

PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC1235

Project Name	Lebanon-Water Augmentation Project (P125184)
Region	MIDDLE EAST AND NORTH AFRICA
Country	Lebanon
Sector(s)	General water, sanitation and flood protection sector (100%)
Theme(s)	Water resource management (80%), Other public sector governance (20%)
Lending Instrument	Specific Investment Loan
Project ID	P125184
Borrower(s)	Ministry of Finance
Implementing Agency	Council for Development and Reconstruction
Environmental Category	A-Full Assessment
Date PID Prepared/ Updated	10-Oct-2013
Date PID Approved/ Disclosed	17-Oct-2013
Estimated Date of Appraisal Completion	30-May-2014
Estimated Date of Board Approval	10-Dec-2014
Concept Review Decision	Track II - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

Lebanon is a small, highly urbanized, middle-income country with a population of approximately 4.6 million people, 88 percent of which live in the narrow urban stretch spanning the cities of Tripoli in the north and Saida in the south. Half of the total Lebanese population lives in the central Greater Beirut and Mount Lebanon (GBML) region, a major hub for public sector, private sector and tourist activity.

Services (including retail, banking and tourism) and industry contribute 73.2 percent and 20.5 percent respectively to the Lebanese Gross Domestic Product (GDP). Though agriculture plays an important role in rural areas, it has a relatively minor role in the economy, contributing only 6.3 percent of GDP in 2012 and 8 percent of the effective labor force. Over 60 percent of national water consumption is however used in agriculture.

In 2012, Lebanon's average GDP per capita was around US\$9,705. The service-based economy

remains however vulnerable to external shocks and regional instability. While real GDP growth was 8 percent per year from 2007 to 2010, it slowed to 3 percent in 2011 reflecting spillover of the Arab Spring, especially in neighboring Syria. To date, over 670,000 registered Syrian refugees are living in Lebanon as per UNHCR estimates.

Following the March 2013 resignation of Government, the current Government's care-taker capacity limits its ability to respond effectively to regional and national shocks until such time that a new Cabinet is appointed and/or the next Parliamentary elections, currently planned for November 2014.

Sectoral and Institutional Context

Despite its internal rivers and relatively large aquifers, freshwater availability in Lebanon is only considered high when compared to its larger, arid neighbors. Effectively, the threat of acute water shortage across Lebanon was evident as early as the 1950s and was largely a result of the significant spatial and temporal variations in water resources availability and a lack of infrastructure to capture and utilize surface runoff. Combined, these factors significantly challenged the Government of Lebanon's (GoL) capacity for sustainable and integrated water resources management.

Between 1950 and 1975, GoL implemented a number of infrastructure projects and reform initiatives to optimize the use of national water resources and meet the demands of a growing population and economy. These included: (i) the construction of the Qaroun Dam on the Litani River; (ii) construction of the Litani/Awali Hydroelectric Project; and (iii) promulgation of Decree 14522 to allocate water on a yearly basis from the Litani and Awali/Bisri Rivers for various uses across Lebanon's geographic areas.

Following the end of the sixteen year civil war in the early 1990s, GoL embarked on a widespread development program to rebuild the country's basic infrastructure, including the water supply, sanitation and irrigation sectors. A number of emergency donor-funded projects assisted GoL in these reconstruction efforts, including several World Bank programs for infrastructure reconstruction and rehabilitation. In 2000, GoL further made significant strides in strengthening the institutional aspects of water resources management through the promulgation of Law 221 which created five Water Establishments (WEs) intended to be autonomous, efficient and integrated water service providers.

Despite reconstruction efforts and a vision for institutional change within the Lebanese water sector, GoL has however not been able to deliver to date on its national goal of improved water service and sustainable and integrated water resources management. The ensuing development deficit in the water sector has largely been a result of: (i) delayed implementation and cost of critical storage, distribution and treatment infrastructure; (ii) lags in operation and maintenance of existing infrastructure; (iii) incomplete implementation of Law 221 which precludes WE's from providing sustainable access to and quality of service; and (iv) the challenges inherent of reforming traditional irrigation practices.

As a result, per capita water availability in Lebanon is approximately 926 m³/year, and is thus already defined as water scarce. Due to a lack of surface water storage and over 40 percent losses from the distribution system, areas that are serviced by the public water network only receive as little as three hours of water per day for over six months of the year. A large informal private sector supplements the insufficient public water supply through thousands of unlicensed wells, the

construction and operation of which is largely unregulated by GoL.

In the GBML area alone, where over 2.3 million people live, the water supply deficit will reach an estimated 350 million cubic meters (MCM) by 2035. Absent: (i) an increase in storage capacity to capture seasonal surface water runoff; (ii) reduction in physical and commercial water losses; (iii) regulation of groundwater use and (iv) the implementation of volumetric metering, chronic water shortages will become endemic across Lebanon by as early as 2020.

