

**INTEGRATED SAFEGUARDS DATA SHEET  
APPRAISAL STAGE**

**Report No.:** ISDSA10332

**Date ISDS Prepared/Updated:** 15-Sep-2014

**Date ISDS Approved/Disclosed:** 13-Jun-2014, 17-Sep-2014

**I. BASIC INFORMATION**

**1. Basic Project Data**

<b>Country:</b>	Lebanon	<b>Project ID:</b>	P125184
<b>Project Name:</b>	Lebanon-Water Supply Augmentation Project (P125184)		
<b>Task Team Leader:</b>	Claire Kfouri		
<b>Estimated Appraisal Date:</b>	16-Jun-2014	<b>Estimated Board Date:</b>	30-Sep-2014
<b>Managing Unit:</b>	GWADR	<b>Lending Instrument:</b>	Specific Investment Loan
<b>Sector(s):</b>	General water, sanitation and flood protection sector (100%)		
<b>Theme(s):</b>	Water resource management (80%), Other public sector governance (20%)		
<b>Is this project processed under OP 8.50 (Emergency Recovery) or OP 8.00 (Rapid Response to Crises and Emergencies)?</b>			No
<b>Financing (In USD Million)</b>			
Total Project Cost:	617.00	Total Bank Financing:	474.00
Financing Gap:	0.00		
<b>Financing Source</b>			<b>Amount</b>
Borrower			15.00
International Bank for Reconstruction and Development			474.00
Islamic Development Bank			128.00
Total			617.00
<b>Environmental Category:</b>	A - Full Assessment		
<b>Is this a Repeater project?</b>	No		

**2. Project Development Objective(s)**

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

**3. Project Description**

Despite its relatively abundant water resources, Lebanon is significantly water-stressed. Groundwater is over-extracted by 200 million cubic meters (MCM) per year and water supply reaches as low as three hours per day in the summer season across many regions. Lebanon further only stores six percent of its total water resources, rendering it the country with the lowest dam capacity across the Middle East and North Africa (MENA) region. Water deficits across Lebanon are currently estimated at 353 million cubic meters (MCM) and are expected to increase to 425 MCM by 2035. Following a major revival of the Ministry of Energy and Water (MOEW) in 2006, and recognizing the need for urgent action, Government developed the National Water Sector Strategy (NWSS), with the objective of developing a comprehensive, multi-sectoral plan for improved water resources management across Lebanon. Government-led NWSS was developed by a team of qualified local experts, widely consulted and disseminated. The NWSS was approved by the Council of Ministers in 2012 and outlined national priorities in water sector investment projects, including large dams, irrigation and inter-basin transfers. Several key components of the NWSS are under implementation including investment in transformational infrastructure, development of a national water and sanitation tariff, and the enactment of a water sector public private partnership law.

As one of the most densely populated regions in Lebanon, the Greater Beirut and Mount Lebanon (GBML) is directly and significantly impacted by existing water deficits. During the six month summer period spanning May – October, the GBML region enters into water crisis, wherein the majority of its 2.2 million residents receive less than three hours of potable water per day on average, and rely instead on over 20,000 private wells to supply their water needs. This in turn puts significant pressure on the coastal aquifer underlying Beirut, which, as a result, is exploited at unsustainable levels. The Beirut Mount Lebanon Water Establishment (BMLWE) is the Regional Water Establishment (RWE) responsible for provision of water services in the GBML area. Established through Law 221, the BMLWE operates as a commercial entity, and is headed by a Director General who also chairs the Board. The BMLWE's service areas are divided into three principal categories namely: (i) the northern GBML; (ii) the southern GBML and (iii) Administrative Beirut. Southern GBML comprises four distribution zones (Zones A, B, C and D), housing an estimated 1.6 million people. During the six-month winter period spanning November - April, BMLWE's springs and wells are recharged by snowmelt, precipitation and spring river discharge. During the six month summer period, as the water levels in the springs and wells sharply decrease, the BMLWE is only able to provide an average of three hours of water per day to its users.

