bottom up, and then prioritizing and phasing

As mentioned above (Chapter 3), the heart of the NWSS has been to refocus the investment program on priorities and to improve the efficiency of implementation. Measures are already underway to improve investment planning. However, as discussed above (4.1.2), significant increases in the investment budget will be constrained by fiscal space, absorptive capacity, and limits to sourcing funds from the national budget, from users, from donors and from the private sector. Clearly, prioritization within investment programs will be essential, together with a more extended phasing over a longer period. The process initiated by MoEW to prepare regional master plans (see 4.3 below) will support this phasing, as it will decentralize to the local level the assessment of investment needs and implementation feasibility, essentially building the investment program from the bottom up and in relation to the needs and capacities of each area and its WE.

The tradeoffs between (i) efficient implementation and (ii) ownership and capacity building could be reassessed

For two decades, CDR has been the institution of choice for investment implementation, leaving line agencies out of the loop on planning and implementation. The NWSS proposals for strengthening of MoEW, the WEs and the LRA in investment planning and implementation would improve the fit of investments with strategy and build the capacity of the line agencies, even at the cost of some initial loss of implementation efficiency (see the lessons from the Irrigation Rehabilitation and Modernization Project – IRMP - in Box 7). Institutional arrangements for investment planning and implementation should be restructured so as to increase local ownership, prioritize investments according to local demand and absorptive capacity, and integrate investment planning and implementation increasingly within the WEs and the LRA. In the short term, better horizontal coordination is needed to ensure an effective sequencing of investments and alignment of capital and O&M expenditures (particularly for wastewater). In the longer term, execution of capital works should be progressively transferred to the WEs as they strengthen their capacity.[19]

[19] See *World Bank 2010* (PER): 50-51

The priority should be to improve the quality and efficiency of investment rather than volume.

Investment is essential but it needs to be in a viable institutional context and to be more efficient and prioritized. Given the constraints to increasing investment financing, the priority should be to improve the quality and efficiency of investment rather than increasing volume. Priority should be given to the highest yielding investments that will improve services sustainably, taking account of maximum impact – prioritizing areas with least access, highest environmental impact, potential for high value agriculture etc – and of fiscal and financial constraints, and of political economy considerations.

There is need for strengthened donor harmonization and alignment

Donor support to the water sector has been vital, but it has not been coordinated within an integrated investment program. Donor lead has tended to weaken national ownership. Strenuous efforts will be needed to ensure that all donor investment is coordinated within the NWSS as part of a demand-driven investment program, in line with the sub-sectoral and regional investment priorities and the business plans of the WEs. The possibility of government and donors joining together in a 'sector-wide approach' (SWAp), financing a commonly agreed investment program, could be considered.[20]

Box 7: 'Technical agencies should be empowered to implement projects wherever possible'

In the Bank-supported Irrigation Rehabilitation and Modernization Project (IRMP), implementation delays and insufficient capacity building resulted from lack of coordination and collaboration between CDR and MoEW, and between the three technical agencies: MoEW, LRA, and MoA. The ICR drew the important lesson that empowerment of the 'technical' agencies – MoEW, LRA, MoA – to implement the project and carry out their own procurement would have accelerated implementation and built capacity in those agencies.

Source: Annex 5

4.3 Conclusion and implications for future Bank assistance

The NWSS is a relevant but very ambitious program. Specifics for priorities and for phasing will be important, and implementation challenges will need to be met.

Overall, the NWSS measures are bold and comprehensive, and they respond to the problems identified. The biggest challenges will be overcoming the likely constraints to implementation, which may include: (i) creating internal and external accountability; (ii) prioritizing investments within financial availability; (iii) overcoming institutional rigidities, particularly regarding manpower and investment planning and implementation, and building the needed capacity; and (iv) generating enough social and political support.

