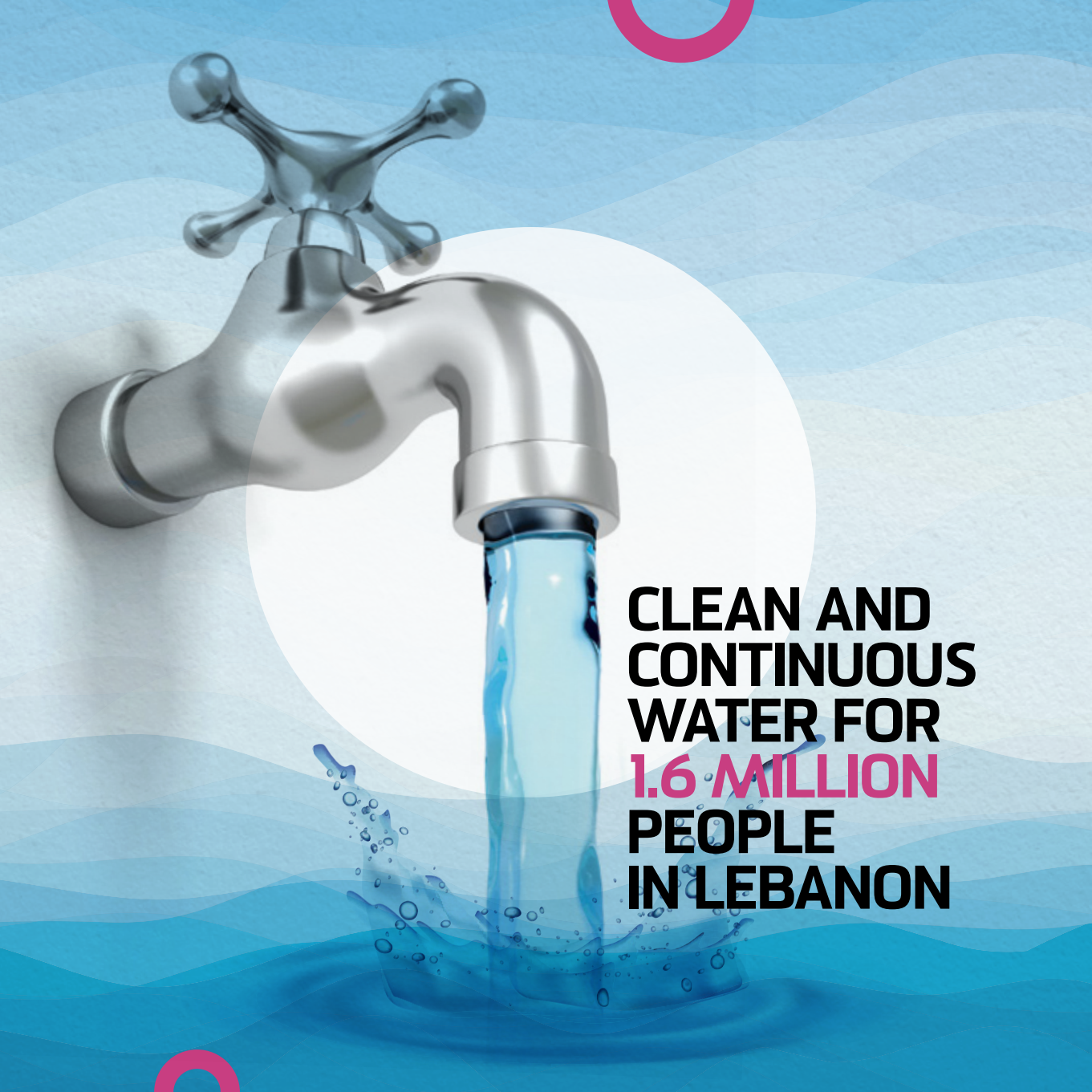

CLEAN AND
CONTINUOUS
WATER FOR
1.6 MILLION
PEOPLE
IN LEBANON

CLEAN AND CONTINUOUS WATER FOR 1.6 MILLION PEOPLE IN LEBANON

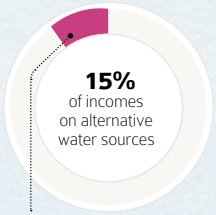
Over **1.6 million people** living across the Greater Beirut & Mount Lebanon (GBML), including **460,000 living on less than $4 a day**, will have access to clean and improved water supply service without spending additional expenses on alternative water sources.

