

Lebanon Sustainability Backgrounder

- **Energy Security:** Lebanon has no known fossil fuel resources and is a net energy importer, relying on fossil fuel imports for 97% of its energy needs. Apart from relatively modest hydroelectric resources and the import of 50-100 megawatts of electricity semi-annually from Syria, all energy needs are met with imports by sea of petroleum products.
- **Fuel Subsidies:** The Government spends more than \$1.2 billion per year on fuel subsidies, resulting in a significant strain on the national treasury and contributing to public debt. Given its already depressed economy and unstable political climate, subsidies of this magnitude cannot be continued if Lebanon is to achieve sustainable economic growth over the long term.
- **Energy Infrastructure:** Lebanon's energy production facilities include three thermal power stations, two gas turbine stations, seven hydroelectric stations, and two combined cycle power plants. The country's single, public utility (EDL) also purchases power from four independent hydroelectric power producers and sells wholesale to four private distributors. EDL has been earmarked for privatization and the government is seeking a strategic foreign partner willing to invest in refurbishment; however, current political conditions have stalled this effort.
- **Electricity Supply:** Up to 60% of fuel oil is consumed by the residential, commercial and industrial sectors for electricity, and 40% is consumed for transport. Lebanon's daily electricity needs call for over 2,300 MW, but generation capacity is barely able to deliver 1,500 MW, and electricity rationing is commonplace in all areas. In 2004 only 14% of primary residences had access to uninterrupted electricity from the public network, with 74% experiencing daily and 12% weekly power cuts. The problems stem from neglect of transmission facilities, poor management, non-paying customers, and widespread electricity theft (at one point of up to 23%, but more recently coming under control). As per a June, 2009 power supply arrangement with the Government of Egypt, Lebanon will be supplied with additional electricity via the regional power grid that currently connects eight countries. Also of note is that electrification has already been extended to most rural areas of the country.
- **Natural Gas:** In June of 2009, the Dept. of Energy and Water announced a gas supply deal with Egypt that will make up to 1.2 billion cubic meters of gas available each year. As nearly all of the country's aging power stations currently operate on fuel oil, the conversion of power plants to gas from fuel oil represents huge savings potential, and should significantly reduce production costs in the industrial sector. It is also expected to reduce household heating costs by 50%. This may create AS and investment opportunities for IFC and its partner banks and may also lead to eligible CDM projects.
- **Renewable Energy Technologies:** Renewable energy has not been a priority for the Lebanese Government, and renewable energy sources contribute less than 2% to domestic energy use, most of which is derived from hydroelectric power plants. (Lebanon has several small hydro electric facilities primarily in the Bekaa valley.) There has been some progress with one technology: solar water heating. The Lebanese energy ministry and EDL have expressed a strong interest in this solar energy application, which has the highest potential for scale-up and environmental impact at the residential level. There has been some market uptake to date, and there are several types of solar thermal collectors on the market, many of which are imported. Of interest is that the government has issued no quality standards for solar water heating devices. Potential for wind development may exist along the coast line, which is suitable for wind turbines and wind fields, and potential for solar PV exploration exists in the Bekaa Valley, which offers space for solar panels.
- **Regulatory Framework for Renewable Energy:** There is no overall strategy and no targets for EE or RE uptake, no feed-in tariffs, and no tax or other kind of incentives in place. As a result of a UNDP/GEF sponsored program in cooperation with the MEW, a new agency dedicated to Energy Efficiency has been recently created. However, given the current political turbulence and the monopolistic role of EDL in the market, significant reform in the regulatory arena seems unlikely in the near term. International financial and technical assistance must play a critical role if Lebanon is to successfully harness its renewable energy potential.
- **Water and Climate Change Issues:** Lebanon is becoming more arid, largely because of poor environmental protection and a gradually warming climate. The growing number of cars on the road affects air quality (particularly in Beirut), as do a number of archaic industrial plants, with the UN placing Lebanon in the highest risk category for lead poisoning. Only 46% of primary residences have permanent access to the public water network in winter—and this falls to just over 20% in the summer. Total annual rainfall is about 10bn cu meters, but less than one-quarter of this is collected and most is lost to surface run-off. Water shortages are commonplace. In ten to fifteen years an annual deficit of up to 800m.c.m. is projected, with demonstrable climate change impacts directly related to water.

Opportunities Summary:

As the Government rehabilitates the country's energy infrastructure to cope with soaring energy demand and oil prices, opportunities for IFC through its partner banks may exist in the following areas:

- Conversion of thermal power installations from oil to natural gas
- Clean Production loans to antiquated industrial plants
- Vendor Finance and Quality Certification programs for producers of solar water heaters
- Although the current regulatory framework for RE is very poor, renovation opportunities for small hydro facilities may exist in rural areas

Resources and Contacts:

- **Lebanese Center for Energy Conservation Project (LCECP):** Funded by UNDP and the Ministry of Energy and Water (MEW) and administered by MEW, the project oversees initiatives throughout the country in energy efficiency, conservation, policy development and management. Interventions include: energy audits, EE standards and labeling, solar water heating projects, and awareness raising. Website: www.lcecp.org.lb; e-mail: energy@lcecp.org.lb
- **National Council for Scientific Research (NCSR):** Oversees research projects in the area of climate change and has an active co-operation program with various ministries, public institutions, international organizations and academic institutions. Website: www.cnrs.edu.lb
- **Lebanon Ministry of Energy and Water** Website: www.energyandwater.gov.lb
- **Beirut Chamber of Commerce and Industry** Website: www.ccib.org.lb
- **Solidere:** private joint-stock company charged with renovating infrastructure and utility network of down-town Beirut in compliance with standards of sustainable urban development. Website: <http://www.solidere.com.lb>
- **Consulting Firms and Energy Service Companies**

<p>APAVE Liban Contact Person: Mr. Nassib Nasr Address: Achrafieh, Sioufi, Rue Emile Lahoud Beirut, Lebanon Telephone: (961) 1 612918-9 Fax: (961) 1 612920 Email: apavelib@dm.net.lb</p>	<p>Metacs Contact Person: Mr. Emile Azar Address: Achrafieh, Salim Bustros Street, Tabaris, Achrafieh Beirut, Lebanon Telephone: (961) 1 335929 Fax: (961) 1 200159 Email: metacs@metacs.com</p>	<p>Beta Engineering Contact Person: Mr. Ali Berro Address: Badaro Beirut, Lebanon Telephone: (961) 1 380945 Fax: (961) 1 386934 Email: betaengi@inco.com.lb</p>
<p>Energy Efficiency Group (EEG) Contact Person: Mr. Iskandar Moussa Address: Banking Center, 6th Floor Dora, Lebanon Telephone: (961) 1 259868 Fax: (961) 1 259867 Email: info@eeigroup.com</p>	<p>National Energy Consultants (NEC) Contact Person: Mr. Ronald Diab Address: Rebeiz Building, Monot Street, Achrafieh Beirut, Lebanon Telephone: (961) 1 219284 Fax: (961) 1 219285 Email: info@nec-group.com</p>	<p>SGS Liban Contact Person: Mrs. Mireille Khalil Azar Address: Tanios Saba Building, Ibrahim Bacha Street, Medawar Beirut, Lebanon Telephone: (961) 1 580030-1 Fax: (961) 1 580010 Email: mireille.azar@sgs.com</p>