Implementation will require breaking the NWSS down into 'bite-sized pieces' and phasing its implementation according to priority and financing available

The NWSS contains a 'strategic roadmap' for implementation, and this is now being broken out into a phased implementation program. As discussed in this chapter, the implementation program should take account of the social, political and institutional constraints, prioritizing measures and investments according to impacts, adopting proposals to overcome or by-pass constraints, and setting out a plan to ensure the needed support of champions, key political actors, stakeholders and financiers. Taking a step by step approach, tailoring reforms to local

[20] Box 9 in Chapter 5 discusses this possibility in more detail.

realities, and testing out reforms on a small scale could also help. Separate strategies are to be prepared for each WE. Development partners have been associated with the NWSS from the start and have contributed to its elaboration. As planning for implementation goes ahead, it will be important to keep the development partners aligned behind the NWSS, with financing of the priority infrastructure investment and institutional development plans of each WE coordinated.

MoEW has embarked on preparation of a detailed investment program

MoEW has embarked (October 2011) on three complementary investment planning processes: subsector planning, regional master planning,[21] and business planning at the level of WEs. These processes should result in a consolidated and phased infrastructure investment program within set financial ceilings. The program should be aligned with measures to reform the enabling environment, and then be presented to government, private investors and donors for financing. Once implementation planning has been done, KPIs will need to be set

Implications for future Bank assistance

Table 4 lists the main priorities discussed in this chapter and indicates some considerations regarding future Bank assistance to implementation, as a contribution to the discussion in Chapter 5 on the proposed Bank program in the sector.

[21] Four regional master plans, each covering one *caza*, have been issued, and others are in preparation

Table 4: Overcoming constraints and targeting outcomes – priorities and implications for the Bank

Constraints	Measures to overcome constraints	Implications for Bank
Accountability	Strengthen measures for internal and external accountability	Measures should be integrated in each Bank intervention where appropriate
Fiscal constraints	Match investment to financial ceilings	
	Link investment to reform	
	Define expected role of private finance	
Implementation capacity	Restructure and build implementation capacity in a practical, prioritized way	
Political economy	Implement an NWSS 'engagement strategy'	Possible scope for WBI
Targeting outcomes	**Implementation priorities identified**	**Implications for Bank**
Water supply, WEs	Strengthen WE autonomy and accountability	Bank support to a WE should be integrated with other financing and be set within a business plan tailored to the WE's needs, prioritizing autonomy and accountability along with efficient, sustainable service delivery
	Adapt approaches to the reality of each WE in tandem with government and donors	
	Generate confidence through performance and communications	
	Use the business plan to link investment and strengthening of institutional autonomy, accountability and capacity *to* Improved service levels and better financial performance *and possibly to* Results-linked smart subsidy where needed	
	Program infrastructure and institutional investment in tandem	
	Try out low key PPP whilst preparing the political, legal and institutional ground for large-scale PPP	Bank support would be coordinated with the IFC
Water resources	Develop a master plan and institutional capacity along with infrastructure investment	Scope to support strengthened planning and management alongside infrastructure investment
Wastewater	Assign clear responsibilities	Bank has no track record in this problematic sub-sector in Lebanon
	Develop a flexible business model	
	Local planning to complete and bring on line installed capacity	
Irrigation	Clarify responsibility for irrigation sector development and management	Scope for sector work and possible investment as the Bank has long experience
	Decentralize responsibility to formal WUAs	
	Cost recovery for bulk water, and financial autonomy and accountability for providers	
Sector oversight	Define core functions and an action plan for MoEW	Possible scope for Bank support to key analysis and functions
	Recruitment, capacity building	
Investment efficiency	Restructure arrangements for investment planning and implementation	
	Prioritize the highest yielding investments	
	Donor harmonization and alignment	Possible scope for proactive Bank role

Chapter 5. Adding value: a proposed Bank approach and program

Building on the diagnosis of water sector problems (Chapter 2), NWSS initiatives (Chapter 3) and lessons from experience and considerations for phasing NWSS reform and investment (Chapter 4), this final chapter assesses how the Bank might most productively work with government and other agencies to support implementation of the NWSS and so improve delivery of sustainable, equitable and efficient water sector services for the Lebanese people.

The chapter looks first at why supporting reform and investment in the water sector is a priority (5.1), and then at the Bank's comparative advantages and constraints and at the Bank's overall partnership strategy with Lebanon (5.2). The final section (5.3) proposes specific areas of analytical and advisory services and of investment for the period 2012-2016 for discussion with government and other partners.