BMLWE embarked on an extensive program of investment, as agreed in the NWSS, to: (i) expand its water storage capacity; (ii) reduce the estimated 40% non-revenue water (NRW) by rehabilitating/ replacing distribution networks; (iii) introduce volumetric metering; and (iv) modernize utility operations. Further actions to improve the efficiency and sustainability of water services include the piloting of metering, and implementation of a sanitation tariff. Despite these demand management efforts, significant additional water supply is needed. The current water supply deficit is estimated at 90 MCM per year, and is expected to reach 180 MCM/year by 2035. As a result, BMLWE is in the midst of a significant investment phase which includes the completed Shabrouh Dam and the Bank-financed Greater Beirut Water Supply Project. However, these investments will only add 60 MCM of water supply, leaving a significant short term and long term deficit which requires additional investments.

Following a series of public consultations and detailed technical analysis, an Analysis of Alternatives, commissioned by the Government, commended that GBML's long-term water sustainability depends on the implementation of a program of coordinated investments and reforms

involving non-dam activities, as well as development of new water sources through a phased program of dam construction. Construction of a dam at Bisri was recommended as the immediate next step as part of a program for water supply augmentation to the GBML. Bisri was assessed to offer: (i) significantly larger volume of stored water; (ii) direct impact on water users in the southern regions of the GBML, where a large majority of GBML poor reside; (iii) relatively lower environmental and social impacts; and (iv) advanced level of detailed design which would enhance the rate of outcome delivery.

The proposed project thus comprises:

Component 1: Construction and construction supervision of Bisri dam and associated infrastructure (USD 391.81 million of which USD 305 million IBRD financing). Component 1 will finance: (i) the construction and construction supervision of the Bisri water supply dam, hydropower station (0.2 MWH) and access road; (ii) construction and construction supervision of the conveyor pipeline from the dam to the existing Joun reservoir; (iii) construction and construction supervision of a hydropower station at Joun (12 MWH); and (iii) construction and construction supervision of the expansion of the Ouardaniyeh water treatment plant (WTP). Water stored at the Bisri dam will be conveyed, treated and distributed through the tunnel, Ouardaniyeh WTP, and distribution network currently under implementation under the partially-financed GBWSP.

Component 2: Sustainability of service delivery (USD 46.85 million of which USD 6.6 million IBRD Financing). Component 2 will finance priority activities, complementary to construction of Bisri dam, to ensure the long term sustainability of water service delivery across the GBML. Component 2 will finance: (i) technical assistance to the MOEW, BMLWE and CDR on the operation and maintenance of dams; (ii) technical assistance to the MOEW and BMLWE on management of BML water resources; (iii) technical assistance to MOEW and BMLWE in developing and carrying out awareness raising campaigns on the economic benefits of switching to the public water network and (iv) environment and social mitigation measures including the construction of sewerage networks in the upstream catchment villages, as described in the Environment and Social Management Plan (ESMP).

Component 3: Project Management and Quality Assurance (USD 6.74 million of which 6.02 IBRD Financing): Component 3 will finance: (i) core Project Management Unit (PMU) within CDR to oversee project implementation; (ii) continued engagement of the Dam Safety Panel (DSP) as per Bank policy requirements; (iii) independent environment and social Panel of Experts; and (iv) supervision of the ESMP.

Component 4: Expropriation and Resettlement Compensation (USD 170 million of which USD 155 million IBRD Financing): Component 4 will finance the costs of compensation of land acquisition of 570 hectares of land, as well as the cost of assistance for livelihood rehabilitation and monitoring of the Resettlement Action Plan (RAP) implementation. Total project resettlement costs are estimated at USD 170 million and include: (i) approximately USD 150 million for compensation of land acquisition and other assets related to implementation of the RAP; (ii) approximately USD 5 million in assistance for livelihood rehabilitation, benefit sharing program and monitoring of implementation of the RAP; and (iii) approximately USD 15 million in contingency funds

#### **4. Project location and salient physical characteristics relevant to the safeguard analysis (if known)**

The Bisri dam will be located approximately 17 kilometers inland from the coast of the

Mediterranean Sea and north east of the southern city of Saida. The Bisri dam will be a zone embankment dam with clay core, 70 meters high and 116 million cubic meter live storage capacity. A small hydropower plant of 0.2 MW capacity will be installed at the dam site. A 3.7 kilometer twin pipeline will convey stored water to connect to the tunnel currently under construction under the GBWSP. A second larger hydropower plant (12 MW) will be installed at the existing Awali hydropower plant.

