PROJECT INFORMATION DOCUMENT (PID)
CONCEPT STAGE

Report No.: PIDC2568

Project Name	Lake Qaraoun Pollution Prevention Project (P147854)
Region	MIDDLE EAST AND NORTH AFRICA
Country	Lebanon
Sector(s)	General water, sanitation and flood protection sector (100%)
Theme(s)	Water resource management (100%)
Lending Instrument	Investment Project Financing
Project ID	P147854
Borrower(s)	Lebanese Republic
Implementing Agency	Council for Development and Reconstruction
Environmental Category	B-Partial Assessment
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Concept Review Decision	Track I - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

Lebanon is an upper middle-income country, with a per capita gross domestic product (GDP) of US $9,705 in 2012 and a real GDP growth of 4 percent during 1997-2010 . The country is highly urbanized, with more than 85 percent of its 4.4 million people living in cities . It has an open economy, in which services and trade account for 60 percent of GDP and 73 percent of jobs . Though agriculture plays an important role in rural areas, it has a relatively minor role in the economy, contributing only 6 percent of GDP in 2012 . However, agriculture consumes over 60 percent of water supplies.

The economy is driven by a dynamic private sector and is dependent on financial flows from Arab Gulf countries. Despite the significant financial resources, growth and job creation performance are under potential because of several factors, such as the country's macro-economic volatility, distorted product and labor markets, and poor governance. In 2012, the unemployment rate was 11 percent, and was particularly high among women (18 percent) and youth (34 percent) .

Lebanon is divided administratively into 6 governorates . Poverty affects nearly 28 percent of the Lebanese population (living on US$4/day) and extreme poverty touches an additional 8 percent (living on US$2.4/day) . The highest concentration of poor is found in the North Governorate (especially in Akkar); followed by the South Governorate and the Bekaa Governorate.

In addition, more than two years of conflict in Syria has resulted in a very large influx of refugees into Lebanon. According to the ESIA , by the end of 2013, an estimated 1.3 million Syrian refugees would have entered Lebanon, representing an additional 32% of the Lebanese population prior to the crisis. Most refugees are concentrated in already impoverished area of the Bekaa (35 percent) and North Lebanon (35 percent). This situation puts an additional strain on public services and resources, such as clean water and sanitation.

Sectoral and Institutional Context

The Litani River and Lake Qaraoun

The Litani River is the principal artery of Lebanon, exceeding 170 km in length, and its major water structure is the Qaraoun dam, which forms the Qaraoun Lake (or reservoir). In 1959, the Qaraoun Lake, the largest artificial Lake in Lebanon, was built to produce hydropower, and provide water for irrigation and water supply. The Lake is situated in the West Bekaa at an altitude of 800 m and covers an area of 12 km2. The Lake has a capacity to hold 220 million m3. Approximately 70-80% of its storage capacity is used for irrigation and hydropower. The Lake's waters irrigate about 30% of the country's irrigated land with 1,400 hectares (ha) of the agricultural area in the Bekaa valley and 36,000 ha in the South of Lebanon, and generate electricity in the Markaba (34 Mega Watt (MW)), Awali (108 MW) and Joun (48 MW) hydropower plants.

The Upper Litani River catchment extends over an area of 1,500 km2 (10% of the Lebanese territory) and comprises 99 towns/villages distributed into four administrative districts: Baalbeck, Zahlé, West Bekaa, and Rachayya.

Pollution of Water Resources

Large stretches of the Litani River and of Qaraoun Lake are polluted due to four sources of pollution .

• Municipal wastewater. In 2013, the volume of wastewater generated in the Bekaa was estimated at 63 million m3 with an annual load of 21,300 tons of Biochemical Oxygen Demand (BOD). Most wastewater is currently discharged untreated in the Litani River.

• Industrial wastewater is estimated at about 4 million m3 in the Bekaa. There are factories producing effluents that are conveyed to surface water through either the nearby tributary or the existing sewer networks. Out of 294 industrial establishments located along the Litani river, 120 are large-scale priority industries located within 400 m of the Litani river, its tributaries or Qaraoun Lake.