5.1 The case for supporting NWSS reform and investment in the water sector

Priority has to be given to the water sector and the NWSS reforms because of the high economic, social and political costs of current poor performance. Expanded and improved services would contribute to the country's equity and poverty reduction aims. Improved water service delivery would also contribute to GDP, exports and employment growth, for example in irrigated agriculture. Finally, water sector reform is an imperative in order to mitigate the risks of non-sustainability into the medium term due to water resource shortages, potential climate change impacts and environmental damage. These considerations provide a strong rationale for supporting water sector reform and investment. .

5.2 Where can the Bank best add value?

The Bank's main competences and constraints in the water sector

Globally, regionally and within Lebanon, the Bank has long experience in the water sector, and has comprehensive involvement across all sectors, so that knowledge can be brought to bear on integrated and cross-sectoral approaches, and on integration of water sector programs within the larger macro framework. The Bank also has convening power with international and national partners. The Bank maintains a demand-driven business model which ensures that Bank operations are fully owned, aligned and harmonized with country requirements. Finally, the Bank has a critical mass of staff, including staff specialized in water, posted both at headquarters and in-country, and has the capability to step up its level of effort in response to demand. The Bank is thus well placed to play a growing role in the development of the water sector in Lebanon. However, within a constrained environment, the Bank needs to have a long term assistance strategy integrated within the NWSS, agreed with government, tailored to its strengths and limitations, prioritizing its interventions according to development impact, organizing for efficient delivery, and working in partnership with other development partners.

Key points where the Bank can make a difference

In line with the above assessment of Bank competences and constraints, the key points where the Bank can make a difference in Lebanon's water sector are:

- At the strategic level, helping through analytic and advisory activities (AAA) and dialogue to fine-tune NWSS sector strategy, prioritize the reform measures and investment opportunities, hone implementation arrangements, and help government to align and harmonize donor support.

- At the macroeconomic level, helping government through AAA and dialogue to fit the NWSS and its implementation planning within the overall macroeconomic, planning and fiscal framework

- At the implementation level (1) supporting the design and implementation of key reforms through AAA and dialogue; (2) investing in key operations linked to priority NWSS outcomes; and (3) helping the Lebanese government to ensure readiness of the water sector to receive private financing through PPPs.

The Bank partnership strategy with Lebanon

Current Bank engagements are driven by the *Country Partnership Strategy* (CPS) for FY11-14 agreed between government, the Bank and the IFC (May 2010). Emphasizing the need to pursue realistic objectives and principled but pragmatic approaches in the face of socio-political constraints, the CPS sets three criteria for the Bank to intervene: (1) contribution to growth; (2) strengthening of fiscal stability; and (3) reinforcement of social cohesion. Reform and investment in the water sector meet these criteria and the sector is consequently amongst the CPS priorities. Importantly, IFC is a full partner in the CPS, with a focus on private sector investment and advisory services, including for private provision of infrastructure services.

5.3 Towards a program for Lebanon's water sector

Criteria proposed for the water sector program

Five general criteria for the Bank to intervene in Lebanon's water sector are proposed:

Impact on key outcomes. Chapter 3 discussed the expected outcomes of implementation of the NWSS. The leading criterion for Bank involvement is the extent to which a Bank-supported intervention contributes to achieving one or more of these outcomes. Table 5 below indicates schematically the linkages between possible Bank-supported activities and key sector outcomes.

Consistency with the CPS. As mentioned above (5.2), the CPS sets three criteria for the Bank to intervene, judging proposals against the potential contribution to: (1) growth, including incomes, employment and exports; (2) fiscal stability, including limited and cost-effective investment spending, contribution to the overall efficiency of public expenditures, and reduction or elimination of deficits of public agencies; and (3) social cohesion, including reduction of inequality between communities or areas and pro-poor targeting of benefits.