The upper catchment is characterized by the steep slopes and cliffs, with small traditional villages of red-tiled houses perched on hilltops and cliff edges. In the lower catchment downstream of Bisri Village, Bisri river runs through a narrow steep sided valley in which agriculture is largely limited to tree-crops grown on terraced slopes. Despite the presence of extensive agriculture, the Bisri Valley upstream of the dam site is very sparsely populated, with no significant settlements or communities beyond family groups. The majority of land owners are absentee landlords, and most families present are tenant farmers or seasonal laborers. Throughout the reservoir area there is a total absence of non-agricultural commercial or industrial activities

### 5. Environmental and Social Safeguards Specialists

Mutasem El-Fadel (GWADR)

Chaogang Wang (GURDR)

Africa Eshogba Olojoba (GENDR)

6. Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/ BP 4.01	Yes	The environmental assessment policy is triggered as the project could have impacts on the environment due to the construction and operation of the Bisri dam and associated infrastructure. The ESIA was disclosed on May 30, 2014. Two additional annexes on biodiversity management and impact assessment relating to quarries were also disclosed in July 2014.  The Bank has also reviewed and provided its no objection to the terms of reference of the Env/ Social Panel of Experts members.
Natural Habitats OP/BP 4.04	Yes	The natural habitats policy is triggered due to the project location and potential impact on the biodiversity (species and habitats). A detailed biodiversity survey was undertaken and is included in the ESIA. A management plan including mitigation measures, costs and responsibilities is also included and will be further detailed in the updated ESIA. The project will not cause any conversion or degradation of critical natural habitats.
Forests OP/BP 4.36	Yes	Forest issues include measures for the recovery of the wood from the future reservoir, as well as control of induced impacts at the periphery of the

		reservoir. The impacts and mitigation measures are explained in the ESIA.
Pest Management OP 4.09	No	This policy is not triggered as the use of pesticides is not envisaged in this project.
Physical Cultural Resources OP/ BP 4.11	Yes	This policy is triggered because of the project's potential to affect archeological or cultural or religious sites and relics. A detailed Physical Cultural Resources Plan including chance find procedures has been prepared and attached as an annex to the ESIA. Lebanon has extensive experience dealing with physical cultural resources. CDR has already agreed with the General Directorate of Antiquities on a coordinated approach to ensure full implementation of the Physical Cultural Resources Plan.
Indigenous Peoples OP/BP 4.10	No	This policy is not triggered as there are no known indigenous peoples in the project area of influence
Involuntary Resettlement OP/BP 4.12	Yes	This policy is triggered as construction of the Bisri dam involves resettlement. The RAP was disclosed in-country and at the Infoshop on May 30, 2014
Safety of Dams OP/BP 4.37	Yes	This policy is triggered as the project is supporting dam infrastructure higher than 15 meters. CDR has recruited a Dam Safety Panel of Experts. The Panel has reviewed the Bisri dam design and dam safety plans. The Bank has also confirmed that CDR has integrated the observations and recommendations of the Dam Safety Panel into design documents as per OP 4.37 requirements. Draft Dam safety plans have been finalized as required.
Projects on International Waterways OP/BP 7.50	No	This policy is not triggered as the entire basin of the Bisri river is located in Lebanon
Projects in Disputed Areas OP/BP 7.60	No	This policy is not triggered as there are no known disputes over the project area

## II. Key Safeguard Policy Issues and Their Management

### A. Summary of Key Safeguard Issues

<p><b>1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:</b></p>
<p>CDR has prepared an Environmental and Social Impact Assessment (ESIA) that describes environmental and social project impacts and mitigation measures during construction and operation.</p>
<p>Construction phase impacts: Nearly 6 million m<sup>3</sup> of earth materials are expected to be consumed</p>

in the construction of Bisri Dam. The majority of these materials – building aggregate, sand and clay, are expected to be taken from temporary borrow areas within and adjacent to the area of inundation thereby significantly reducing reliance on quarries. Additional materials that may become required will be sourced from commercial quarries and will follow the environmental mitigation procedures of the Ministry of Environment as described in the Annex to the ESIA, disclosed on July 21, 2014, for quarry management. Dam construction will also entail the dismantling and relocation of the Mar Moussa church, located near the dam construction site. The dam construction contractor will have responsibility for traffic, waste, labor force, environmental monitoring, health and safety, and hazardous materials management. Environmental and social clauses satisfactory to the Bank are included in the bidding documents and contracts for infrastructure investments as legal obligations for contractors.

