Lebanon always faced serious and chronic issues in its energy sector. The country suffers from a poor endowment in domestic energy resources, subdued generation capacities along with a poor institutional and legal framework, factors which render proper power delivery a challenging task. In spite of the Ministry of Energy and Water’s (MoEW) five-year reform plan, set to increase
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generated capacity and to ensure that 12% of total supply comes from renewable energies, the power sector is still far from reaching international quality standards.

Lebanon’s precarious energetic status is portrayed by the results of international rankings. According to the World Energy Council, Lebanon ranked 109th out of 129 countries on the Energy Sustainability Index. The latter evaluates three main pillars: “Energy Security”, “Energy Equity” and “Environmental Sustainability”. In terms of energy security i.e the effective management of primary energy supply from domestic and external sources, the reliability of energy infrastructure, and the ability of participating energy companies to meet current and future demand, Lebanon was placed at the 127th spot. The accessibility and affordability of energy supply across the population has deteriorated over the past three years as rankings of energy equity fell from 76 in 2011 and 84 in 2012 to 87 in 2013. The development of energy supply from renewable and other low-carbon sources is underdeveloped and landed Lebanon the 89th spot in 2013.


According to the IMF, the energy sector has been a drag on the Lebanese economy with a negative value-added to GDP of -2.6% over the period 1998-2008. Although government subsidies for the sector rose from $1.7B in 2011 to an estimated $2.2B in 2012, service delivery remains precarious with recurrent power outages and malfunctions.

Electricite du Liban (EDL), the state-owned energy supplier falls short of meeting the entire electricity demand. Ever since 2003, the gap between EDL’s electricity production and total electricity consumption has widened at a fast pace from 345 million kWh in 2003 to 7,815 million kWh in 2011. Across this period, electricity consumption grew by 22% to reach 12,397M kWh in 2011 while EDL’s output drastically plummeted by 57% to reach 4,582M kWh in 2011. EDL’s entire structure is in more jeopardy as time goes by as the company hasn’t benefitted from any reform or investment for over 16 years now. The most pronounced yearly drop in EDL’s production is surprisingly not after the Israeli attacks on power stations in 2006 (-2.3%) but rather in 2010 (-33.2%).

Lebanon’s electricity prices are in the upper bracket when compared to those in the region but still fail to cover EDL’s costs. In detail, prices for average consumption in Lebanon are higher than those in Libya, Egypt, Iraq and Bahrain. However, the tariff structure doesn’t incorporate the fluctuations in international oil prices. The price/cost discrepancy is a chronic problem: Back in December 2009, the tariff structure was reported to have been based on an oil price of $25/barrel while the international price during that period surpassed the $70/barrel mark.
According to the Regional Center for Renewable Energy and Energy Efficiency (RCREE), tariffs in Lebanon are also one of the most segmented in the region. A step tariff structure is applied according to which the minimum price varies from $0.023 in the segment of 1-100 kwh/month to $0.132 for consumption surpassing the 501 kwh/month. Worth noting that when consumption exceeds the 501 kWh/month, Lebanon has the 3rd highest minimum price tag among RCREE member states after Jordan, Morocco and Tunisia.

EDL still has a long way to go in order to achieve true energetic efficiency. Indeed, EDL incurs high operational costs yet reaps a marginal return. In fact, due to technical losses not every unit of energy produced by EDL will be delivered to the end user as power networks consume or lose part of the produced energy. EDL’s technical loss stood firmly at a high 15% from 2002 to 2007 compared to 8-10% internationally. The UNDP noted that reducing technical losses from 15% to 10% would free up 100 MW of capacity and would enable savings of $80M-$100M as the extra output will be billed to consumers. As for commercial losses which stem from uncollectible energy bills and illegal connections, they remain substantial despite falling from 29% in 2002 to 18% in 2007.

All of the installed power plants in Lebanon operate below capacity. According to the World Bank, EDL only satisfies 63% of peak demand. This has resulted in power outages of at least 3 hours per day in Beirut and up to 12 hours outside of Beirut. Unfortunately, even if the ageing power plants are rehabilitated, electricity rationing will still be an issue as demand is growing at a rapid pace.