Realistic promotion of the NWSS reform agenda. The constraints and opportunities for realistic implementation of the NWSS are discussed at length in Chapter 4, and Table 4 summarizes priorities and implications for the Bank, In summary, Bank interventions should promote feasible and pragmatic but principled reforms to meet key development objectives and feasible governance arrangements that are compatible with Lebanon's political economy and which contribute to the longer term reform agenda.

Accountability and political economy considerations. Interventions need to be demand-driven and to be owned by key constituencies at both national and local level. Ideally, operations should involve civil society in monitoring performance. Due diligence should show that there has been informed public debate and understanding on the trade-offs involved in policy choices.

Sustainability, including environmental and social sustainability. Interventions should be consistent with environmental and social sustainability and if possible help to reverse environmental degradation.

Table 5: Possible Bank-supported activities and links to sector outcomes (with indicative start years)

Key sector outcomes	Bank-supported AAA	Bank-supported investment
1. Improved, sustainable and affordable water supply	[Possible IFC advisory services on the PPP agenda: *2012*]	5. A time slice investment in one WE: *2013*
2. Sustainable water resources management and allocation to priority uses	2. Support to updating the national water master plan and to wa resources management: *2012*	6. An investment in storage: *2014*
3. Putting wastewater on a sustainable footing	[Possible IFC advisory services on the PPP agenda: *2012*]	
4. Profitable and sustainable irrigated agriculture	3. Economic and institutional assessment of the irrigation sector: *2012/2013* [Possible IFC advisory services on the PPP agenda: *2012*]	7. A free-standing irrigation project: *2015*
5. Strengthened sector oversight and reform implementation	1. Support to implementation of the NWSS: *2011*	
6. Improved efficiency of public expenditures	4. Support to restructuring institutional arrangements for investment planning and implementation: *2013*	5. A time slice investment in one WE: *2013* (within a single integrated program also supported by Government and other donors)

Possible analytical and advisory services (AAA)

Analytical and advisory services (AAA) would be driven by discussion and agreement with government on where the Bank could add value to the NWSS reform effort. Four areas identified which meet the criteria and are consistent with Table 4 are:

1. Support to implementation of the NWSS could contribute to the key outcome of strengthened sector oversight and reform implementation, and could cover some of the key steps in moving towards implementation of the NWSS that were discussed in Chapters 3 and 4 above. Services could include:

- Support to engagement with stakeholders to increase ownership and accountability (perhaps through the World Bank's learning and capacity building arm, the *World Bank Institute* - WBI)
- Political economy analysis to firm up feasible reform pathways
- Support to preparation of business plans/implementation programs for the WEs and the LRA
- Support to development of a prioritized investment program

2. Support to water resources management would contribute to the key outcome of sustainable water resources management and allocation to priority uses, and could include the detailed work to support the identification and preparation of a Bank-financed investment in storage (see 6. below). Services could include:

- Support to update of the national water master plan
- Support to identification of multi-purpose water storage infrastructure

- Capacity building

3. Economic and institutional assessment of the irrigation sector would support the key outcome of a profitable and sustainable irrigated agriculture, and could include assessment of the institutional reforms needed, particularly to decentralize responsibility for lower level operation and maintenance responsibility to empowered water user associations, practical cost recovery arrangements, and pathways towards a more efficient and less fiscally onerous operational model. Services could include (as recommended above, 4.2):

- Development of an institutional strategy and improved cost recovery mechanism
- Development of a sector investment program
- Support to identification and preparation of a Bank-financed investment in irrigation

4. Support to restructuring institutional arrangements for investment planning and implementation. In support of the outcome of improving the efficiency of public investment in the sector, this activity could include strengthening of capacity for investment planning, financing and implementation in line with proposed revisions to MoEW and WE organization structures (see 4.2.4 above). Services could include:

- Support development of MoEW investment planning and programming capacity
- Develop instruments and capacity for investment planning and programming in the WEs and the LRA
- Strengthen WE and LRA capacity for project implementation
- Develop mechanisms for harmonization and alignment of donor/government financing, including evaluation of possible SWAp arrangements (see Box 9 below)

All of these services would be programmed annually, and could be delivered either through fast-response 'just-in-time policy notes', or through larger studies under the Bank's economic and sector work (ESW) program, or programmed under Bank-financed investment operations. In addition, Bank services may be programmed jointly or in complement to larger exercises carried out by government and/or other development partners..