• Municipal Solid waste generated in the upper catchment of the Qaroun Lake is estimated at 650 tons per day and the only sanitary landfill is located in Zahlé. Because of the lack of sanitary landfills, most garbage is dumped in open dumps. Garbage is also dumped in the River itself along

the entire Qaraoun catchment. Water pollution comes from littering and surface water runoff of the solid waste, which is acute when the solid waste site is close to surface water stream or body. The main dump sites exerting pressure on the Litani River are: Temnin El Tahta, Saadnayel old dump, Qabb Elias, Barr Elias, Hawch El Harimi, El Khiyara, Ghazzé, and Jeb Jennine.

• Agriculture. Agriculture is the largest land use in the Litani River basin. Agricultural water pollution originates mainly from irrigation overflows and seepage. In 2010, irrigated agriculture in the Bekaa covered about 54,000 ha concentrated in three districts: Baalbek (24,000 ha); Zahlé (16,000 ha) and West Bekaa (10,000 ha) . Vegetables, fruit trees and industrial crops are the main irrigated crops in these areas, in addition to cereals that are usually grown under rainfed conditions or supplemental irrigation. Based on a field survey conducted in 2010 , it was concluded that farmers in the area are over-fertilizing their crops and many pesticides are being applied at almost twice the recommended rates. As a result, the most important constituents of agricultural runoff and water seepage are agricultural chemicals and non-degradable pesticides which end up in waterways with irrigation overflows.
Impacts of water pollution

Business Plan to Combat Pollution in Lake Qaraoun

It is against this backdrop, that the Ministry of Environment had commissioned in 2010 a business plan to assist the Government in identifying the major sources of pollution in the Qaraoun Lake and recommending appropriate solutions to mitigate them. The Business Plan was completed in 2011 and endorsed by the Presidency of the Council of Ministers in 2012. The plan includes detailed prioritized investments for each polluting sector, with a financing requirement estimated at about US$255 million. The GoL has requested, in February 2013, World Bank assistance to fund some activities of the business plan.

Institutional Context

The Ministry of Environment (MoE) is responsible for setting environmental standards, approving permits and EIA reports and monitoring environmental quality. In relation to the proposed project, MoE is also responsible for regulating the collection and disposal of solid waste.

The Ministr y of Energy and Water (MoEW) is responsible for strategic planning of water resources management. Prior to 2000, there were 21 local water establishments. Law 221 of 2000 and its amendments merged them into four Water and Wastewater Establishments (WWE): North Lebanon, Beirut/Mount Lebanon, Bekaa and South Lebanon. This is a major step towards consolidating responsibilities. The ultimate role of the WWE is to have full administrative and financial autonomy over the service provision of water and wastewater services and irrigation. In reality, the WWEs are not yet fully staffed and operational nor are they financially autonomous. The Bekaa Water and Wastewater Establishment (BWWE) (the one responsible for the project area) being the weakest of all. The BWWE inherited distribution networks in poor conditions, with very high levels of illegal connections and very low collection rates from those legally connected.

The Litani River Authority (LRA) is a public establishment under the MoEW is primarily responsible to (i) exploit hydroelectrical power plants; (ii) construct irrigation scheme, (iii) conduct preliminary studies and construct dams, and (iv) monitor the quality of the Litani River.

The Ministry of Agriculture (MOA). The MoA has the overall responsibility for the development of the agriculture sector. As indicated in the MoA's Strategy for 2010-2014, the sustainable management and conservation of natural resources is considered as an important pillar of this strategy. While the MoEW has the overall mandate for water resources including irrigation, the MoA has the prime responsibility for irrigation at the farm level. The MoA Strategy gives high priority to enhancing the efficient use of irrigation, expanding the use of treated waste water for irrigation, and reducing water pollution from agricultural chemicals. The MoA is also responsible for the regulation of pesticide and fertilizer imports, marketing and use, and it has launched a series of measures to enhance enforcement of these regulations and to promote awareness about the proper use, handling and disposal of pesticides

The Council for Development and Reconstruction (CDR). The CDR, established through Decree no.5 of 1977 is responsible for preparing national development plans; implementing infrastructure project and mobilizing external financing to lead the reconstruction and development of the country. The CDR is accountable to the Council of Ministers. The CDR has been implementing agency for various World Bank funded projects and as such is very familiar with its procedures.