**Impacts on natural habitats:** The project will not cause any conversion to critical natural habitats. The project will have significant impacts on the natural habitats during construction, filling and operation of the dam. The expected land take extends to some 570 ha, of which 434 ha the inundated area including reservoir and dam footprint. The construction of Bisri dam and its associated structures, in addition to the creation of the reservoir, will thus cause both loss and alteration of natural habitats. The presence of the reservoir will transform riparian riverine habitats into lacustrine habitats with both adverse and beneficial effects. The reservoir will reduce habitats for wildlife species that require flowing water but attract those adapted to still or slower-moving waters such as waterfowl. Beneficial effects will also arise from the habitats presented by the reservoir and new biological communities will establish themselves over time. Five fish species and one crab were identified in Nahr Bisri. Three of the above fish species deserve special mention. These are the Freshwater blenny, the European eel, and the Middle Eastern Green carp. No exotic fish or macro invertebrates were captured. Impacts on aquatic fauna are considered to be moderate to minor at Bisri dam site. Measures to ensure sustainable biodiversity management are addressed as part of the ESIA.

**Deforestation and release of greenhouse gases:** Forestry issues include recovery of pine woods from the future reservoir, as well as control of induced impacts at the periphery of the reservoir. Greenhouse gas emissions from the construction of the dam occur primarily during construction, from exhaust gas emissions, construction machinery, and during early operation as a result of decomposition of organic material inundated in the reservoir. The Bisri dam project will avoid the potential local health risks of particulate matter, nitrous oxides and sulphur dioxide emissions from construction machinery. Most of the biomass will be removed from the reservoir to reduce greenhouse gases, particularly methane emissions after flooding.

**Social impacts:** A combination of consultations, socio-economic surveys, desk study, informal meetings and direct analysis informed the analysis of social impacts. A total of 861 landowners, many of whom are absentee landowners, will be impacted by land expropriation. The total population living in the area of influence is estimated at 36,000 in summer months and about 21,000 in winter months. Major economic activities in the area are agriculture, sedentary and itinerant livestock rearing and fishing. The reservoir will displace economic activities currently practiced, including agriculture, livestock rearing, and fishing. The reservoir will also entail land take for other project activities and associated infrastructure like the access road leading to the dam. One cultural heritage site, a small church, and adjacent monastic remains will also be relocated. Expected social impacts and proposed mitigation measures are analyzed in detail in the project's ESIA, including those related to social and health consequences of migrant workers, and safety issues from construction traffic. The involuntary resettlement of the populations directly

affected by the dam and the reservoir is described in the Resettlement Action Plan (RAP) along with its mitigating measures.

Expected positive impacts include job creation through the hiring of local labor for construction works, the establishment of a project specific benefit sharing program, and the potential for increased trade and tourism in an enclave area. CDR will undertake ongoing consultation activities with the local communities to help prioritize community development needs aside from the required livelihood restoration measures.

Land acquisition and resettlement: Land take will be extensive within the proposed area to be expropriated and is estimated at 570 ha. Residential properties are few and there are no commercial or industrial premises and no significant public infrastructure or community facilities within the impoundment area. In total, there are some 966 separate cadastral plots, within these 570 ha, that will be expropriated from 861 landowners, including around 135 building structures that could be residential, water tanks, storage rooms, generator rooms, religious places, or animal refuges. The occupied residential accommodations house seasonal farm workers, mostly non-Lebanese, that will need to be relocated. Twenty six designated archaeological sites and one heritage site lie within the area to be expropriated. Land take and resettlement will also occur for other project activities and associated infrastructure such as the distribution lines and access road in the lower catchment along the conveyor line. Arrangements for land take of associated infrastructure (including that for the conveyor line, hydropower stations and church relocation sites) have been assessed as part of the RAP and ESIA.