IFC advisory services

If government wishes to proceed with expanded private sector participation, IFC could be invited to provide advisory services as it has done successfully in many countries, in water supply, sanitation and irrigation.

Possible lending

Matched against the criteria and based on Table 4 above, the following investments may be proposed:

5. A time slice investment in one WE in support of an agreed business plan, with the objective of completing reforms, raising service levels, and bringing the WE to financial viability. This investment would provide integrated support to achieving the outcome of improved, sustainable and affordable water supply in one service area, and would support implementation of the agenda for the transformation of the WE into an autonomous, accountable and (ultimately) self-financing professional service provider. The investment could cover all hardware and software needs to bring the WE to agreed results. Upfront agreement on reforms and associated investments and institutional strengthening would be required, together with accountability mechanisms between the WE, government and local stakeholders and consumers. A results-based loan to government, where disbursement would take place against agreed results (KPIs) rather than previously specified inputs might be appropriate, provided that core Bank requirements could be satisfied. One key innovation

that would certainly add substantial value would be to work with government and donors to group all support to the WE within a single program driven by the WE's own business plan and investment program, ensuring that all financing needs were covered and agreeing on periodic performance targets to be met as triggers for further financing. This arrangement could be limited to programmatic financing of a single WE, or could be extended to a sector-wide programmatic approach (see Box 9).

6. An investment in storage, to resolve binding constraints to sustainable water supply for both consumers and irrigated farmers. This investment would target the outcome of sustainable and integrated water resources management by supporting specific storage investment and also by strengthening water resources allocation, IWRM and sector regulation. This would help to increase water security, resolve supply constraints and – if irrigation could be included – increase employment, incomes and exports from high value agriculture. MoEW has already carried out a multi-criteria prioritization of surface water storage investments that could provide an objective basis for project selection, when completed by all appropriate environmental and social impact assessments (Box 8).

Box 8: The *Lebanese Strategy for Surface Water Storage* proposes investments in surface water storage costing a total of $3 billion

The *Lebanese Strategy for Surface Water Storage* includes a needs assessment up to 2035, a review of alternative water sources (aquifer recharge, wastewater reuse, surface water storage), a prioritization of potential projects using 13 evaluation criteria weighted according to importance, and an outline financial and economic feasibility assessment of the proposed development plans.

The total investment cost of constructing all proposed storage would be in excess of $3 billion, providing 869 MCM of static storage, and 1,210 MCM of dynamic storage. The best rated major projects and their estimated capital cost include:

BML: Janneh Dam ($300 million, dynamic storage 90 MCM, irrigation potential of 450 ha); Bisri Dam ($300 million, dynamic storage 120 MCM)

North: Bared Dam ($144 million, dynamic storage 90 MCM); Adline Noura Tahta Dam ($150 million, dynamic storage 50 MCM, irrigation potential of 4,000 ha)

Bekaa: Aassi Dam Phase II ($141 million, dynamic storage 15 MCM, irrigation potential of 1,800 ha)

South: Ibl Es Saki Dam ($300 million, dynamic storage 50 MCM, irrigation potential of 2,600 ha); Khardaly Dam ($280 million, dynamic storage 120 MCM, irrigation potential of 13,000 ha)

Source: Lebanese Strategy for Surface Water Storage

7. A free-standing irrigation project, to support irrigation sector reforms, particularly decentralization of operation and maintenance responsibilities, empowerment of water user associations, and cost recovery, together with investments to validate the new management model and to increase productive capacity and efficiency. Investments might complete infrastructure partially developed under the Irrigation Rehabilitation and Modernization Project (IRMP), improve existing infrastructure, and expand the irrigated area. This investment would be targeted at the outcome of developing profitable and sustainable irrigated agriculture. This project could meet targets of growth, equitable spread of benefits and poverty reduction. The project could also build on the results of the ongoing GEF Grant to the *Conseil National de la Recherche Scientifique* which is working with the Ministry of Agriculture and MoEW to improve water resources management and agricultural productivity through the use of earth observation and remote sensing tools and methods.