The World Bank engagement in the wastewater sector in the Bekaa Region

The Bank has had a long -term involvement in the water and wastewater sector in Lebanon and has provided assistance to the Government in the preparation of sector strategies and investment projects.

(a) The first phase of Bank assistance (US$ 225 million) started in 1993 with the Emergency Reconstruction and Rehabilitation Project (ERRP), after a devastating 17 years of civil war which destroyed most of the country's infrastructure, education and public services. The main components of the ERRP are: (i) electricity, (ii) solid waste, (iii) education, (iv) housing, (v) telecommunication, (vi) technical assistance and (vii) water and wastewater. The latter consisted of the rehabilitation and extension of essential water supply and wastewater facilities in the Bekaa Valley, Mount Lebanon and emergency repairs in South of Lebanon. The supplemental loan that was approved in 1996 included a wastewater treatment facility in Iaat in the city of Baalabeck. The project did not provide the related influent and effluent network and house connections which was supposed to be undertaken by the local authorities. However, the local authorities did not have the technical or the financial capacity to complete the missing network and hence the Iaat treatment plant remained idle for several years until a follow up Bank project came in 2002. It is also worth noting that the ERRP established the first steps for an enabling environment to restructure and reorganize the power, water, telecommunication and solid waste management sectors and also initiated sector development policy notes. For the water sector, there was essentially the 221 water law of 2000 that led to the merging of 22 Water Utilities into 4 Regional Water and Wastewater Authorities.

(b) The Baalabeck Water and Wastewater Project approved in 2002 (US$ 43.5 million) had for objective to complete the unfinished work of the ERRP above mentioned and focused on the capacity building of the newly created Bekaa Water and Wastewater Establishment integrating the three utilities (Baalabeck, Zahlé and Chamsine) into one. The project also aimed to rationalize the use of water through the introduction of water meters to be the basis for the volumetric tariff in the future and involve the private sector in the O&M of water supply and wastewater. Tariffs were not explicit objectives but were added during the restructuring of the Baalabeck project in 2009 by

revising in the loan agreement the PDO and key performance indicators, given the fact that tariff (fee) and their collection were very low covering at the time no more than 50% of O&M and leaving the BWWE in great financial difficulty, in some instances not being able to pay its staff. The tariff proposed were to be established to pay water based on consumption and would encourage optimizing the use of water and improve cost recovery. Making people subscribe and pay their water and wastewater bill remains the most challenging issue in Lebanon and in the Bekaa in particular.

(c) The West Bekaa Water Supply Project (US$ 52 million) was prepared after the July 2006 Israeli war. In the aftermath of the hostilities, the Government sought to secure grant financing from the Bank (US$ 15million) and the Kuwaiti Government to alleviate the precarious conditions of West Bekaa water supply systems. The project did not have any capacity building component because of its emergency nature and the fact that the Baalbeck project which was still under implementation had that covered.

Relationship to CAS

The proposed project is directly in line with the FY11- FY14 World Bank – Lebanese Republic Country Partnership Strategy (CPS), in which the GoL identified the water sector as a priority focus area requiring immediate investment actions and reform to "produce tangible results toward meeting the pressing needs of the population". Moreover, the proposed project is consistent with the GoL's goal related to wastewater, which is to stop the contamination of groundwater, improve the operation of existing treatment sites, and accelerate the construction of new sites to protect the natural resources.

The National Water Sector Strategy aims at putting wastewater on a sustainable footing by developing wastewater infrastructure to increase coverage of collection networks and treatment capacities. Moreover, the National Strategy for the Wastewater Sector aims at increasing wastewater collection from 60 percent to 80 percent by 2015 and treatment from 8 percent to 95 percent by 2020. The project is in line with both strategies by expanding the sewerage networks in Bekaa and South Lebanon, thus increasing the volume of wastewater collected and treated in Lebanon.