Recognizing the need for urgent action, the Ministry of Energy and Water (MOEW) developed the 2010 National Water Sector Strategy (NWSS) and has recently launched several priority infrastructure projects. These include the Canal 800 Irrigation project, Environmental Pollution Abatement Project and other water, wastewater and storage infrastructure among others. Over the past 3 years, GoL has also developed: (i) a detailed Surface Water Storage Strategy, (ii) National Wastewater Management Strategy, (iii) Business Plan for combatting pollution of Qaroun Lake and (iv) Groundwater Assessment and Database study in partnership with UNDP. These strategic plans were developed by a team of local and international experts, build on lessons learned from the sector, benefited from technical assistance from the World Bank and other development partners and are generally considered to meet international quality standards.

For the economically-significant GBML region in particular, GoL examined the various alternatives for water supply augmentation in the long term, by developing: (i) a detailed water balance and (ii) a technical, economic, environmental and social evidenced-based review of nine different alternatives for water supply augmentation including four dam options on the Bisri, Damour and Janna rivers and five non-dam options including desalination, network leak reduction, groundwater, rainwater harvesting, and wastewater reuse. Based on thorough review of this work and extensive public consultation, GoL committed to implementing the following infrastructure and reforms to close the anticipated water supply deficit described above and meet the GBML's medium and long term demands for water:

- Damour and Janna dams: which will provide up to 40 MCM/year and 15 MCM/year respectively to the GBML;
- The Greater Beirut Water Supply project (GBWSP), currently under implementation with partial financing from the World Bank (P103063) and will provide an additional 50MCM/year to the GBML in the short term by: (i) conveying water from the existing Joun reservoir through two underground tunnel; (ii) rehabilitating and/or replacing over 400 kilometers (km) of distribution network; (iii) installing 200,000 water meters across the GBML area; and (iv) developing the capacity of the Beirut Mount Lebanon Water Establishment (BMLWE) in utility operations.
- Improved groundwater and surface water management: to sustainably mobilize approximately 100 MCM/year to the GBML, detailed plans for which are being proposed as part of the Groundwater Assessment and Database study developed in partnership with UNDP;
- Demand management measures: including the introduction of volumetric tariffs, and consumer awareness raising among other measures included in the NWSS and
- The Bisri Dam which will provide an additional 120 MCM/year of water to the GBML. Water stored at the Bisri dam will be conveyed, treated and distributed through the tunnel, water treatment plant and distribution networks currently under implementation as part of the GBWSP described above.

GoL requested the Bank's involvement in financing the proposed Bisri dam, which forms a fundamental element of the strategy for long term water security in the GBML. As discussed with

GoL, the proposed Water Supply Augmentation Project (WSAP) will comprise:

- Construction of Bisri dam and associated infrastructure on the Awali/Bisri river (internal to Lebanon), with a catchment area of approximately 215 square kilometers (km²), length of approximately 6 km with 2 km branch and width of approximately 500 meters. The Bisri dam will be an earth dam, 74 meters high and will store approximately 125 MCM; and
- Technical assistance to strengthen and accelerate GoL's complementary components of the strategy for increased water security in the GBML namely technical assistance on: (i) strengthening MOEW in the regulation and safety of all Lebanese dams; (ii) piloting various aquifer recharge technologies and/or other groundwater management options as appropriate; (iii) strengthening the capacity of the BMLWE in measures to improve cost recovery, dam operations, wastewater management and optimizing its water supply system in an integrated manner; and (iv) supporting MOEW in raising awareness and strengthening communications on demand management measures and groundwater sustainability in general and volumetric metering in particular.

Relationship to CAS

The proposed project is directly in line with the FY11- FY14 World Bank – Lebanese Republic Country Partnership Strategy (CPS) and associated 2012 CPS progress report in which GoL identified the water sector as a priority focus areas requiring immediate investment actions and reform to “produce tangible results toward meeting the pressing needs of the population” (Lebanon 2011 – 2014 CPS). The proposed project is further one of the priority investment projects identified in GoL's NWSS and Surface Water Storage Strategy as described above. Further, the 2011 World Bank Country Water Resources Assistance Sector Strategy (CWRSAS - World Bank Report no 68313-LB), agreed with GoL in 2011, lists “investment in storage infrastructure” as one of several specific actions to reduce the development deficit in the Lebanese water sector.

The proposed Project is consistent with the World Bank Water Resources Sector Strategy (2003) and 2010 midterm report: “Sustaining Water for All in a Changing Climate”, 2008 Sustainable Infrastructure Action Plan and Water Supply and Sanitation Sector Business Strategy. For example, the Water Strategy's broad-based water resources interventions, including dams and inter-basin transfers, were viewed to provide national, regional, and local benefits from which all people including poor people, could gain and is thus in line with the GoL CPS goals of poverty alleviation and improved service delivery described above. Further, though the Bisri dam is a large dam by Lebanese standards and will have the capacity to produce only a limited amount of hydropower (1.5 megawatt (MW) for onsite power generation, still under feasibility analysis), the project's draft technical, environmental and social impact reports are in line with the Bank's priority on compliance with best practice social and environmental safeguards. Moreover, the 2008 Sustainable Infrastructure Action Plan includes specific reference to climate change and its implications on planning, managing and delivering infrastructure. By providing additional storage for water supply, the Bisri dam will improve the climate variability and change resilience of the water supply system of the GBML region.