In addition to the 861 landowners, the land acquisition will also affected 49 residential households, of which six households are landowners, eight households are Lebanese tenants, and 35 households are tenants from other countries. The total residential population affected is 238 persons, of which, 64 are Lebanese and 174 are foreigners. Among 174 foreigners, 72 persons are non-refugees and 102 persons are refugees.

The Government of Lebanon has committed itself to implement the RAP according to the requirements of OP 4.12 for resettlement and compensation. These requirements are considerably more stringent than the applicable national laws and the Government of Lebanon has agreed to compensate PAPs according to Bank standards. The project's other development partners have also agreed to adhere to the standards of OP 4.12. A cutoff date of March 20, 2014 has been established and publically disclosed.

Impacts on vulnerable people: In the project area there are no Indigenous Peoples, as defined in OP 4.10. However, women, elderly, children, sick, and disabled people can be considered as particularly vulnerable on account of their limited adaptation capacities, their mutual need for dependency, and/or their fragility or specific needs. Foreign and Lebanese farm laborers with no formal employment title or no legal tenancy entitlement can also be considered as vulnerable. The needs of the vulnerable groups are given specific attention and support as part of the RAP.

Dam safety concerns: CDR has appointed an independent dam safety panel of experts with terms of reference and experience that has been reviewed by the World Bank. The dam design, including the selection of the project site, seismic design requirements, general arrangement of the site, location of the main structures, and scheme for diversion of the river during construction, has been reviewed by the panel and is considered appropriate for the site and its construction feasible without undue difficulties. This review has also included the evaluation of flood risks and their

incorporation in the design of the Bisri dam and is considered to be consistent with industry design practice. The dam safety panel will continue to provide guidance through construction, initial filling, and start-up of the dam, including any design or operational precautions to ensure that the project is consistent with Bank safeguards policies.

Dam safety plans (instrumentation plan, operation and maintenance plan and emergency preparedness plan) and a construction supervision and quality assurance plan have been prepared as part of the revised engineering design and have been reviewed by the World Bank and the dam safety panel. An Emergency Preparedness Plan will be drafted and will be available at least one year before reservoir filling and will include a discussion of procedures for timely and reliable identification, evaluation, and classification of existing or potential emergency conditions.

Impacts on physical-cultural resources: Physical Cultural Resources are addressed in the ESIA. CDR has agreed with the Directorate General of Antiquities (DGA) of the Ministry of Culture on the implementation plan related to the management of cultural heritage and chance finds. All known or newly discovered archaeological sites shall be 'off-limits' to construction crews, whether on or off duty, except with the express permission of the Engineer. Such permission will only be given where access is needed for site protection or to ensure public and/or worker's safety

**2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:**

The project's immediate area of influence area of influence includes (i) area where the project's direct, indirect, and induced impacts are felt, principally around the main infrastructure elements required by the Bisri Dam, as well as (ii) a larger area wherein cumulative impacts are felt.

The cumulative socio-economic impacts resulting from the project will afford an overall increase in domestic water supply to GBML consumers, providing them with improved water service. The establishment of a Benefit Sharing Program to support project affected people will also provide additional mitigating measures to those whose land and/or livelihood will be affected by the project.

Without adequate sewerage and wastewater treatment in the upstream catchment of the Bisri reservoir, water quality levels will deteriorate. A water treatment plant is currently under implementation under a parallel project (the Bank-financed Greater Beirut Water Supply Project) will treat water to potable standards. Detailed catchment management plans for the upper and lower catchments will also be developed in parallel to construction of the dam

**3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.**

Without Project Alternative: With the Greater Beirut Area edging towards a projected population of 3.5 million people by 2035, the present water shortages, particularly severe during the hot and dry summer months, will only be exacerbated by continued population growth, increased living standards, and changing climatic conditions. Thus, the consequences of the "Without Project" alternative are expected to include amongst others the following: (i) Further reduction in water availability to less than three hours/day; (ii) Increased pumping from illegal, unlicensed wells; (iii) Increase in salinity of potable water; (iv) Increased used of tankered supplies, often from non-potable sources; and (v) increased household expenditure on water.