Finally, the project intervenes primarily in the Bekaa region – an area comprising the largest concentration of the country's poorest and of Syrian refugees. By improving access to basic services (sanitation) in these poor areas, the project is contributing to the Bank's twin goal of poverty reduction and shared prosperity.

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The project development objectives are to reduce the quantity of untreated municipal sewage discharged into the Litani River, to increase the adoption of integrated pest management practices among targeted farmers and to improve the capacity of key stakeholders to manage environmental pollution around the Qaraoun Lake.

Key Results (From PCN)

The key results of the proposed project are:

(i) Direct project beneficiaries (number) of which female (Core Indicator)

(ii) New household sewer connections constructed under the project (number) (Core indicator) or length of sewage (km) constructed and connected to a waste water treatment plant.

(iii) Reduction in quantity of pesticide applied / ha in the targeted project area.

(iv) Number of staff trained from local water utilities/agencies (Litani River Authority, Bekaa Water and Wastewater Establishment) tbd.

III. Preliminary Description

Concept Description

Selectivity of activities to be funded under the proposed project. River clean-up and pollution prevention require sustained political will and resources over a long period of time. The business plan provides a set of actions that need to be implemented to mitigate the pollution of Lake Qaraoun. While the most critical sources of pollution need to be addressed first, the nature and scale of challenges will evolve with time and, therefore, the institutional and investment strategies need to adapt as well. Thus, to prevent pollution of the Qaraoun Lake, the World Bank will assist the GoL in implementing activities identified in the Business Plan.

The investments part under this project, focus on reducing one of the four sources of pollution: municipal wastewater by extending sewage network for municipal water and connect them to wastewater treatment plants that are either functional or soon to become functional. This is the most strategic investment as it will allow optimizing the functioning of the wastewater plant and hence ensuring the sustainability of existing investments.

The technical assistance part of the project covers two sources of pollution, agriculture and solid waste by supporting capacity building and preparatory studies respectively. Finally, for the last source of pollution industrial wastewater, the Bank-funded Lebanon Environmental Pollution Abatement Project (LEPAP) under preparation provides a line of credit to give an incentive to industries to reduce their pollution in all of Lebanon including the area upstream to the Lake Qaraoun.

The project will comprise the following components:

Component 1. Improve the collection of the municipal sewage (US$ 45 million).

This component will finance activities that increase sewerage collection in areas where waste water treatment plants have already been constructed in order to maximize the utilization of investments already made:
- It is likely to finance expansion of service coverage for sewerage collection in the villages of Kaa El Reem, Hazarta, Karak in the Greater Zahlé (estimated between 70-90 km of network). This sewage network will be connected to the Zahlé Waste Water Treatment Plant (WWTP) which has a capacity of 56,000 m3/day. Zahlé WWTP is funded by the Italian Cooperation and is expected to become operational in February 2014.
- This component will also examine the possibility of expanding sewage collection to cover Zahlé East and South (Masse, Raite, Dei Ghazal, Koussaya, Ain Kaferzebd, Kfar Zabad, Terbol, Dalhmyat) if Zahlé WWTP can accommodate the flow of these additional villages. This is estimated

at about 120 km of networks.
- It will also look at completing the sewage coverage to maximize the utilization of 3 small size wastewater treatment plants constructed by USAID (El Ferzol, Ablah and Aitanit/Qaraoun) and now being operated by the municipalities.

Component 2. Increase the adoption of IPM practices (US$ 1.5 million).

This component will build and strengthen the capacity of farmers in the project area to implement integrated pest management (IPM) practices and to reduce the application of chemical fertilizers. This will allow farmers to reduce the quantities of pesticides and fertilizers used without reducing yields. The emphasis will be on irrigated farms in the West Bekaa district, given the close proximity to Lake Qaraoun and to the main course of the Litani River immediately upstream from the lake .