ABOUT BISRI DAM

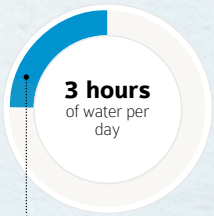
The Bisri Dam will store rain water in winter for usage during summer.

- Location: Located at 35 kilometers south of Beirut immediately upstream of the village of Bisri.
- Storage Size: 125 million cubic meters of water
- Functioning: Bisri Dam reservoir will fill up naturally during the rainy season to be used during summer and fall. Without pumping, treated water will flow to the GBML area entirely by gravity through a 26-kilometer underground tunnel. It will be distributed to households though networks which are currently being rehabilitated as part of the Greater Beirut Water Supply Project (funded by the World Bank).
- Water treatment: Water stored in the Bisri Dam will be treated at the Wardaniyeh water treatment plant.
- Timeline: Construction of the Dam will take about five years from the date of signature of the construction contract.

Greater Beirut & Mount Lebanon's Water Needs

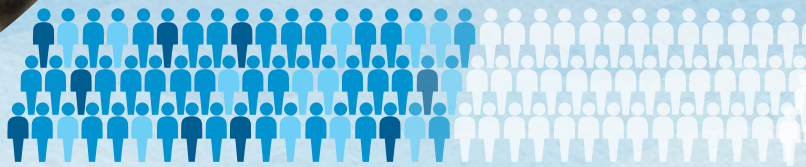


- Households spend up to 15% of their incomes on alternative water sources to cover their water needs: tanker water, bottled water and/or private wells.



- Average of only 3 hours of water per day supplied during summer season in some areas of GBML.

Over 1.6 MILLION PEOPLE living across Greater Beirut & Mount Lebanon will have access TO CLEAN AND CONTINUOUS WATER



- **35 KILOMETERS** south of Beirut
- **125 MILLION m³** of water
- **FILLS UP NATURALLY** during rainy season
- **WATER TREATED** at Wardanieh plant

A BUILDING BLOCK OF LEBANON'S WATER SECTOR STRATEGY

The Government of Lebanon (GoL) has been considering the Bisri Dam project for **over 50 years**. It is a crucial part of Lebanon's National Water Sector Strategy.

During the design of the Project, the GoL commissioned a detailed **Analysis of Alternatives**, which examined the technical, economic, environmental and social aspects of:

- four dam options (Bisri, Janna, Damour East and Damour West)
- several non-dam options, including improved groundwater management, desalination, demand management and treated wastewater reuse.

The analysis showed that **a combination of non-dam and dam actions was required** to increase the volume of water provided to the GBML on the long-term.

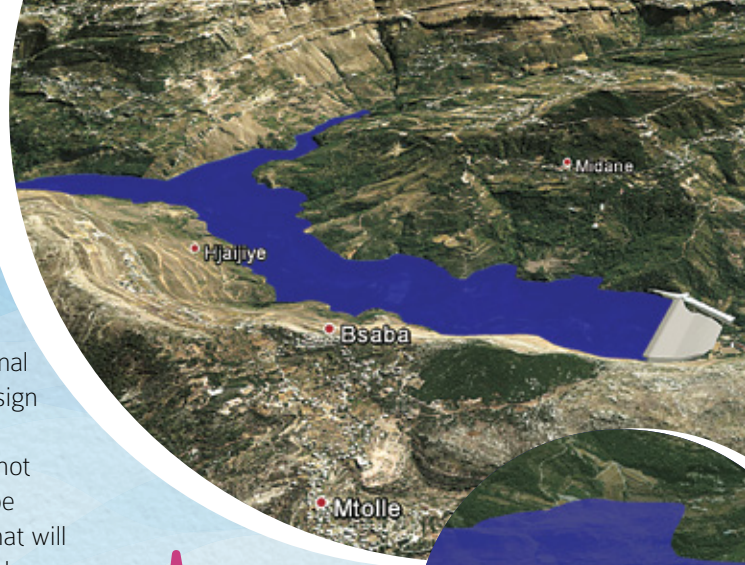
The construction of Bisri Dam is part of a series of coordinated investments and reforms combining non-dam and dam actions, required to provide water security for GBML until at least 2035.