In addition to the "Without Project" alternative, the project was based on a detailed analysis of alternatives in line with OP/BP 4.01 Environment Assessment. The range of alternatives includes;

non-dam alternatives, dam alternatives, in addition “Without Project” alternatives.

Non-dam alternatives considered were desalination, groundwater, rainwater harvesting, wastewater reuse and reduction in “Unaccounted for Water”. Non-dam alternatives would only conditionally contribute to reducing Greater Beirut Area imbalance over the next 30 years.

Dam Alternatives: Earlier studies and work identified potential dam sites, and over the last three decades the Government of Lebanon has commissioned feasibility studies at three sites in addition to Bisri namely: (i) On the Damour River (two sites: Damour East and Damour West) and (ii) On Nahr Ibrahim upstream of the Jannah Plain (one site: Jannah site).

In assessing each of the options for augmenting Greater Beirut water supply, the Analysis of Alternatives conducted an options-prioritization-exercise, examining both the fundamental considerations and detailed impacts. The analysis revealed that the Bisri Dam site was the priority alternative site which can: (i) meet the high storage volume that meets Greater Beirut Area demands in the long term; (ii) has a reservoir floor underlain by low permeability deposits; (iv) has minimal pumping costs; and (v) has the lowest cost per unit volume delivered to Greater Beirut Area.

The ESIA includes a detailed chapter that provides the analysis of the Alternative Analysis described above

**4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.**

The ESMP comprises mitigation measures that are proportional and sufficient to mitigate the impacts identified in the ESIA and address the social and environmental safeguards issues described above:

**ESMP Implementation and Monitoring**

The measures included in the ESMP seek to minimize impacts on the environment, workers, and neighboring populations, including those related specifically to the construction sites. CDR will ensure that appropriate social and environmental clauses are incorporated into all works contracts, including that of the dam works contract. These clauses legally require that contractors to prepare a Contractor ESMP which will be subjected to: (i) ongoing supervision by the construction supervision and quality assurance construction supervision consultant; (ii) ongoing supervision by the senior social and environmental specialists to be appointed to the Project Management Unit (PMU) within CDR and (iii) supervision by the independent Panel of Environment and Social Experts.

**Management of the Reservoir and Downstream Area**

Management of the reservoir and of its downstream impacts will be a principal environmental challenge during the dam’s operation phase. Management of the dam and reservoir by CDR will seek to avoid or mitigate its direct, indirect, induced and cumulative impacts. It will take into account the strong seasonal variation of the water level, given that drawdown during the dry season will create opportunities for recession agriculture, seasonal pastures, and other land uses. The ESMP also requires that CDR give particular attention be given during the operation phase to the risks that water releases or a dam breach would pose to persons and their assets downstream. These provisions are detailed in the Emergency Preparedness Plan, currently in final stages of preparation.

PMU and Independent Panel of Environment and Social Experts: The implementation arrangements for the ESMP are fully integrated with the overall implementation arrangements of the project. CDR will be responsible for the project's compliance with the Lebanese legislation and Bank safeguards policies. CDR coordinates closely with the Ministries and other actors involved in the project, as has been outlined in the ESMP, including the Ministry of Environment and General Directorate of Antiquities. An independent panel of social and environmental experts comprising an environmental specialist, a social specialist and a cultural anthropologist will be recruited by effectiveness, to oversee implementation of the ESMP. CDR will extend the mandate of the panels throughout the duration of the implementation and initial year of operation of the dam.

CDR will implement a monitoring and evaluation program, including monitoring of ESMP indicators, monitoring impacts and their mitigation, as part of the regular donor reporting. These reports will also be available in the CDR local office in Bisri. ESMP monitoring is also included in the World Bank monitoring arrangements and will be supervised as part of project implementation.

Capacity Building: The ESMP includes continued capacity building measures to strengthen the capacity of CDR, the BMLWE and Ministry of Energy and Water for technical assistance and to handle safeguards issues according to international standards, particularly in the context of large water supply infrastructure projects. The capacity building measures in the ESMP build on the technical assistance for environment and social studies. The GoL and CDR teams will continue to receive guidance and support as needed from IBRD safeguards specialists. Complementing this ongoing support, the proposed project will include further measures to ensure satisfactory handling of safeguards during the construction and operation of the Bisri dam; in particular, the project will include a training program, supported by a technical assistance package as needed.