On each of these possible investments, up-front decisions would be needed to ensure compatibility with the criteria, or measures and investments to meet the five criteria set out above would need to be built in to project design (Table 6).

Table 6: Matching possible Bank-supported water sector investments with the five selection criteria

	Impact on NWSS outcomes	CPS criteria			NWSS reform agenda	Ownership and PE	Sustainability
		Growth	Fiscal stability	Social cohesion			
A time slice investment in one WE	*HP*	*HP*	*HP*	*HP*	*HP*	*CP*	*CP*
An investment in storage	*HP*	*HP*	*CP*	*HP*	*CP*	*CP*	*CP*
A free-standing irrigation project	*HP*	*HP*	*CP*	*HP*	*HP*	*CP*	*HP*

*HP: Prima facie **high potential** for meeting the criterion*
*CP: **Constructive potential** for meeting the criterion – the degree of compatibility would form part of the selection process of the specific investment, and measures to enhance compatibility would be factored in to project design.*

These investments would typically be delivered through a Sector Investment Loan. Possibilities of results-based lending or of a joint government/donor programmatic approach (SWAp) within the NWSS framework should also be considered (see Box 9).

Box 9: Sector wide approaches (SWAp) – Pros and Cons

What is SWAp? SWAp is an open-ended process of bringing all government and donor financing in a sector within a single program framework. Based on country-led strategies, SWAp seeks to harmonize donor assistance through common arrangements for financing and technical assistance and to align donor aid on national institutions and on strengthened country implementation and fiduciary systems.

Financing modalities: SWAp can be financed by a range of financing instruments: parallel financing coordinated within the SWAp framework; joint financing (both off budget "basket financing" and on-budget "pooled financing"); and budget support.

Agreeing on SWAp: Agreeing on SWAp requires a process of consolidated appraisal and negotiation that will typically cover five "qualifying criteria": (1) a comprehensive sector policy and results assessment framework; (2) a country led partnership approach; (3) agreement of all partners to support the national investment program; (4) movement to align fiduciary and safeguard requirements; and (5) agreement to move towards common approaches to implementation and management.

Benefits: The benefits from SWAp are stronger country ownership, a coordinated and open policy dialogue, and better resource allocation. SWAp also strengthens national capacity, systems and institutions, and facilitates scaling up of best practice and benefits to the entire sector.

Possible costs and risks: Experience has shown that SWAp can bring initial costs to both government and donors, as the process of agreeing on SWAp is time-consuming and arduous. There are costs of 'managing' SWAp too, in the shape of national coordination, administration, M&E and reporting, and also donor costs in terms of time for consultations, coordination and supervision. On the country side, the gain in ownership is balanced by a certain loss of 'sovereignty', in that everything requires negotiation and agreement, and the approach may result in greater efficiency in investment but lower net transfers. On the donor side, there is a certain loss of the 'control' and 'badging' that project financing brings, and also a certain level of risk in depending on national capacity and procedures.

Source: Sector Wide Approaches (SWAp) In The Water Sector

Managing risks

The major risks to the Bank's engagement in the water sector are: (1) erratic reform implementation; (2) fiscal constraints; and (3) exogenous factors connected to the regional situation. Mitigation strategies are implicit in the proposed program:

- Priority to country ownership, support to dialogue and stakeholder engagement and good political economy analysis up-front
- A flexible framework of activities that can be scaled up or down
- Realistic objectives and simple project design

* * * *

This *Lebanon Country Water Sector Assistance Strategy* is set in the context of the ambitious and comprehensive *National Water Sector Strategy* (NWSS) recently discussed and now under adoption by government. Preparations are underway for implementation of the NWSS, which will be phased in the light of priorities in relation to targeted outcomes, availability of funds and factors influencing sequencing. This World Bank document has suggested some considerations for implementation planning and has set out proposals for focussed Bank support to accompany the NWSS, both analytical and advisory activities (AAA) and investment lending. Bank support would be designed to help implement key parts of the strategy and to produce high impact results for the benefit of the Lebanese people.