DAM SAFETY

The Government of Lebanon designed the Bisri Dam as per the state-of-the-art seismic hazard assessment and design. An independent international panel of experts on dam safety reviewed the design and confirmed that the Bisri Dam is designed to withstand the worst earthquakes and that it will not in itself trigger earthquakes. The Bisri Dam will be equipped with seismic monitoring instruments that will continuously monitor the structure of the dam. Also, an Emergency Preparedness Plan was developed.

PROTECTING BIODIVERSITY

A detailed biodiversity action plan (BAP) was put in place to mitigate impacts on biodiversity based on the results of a detailed ecological survey covering all major taxa, including amphibians, reptiles and macro-invertebrates, as well as location and habitat usage information for flora, mammals, birds and fish. The objective of the BAP is to fully compensate for biodiversity impacts by having an ecological offset for the habitats that will be lost under the reservoir, through translocating some of the species, conserving or strengthening existing natural habitats. These offsets will be designed in a way that the biodiversity result of the Bisri Dam is ideally with "net gains" and at the minimum with "no loss".



EARTHQUAKE RESISTANT

BIODIVERSITY protected

CULTURAL AND ARCHEOLOGICAL SITES preserved

LOCAL COMMUNITIES compensated

MITIGATING ENVIRONMENTAL AND SOCIAL RISKS

During project preparation, the Council for Development and Reconstruction carried out an Environment and Social Impact Assessment (ESIA) in close collaboration with government agencies, civil society, the private sector and community members. The ESIA was reviewed and approved by the Lebanese Ministry of Environment.

In order to mitigate the Environment and Social Impacts assessed in the ESIA, an Environment and Social Management Plan (ESMP) was developed. It is made up of mitigation measures that are proportional and sufficient to mitigate the impacts identified in the ESIA.

In addition, a detailed Resettlement Action Plan was developed. It details the process through which land expropriation and resettlement will be undertaken.

ESIA & RAP are available at:
www.cdr.gov.lb/eng/bisri.asp

PRESERVING CULTURAL AND ARCHEOLOGICAL SITES

The Mar Moussa church and the remains of the Saint Sophia monastery will be relocated nearby, with close oversight of the Maronite church authorities and parishioners. Archeological sites will be investigated, documented and preserved when needed with close coordination and supervision of the Directorate General of Antiquities. Archeological works will be financed by the Project.

LIMITING IMPACTS ON LOCAL COMMUNITIES

Measures are put in place to ensure that livelihoods affected by the project are sustained and concerns are addressed.

The expropriation of land affects 861 landowners of which only 96 live in the area and partially rely on the land for income or livelihood. Land owners are provided cash compensation calculated at replacement cost in accordance with the World Bank's policies. Additional assistance will be provided to help restore incomes and rehabilitate livelihoods as needed.

More so, a Grievance Redress Mechanism provides clear and accountable means for affected persons to raise complaints and seek remedies when they believe they have been affected by the Project.

CONSULTING CIVIL SOCIETY

The Council for Development and Reconstruction consulted civil society during the preparation and implementation of the Project. Around twenty-eight public meetings and focused group discussions with beneficiaries, project-affected persons, NGOs and civil society groups were conducted between April 2012 and May 2017. Their comments were taken into account in the Project's design.

Project Name The Bisri Dam is partially funded by the Lebanon - Water Supply Augmentation Project (the Project).

Approval Date by the World Bank September 30, 2014

Closing Date June 30, 2024

Total Project Cost US$ 617.00 million

Implementing Agency

Financed by

WORLD BANK GROUP

More Info http://projects.worldbank.org/P125184?lang=en and www.cdr.gov.lb/eng/bisri.asp

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