Finally, the proposed project is in line with the Bank's historic involvement in the Lebanese water sector and will benefit from the lessons learned in previous engagements namely on the importance of preparing users for the implication of increased access to water services, and the cultural, social and economic adjustments that this entails. (See Ba'albeck Water and Sanitation Project - P074042 and Beka'a Emergency Waters Supply Project - P103885). The proposed project will further convey stored water through infrastructure currently under implementation under the Bank-financed the

GBWSP, thus allowing for close supervision of project implementation and a higher likelihood of successful delivery of increased volumes of water supply in the long term to GBML residents

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The project development objective is to increase the volume of water available to the Greater Beirut and Mount Lebanon area.

Key Results (From PCN)

The proposed PDO indicators are:

- Increased volume of water supply available for water distribution to the GBML area;
- Water utilities that the project is supporting (number)
- Direct project beneficiaries (number), of which female (percentage);

Additional project indicators include:

- Development of a national plan for dam safety and dam regulation;
- Development of a communications strategy on the expansion of volumetric metering and reduction in groundwater mining; and
- Study on aquifer recharge results and recommendations for scale-up and expansion

III. Preliminary Description

Concept Description

Following the development and adoption of the NWSS by the Lebanese Government, MOEW developed a sub-strategy for the GBML, in partnership with the BMLWE. Both the NWSS and 2010-2014 BMLWE Business Plan identified a number of measures to: (i) improve access to and quality of water service delivery in the GBML and (ii) increase the sustainability and cost-recovery potential of the BMLWE. These include network loss reduction, the installation of meters and implementation of volumetric metering, consumer awareness raising on water savings and network rehabilitation among others.

Many of these measures have already been implemented by GoL and its partners, as part of ongoing World Bank and development partner projects with the BMLWE. For example, USAID, GIZ and AfD are actively supporting the MOEW and BMLWE in tariff design, business plan development, drafting the Code de L'eau, piloting a large scale metering program in GBML and other associated initiatives. Notwithstanding these important actions, the limiting factor in improving water service delivery in the GBML however remains the insufficient actual water storage capacity. Furthermore, many of the water management and utility reform measures listed above cannot be fully implemented without first increasing available supply volume, with volumetric metering being a notable example.

This precipitates urgent action in increasing the GBML's capacity for water storage. Immediate action to capture seasonal runoff and increase the volume of water stored for distribution is thus critical. As described above, the detailed review of alternatives for supply augmentation to the GBML, included in the draft Environmental and Social Impact Assessment submitted by GoL for review, concluded that construction of a dam at Bisri could provide an additional 125 MCM/year of potable water supply to the GBML and should be implemented as part of a program of increased water reliability and security to the GBML.

The proposed Project components are:

Component 1 – Bisri Dam Infrastructure Works and Construction Supervision (Estimated cost US \$470 million including expropriation of lands). Under this component, the Islamic Development Bank (IsDB), the Saudi Development Fund (SDF), and the World Bank will jointly finance the construction and construction supervision of a water supply dam and associated infrastructure on the Bisri river. This component will also finance: (i) construction supervision, (ii) environment and social panel of experts, (iii) monitoring and evaluation of project implementation, and (iv) potential community development and benefit sharing programs as appropriate.

Component 2 – Technical Assistance (Estimated cost US\$10 million) This component will strengthen and accelerate the implementation of GoL’s complementary components of the strategy for increased water security in the GBML area namely: (i) strengthening the MOEW in the regulation and safety of all Lebanese dams; (ii) piloting various aquifer recharge technologies and/or other groundwater management options as appropriate; (iii) strengthening the capacity of the BMLWE in measures to improve cost recovery, dam operations, wastewater management and optimizing its water supply network and (iv) supporting MOEW in raising awareness and strengthening communications on water demand management measures. Component 2 will also finance the implementation, monitoring and follow up of the environment and social management plan (ESMP) for construction and operation, as well as the resettlement action plan (RAP).

IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	x		
Natural Habitats OP/BP 4.04	x		
Forests OP/BP 4.36		x	
Pest Management OP 4.09		x	
Physical Cultural Resources OP/BP 4.11	x		
Indigenous Peoples OP/BP 4.10		x	
Involuntary Resettlement OP/BP 4.12	x		
Safety of Dams OP/BP 4.37	x		
Projects on International Waterways OP/BP 7.50		x	
Projects in Disputed Areas OP/BP 7.60		x	

V. Financing (in USD Million)

Total Project Cost:	480.00	Total Bank Financing:	125.00
Financing Gap:	0.00		
Financing Source			Amount
Borrower			221.00
International Bank for Reconstruction and Development			125.00
Islamic Development Bank			74.00
SAUDI ARABIA Saudi Fund for Development			60.00

Total	480.00
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