RAP Implementation: The main adverse social impacts of the project are largely related to land acquisition and demolition of structures. The inundated area of the reservoir is about 570 hectare of land, which include 966 separate cadastral land plots and 135 building structures. In total, it will affect about 861 landowners. The project will also affect some non-Lebanese workers in the project area.

To mitigate the impacts, a RAP has been prepared by following the World Bank policy on Involuntary Resettlement OP 4.12 and relevant local laws and regulations of the government of Lebanon. The RAP is prepared based on detailed census of the affected people, inventory of affected assets, socioeconomic surveys and extensive consultations with the project affected people. The following are the basic principles to be followed for the land acquisition and resettlement planning and implementation:

- All affected persons are entitled to compensation for lost assets, or to alternative but equivalent forms of assistance in lieu of compensation; lack of legal rights to the assets lost will not bar affected persons from entitlement to such compensation or alternative forms of assistance.
- Compensation rates as established in the RAP refer to amounts to be paid in full to the individual or collective owner of the lost asset, without depreciation or deduction for any purpose.
- When cultivated land is acquired, it often is preferable to arrange for land-for-land replacement. Where suitable alternative land is not available, or at the preference of the affected person, compensation in cash at full replacement cost is appropriate.
- Replacement house plots, sites for relocating businesses, or agricultural land should be of

equivalent use value to the land that was acquired by the project.

Compensation for land and other assets should be paid prior to the time of impact, so that new houses can be constructed, fixed assets can be removed or replaced, and other necessary mitigation measures can be undertaken prior to actual displacement. Adequate transitional support should be provided to affected persons or businesses required to relocate because of the project

Independent Monitoring of RAP implementation: To ensure full compliance with World Bank safeguards policies particularly relating to land expropriation and resettlement, an independent monitor of RAP implementation will be incorporated into the project. The independent Panel of Experts on Social and Environment will also monitor implementation of the RAP as part of their terms of reference.

**5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.**

Key stakeholders consulted: Safeguards consultations were undertaken with institutional stakeholders, local project affected people (PAP) in the villages in the vicinity of the proposed Bisri dam, and for Greater Beirut residents.

Consultation: Extensive public consultations were held on the ESIA, and will continue throughout project preparation and implementation. Civil society, Project-Affected People (PAP), vulnerable groups and various stakeholders were consulted on all safeguards documents, including the ESMP and the RAP. The date and timing of all meetings were agreed with individual municipalities. The village sessions were scheduled at weekends and early evening's week-day to allow the maximum number of concerned people to attend.

A series of scoping sessions were held during April and May 2012, as part of the ESIA preparation process, commencing with an Institutional Stakeholders session at CDR offices in Beirut to which ministries, other governmental agencies and NGOs were invited. This was followed by separate meetings in the vicinity of the three potential dam sites, that for Bisri being held at Mazraat El Dahr Municipality on Tuesday 10 April 2012. Two separate sessions were further held for Beirut residents, the prime project beneficiaries, at Hadath Municipality on Tuesday 24 April 2012 for southern suburb residents and in Downtown Beirut at Beirut Municipality on Saturday 5 May 2012 for Beirut municipality residents. All presentations and the subsequent proceedings were conducted in Arabic. The Consultant's team was also prepared to present and respond in English and French.

Following revisions to the ESIA and RAP consequential upon changes to Dam design, land expropriations requirements, completion of the household survey and the establishment of indicative costs, further sessions of public consultation were held on Friday April 25, 2014 at Dar Ammatour and Saturday April 26, 2014 at Mazraat El Dahr. New copies of the plans were given to each municipality for future public reference. These were also disclosed on CDR's website.

Targeted Communication: The following methods were used for targeted communication: (i) dissemination of information in the villages/communities affected, and continuous discussions with villagers in the project area by CDR staff; (ii) disclosure of safeguards documents at the various project sites. Information will be also disseminated through the CDR website as well as the World Bank Infoshop; (iii) dissemination of information via local press and targeted local authorities, opinion leaders, elites, NGOs and other interested parties; and at the local level, meetings in all villages were set up during preparation of the ESIA and during public hearings

organized by CDR.