Given that FAO has been implementing a Regional Integrated Pest Management Program in the Near East since 2004 that covers 10 countries (including Lebanon) , it is likely that FAO will be in charge of implementing the activities under this component. IPM activities will be implemented through Farmer Field Schools (FFS) methodology, which is a proven methodology that is based on participatory approach to train and empower farmers on the use of IPM techniques and on the proper handling and disposal of pesticides. Similar participatory approaches will be used to train farmers on alternative methods and practices for sustainable fertilizer use in the project area. Baseline surveys and regular farm visits will be conducted to monitor the use of agro-chemicals by targeted farmers as well as the sales of these chemicals in the project area. The project will also support capacity building of MoA extension agents and other stakeholders on IPM and FFS approaches, and will sponsor public awareness campaigns related to environmental and public health concerns associated with excessive use of agro-chemicals.

Component 3. Capacity Building, Technical Studies and Project Management (US$ 3.5 million)

Capacity building. This component will fund institutional technical assistance for the Bekaa Water and Wastewater Establishment (BWWE) by building on the capacity strengthening that has been initiated under the Bank-financed Ba'albeck Water and Wastewater Project (P074042), which closed in June, 2012 and on GiZ support, which is phasing out from the water sector in Lebanon. It will also support the Litani River Authority (LRA) by building on activities achieved under the USAID Litani River Basin Management Support Program and continue to focus on strengthening its capacity to monitor water resources, manage irrigation system, improve risk management, and strengthen institutional capacity to support the implementation of the Business Plan (initially as a secretariat of multi-sectoral committee) and potentially as River Basin Agency, if its mandate is expanded.

Technical Studies. As indicated earlier, the quantity of solid waste generated in villages/towns located in the Upper Litani Catchment was estimated at 650 t/ day in 2011. However this amount is likely to have increased substantially due to the influx of Syrian refuges , which has increased the population of this area by at least 50%. Currently there is one sanitary landfill (constructed by a WB funded project) in Zahlé serving a large area and receiving about 130 t/ day. Two additional sanitary landfills are under construction: one in Baalback with a capacity of 100 t/day (with funding from the Italian Cooperation) and a small one in the city of Jeb Jennin funded directly by the municipality. The Business Plan has identified the need for additional sanitary landfill to cope with the quantity of waste generated around the Litani River /Lake Qaraoun upper catchment area.

Under the proposed project, it is suggested to undertake all necessary technical, environmental and social studies for (i) establishing a sorting and landfilling site in Barr Elias, Tal Thnoub and/or Rachaya; and (ii) the closure and capping of existing dump sites such as Temnin al Tahta, Qab Elias, Barr Elias, Hawch Al Harim, Al-Khyara, Jeb Jennine or Gazze.

Project Management. This component will support the establishment of a fully functioning Project Management Unit (PMU). Funding will cover the cost of consultants, field visits, office equipment, audits and any operating costs necessary for project implementation as well as activity monitoring and evaluation.

IV. Safeguard Policies that might apply

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

V. Financing (in USD Million)

Total Project Cost:	50.00	Total Bank Financing:	50.00
Financing Gap:	0.00		

Financing Source	Amount
Borrower	0.00
International Bank for Reconstruction and Development	50.00
Total	50.00

VI. Contact point

World Bank

Contact: Maria Sarraf
Title: Lead Environment Specialist
Tel: 473-0726
Email: msarraf@worldbank.org

Borrower/Client/Recipient

Name: Lebanese Republic

Contact: Ministry of Finance - Alain Bifani
Title: Director General
Tel: 961-1-642722
Email: alainb@finance.gov.lb

Implementing Agencies

Name: Council for Development and Reconstruction
Contact: Ms. Wafaa Charafeddin
Title: Director of Funding Division
Tel: (961-1) 981-380
Email: wafac@cdr.gov.lb

VII. For more information contact:

The InfoShop
The World Bank
1818 H Street, NW
Washington, D.C. 20433
Telephone: (202) 458-4500
Fax: (202) 522-1500
Web: http://www.worldbank.org/infoshop

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