Key issues raised in the consultations included: (i) need to gain access to drinking water, (ii) ensuring access to jobs and other opportunities for tourism, (iii) the need to preserve archaeological, historic and cultural heritage such as Mar Moussa church and other historical ruins, (iv) need to access productive land upstream and downstream of Dam; and need for people living in the vicinity of Dam to benefit from water supply as the Beirut residents, (v) means of compensation for land take and fairness of compensations for expropriated lands, (vi) the returns for such project on local residents in economic and employment terms, (vii) issues of sewage, sanitation and wastewater before and after dam construction, and (viii) protection of nature and environment from pollution. These issues have been reflected in the project design and safeguards documents as appropriate. A detailed communications strategy has also been prepared in close consultation with CDR and GoL counterparts to ensure that transparent and effective communication is maintained with citizens throughout project implementation.

### ***B. Disclosure Requirements***

<b>Environmental Assessment/Audit/Management Plan/Other</b>	
Date of receipt by the Bank	15-May-2014
Date of submission to InfoShop	30-May-2014
For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors	13-Jun-2014
<b>"In country" Disclosure</b>	
Lebanon	30-May-2014
<i>Comments:</i> A draft of the ESIA was disclosed on May 30, 2014. An updated version of the ESIA annexes on biodiversity management and quarries impact assessments were disclosed on July 21, 2014	
<b>Resettlement Action Plan/Framework/Policy Process</b>	
Date of receipt by the Bank	05-May-2014
Date of submission to InfoShop	30-May-2014
<b>"In country" Disclosure</b>	
Lebanon	30-May-2014
<i>Comments:</i>	
<b>If the project triggers the Pest Management and/or Physical Cultural Resources policies, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/Audit/or EMP.</b>	
<b>If in-country disclosure of any of the above documents is not expected, please explain why:</b>	

### ***C. Compliance Monitoring Indicators at the Corporate Level***

<b>OP/BP/GP 4.01 - Environment Assessment</b>	
Does the project require a stand-alone EA (including EMP) report?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]

Are the cost and the accountabilities for the EMP incorporated in the credit/loan?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
<b>OP/BP 4.04 - Natural Habitats</b>	
Would the project result in any significant conversion or degradation of critical natural habitats?	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ] NA [ <input type="checkbox"/> ]
If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?	Yes [ <input type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input checked="" type="checkbox"/> ]
<b>OP/BP 4.11 - Physical Cultural Resources</b>	
Does the EA include adequate measures related to cultural property?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
<b>OP/BP 4.12 - Involuntary Resettlement</b>	
Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
<b>OP/BP 4.36 - Forests</b>	
Has the sector-wide analysis of policy and institutional issues and constraints been carried out?	Yes [ <input type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input checked="" type="checkbox"/> ]
Does the project design include satisfactory measures to overcome these constraints?	Yes [ <input type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input checked="" type="checkbox"/> ]
Does the project finance commercial harvesting, and if so, does it include provisions for certification system?	Yes [ <input type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input checked="" type="checkbox"/> ]
<b>OP/BP 4.37 - Safety of Dams</b>	
Have dam safety plans been prepared?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
Have the TORs as well as composition for the independent Panel of Experts (POE) been reviewed and approved by the Bank?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
Has an Emergency Preparedness Plan (EPP) been prepared and arrangements been made for public awareness and training?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
<b>The World Bank Policy on Disclosure of Information</b>	
Have relevant safeguard policies documents been sent to the World Bank's Infoshop?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
<b>All Safeguard Policies</b>	
Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]

Have costs related to safeguard policy measures been included in the project cost?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]
Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ] NA [ <input type="checkbox"/> ]

### III. APPROVALS

Task Team Leader:	Name: Claire Kfour	
<b><i>Approved By</i></b>		
Regional Safeguards Advisor:	Name: Nina Chee (RSA)	Date: 17-Sep-2014
Practice Manager/ Manager:	Name: Steven N. Schonberger (PMGR)	Date: 17-Sep-2014