Due to the above mentioned inefficiencies, government resources are being depleted due to the burdensome transfers to EDL, one of the three largest budget expenditures. The treasury transfers’ share in GDP and in total budget expenditures increased from 3% and 12% in 2010 to 5% and 22% in 2012, respectively. The trend extends into 2013 as treasury transfers to EDL (Debt service and reimbursement of gas and fuel purchases) totaled $1.21B in the first seven months of 2013, and as EDL’s contribution to the oil bill remained marginal, standing at 2.7% up to July 2013 as compared to 2.5% up to July 2012.

EDL’s contribution to the oil bill has always been marginal. Hence, the ever-growing cost of gas oil and fuel oil imports rests on the shoulders of an already- indebted government. Up to August 2013, reimbursement of the two oil suppliers KPC and Sonatrach amounted to $1.47B, 6% higher than the same period last year. While EDL covered 3.4% of the oil bill in the first eight months of 2012, this share dropped to 2.5% in 2013.
In an attempt to boost the capacity feed, the MoEW entered into an agreement with the Turkish operator Karadeniz Holding. As per the $390M deal, two power ships docked in Lebanon, the first adding 205 MW to the grid and the second lifting this capacity to 270 MW. This agreement brought about repeated incidents of halted supply as both the MoEW and the Turkish company tossed blame on the latter claiming that disruptions were caused by low fuel quality and the former demanding compensation for delivery delays. Regardless of the cause, power outage leaped from 3 hours to 9 hours even in Central Beirut.

With already weak baseline conditions, the Syrian crisis has created additional strain on the electricity system and shed light on its lack of resilience. The displaced will increase residential electricity load where refugees are being hosted in Lebanese households, are renting accommodation or staying in hotels. The World Bank estimates an increased demand due to the Syrian influx of 213 MW by December 2013 and 251 MW by the end of 2014. Given the average production cost of 23.69c/kWh, the government will need to disburse $170M in 2013 and $393M in 2014. Lebanese consumers will also bear extra costs in terms of lower supply levels: it is estimated that average available hours of power will drop from 18.32 hours/day to 16.5 hours/day in December 2013. Assuming that consumers will make up for this loss in power supply by paying for private generators, the direct cost would be of $206M in 2013 rising to $432M in 2014.

Even before the eruption of war in Syria, private generators were the Lebanese’s go to source for power supply that EDL fails to deliver. In 2010, the MoEW estimated that 61% of Lebanese residences were equipped with a private generator with a total cost of $1.4B compared to $700M paid for EDL. A survey conducted by the American University of Beirut (AUB) in the Hamra region identified a total of 184 buildings, 109 diesel generators and a total fuel bill of approximately $120,000/month. If EDL had the means to provide the region with power and assuming a cost of electricity of $0.13/kWh, the equivalent energy could have been purchased from EDL at $44,000/month, resulting in a net loss of $76,000/month in the survey area. Losses will surely be inflated once indirect costs such as maintenance, capital outlays and health effects are taken into account.

Indeed, the use of private generators not only has financial repercussions but also raises environmental and health concerns (Heavy carbon dioxide emissions, carcinogen exposure, and air pollution). The private power sector runs on diesel generators, located in dense urban areas and running on high sulfur fuel. Developed countries being aware of the harmful impact of this type of fuel, encourage the use of ultra-low sulfur diesel which contains less than 0.0015% of sulfur. However, in Lebanon, the admissible dose of sulfur in Heavy Fuel Oil (HFO), the largest constituent of the Lebanese primary energy supply, is of 2.5%.
Lebanon still has a long way to go before it supplies environmentally friendly energy. Awareness towards the use of renewable energy amongst consumers and industrialists remains underdeveloped especially compared to international standards. In 2011, the share of renewables in gross electricity consumption recorded a marginal 5.53% but is still higher than 5.34% in 2010 and 4.52% in 2009. Over 90% of electricity generation is provided through thermal sources while a marginal share is a hydraulic one.

Nevertheless, several initiatives are in place to steer energy use onto a more sustainable path. In 2009, The Government of Lebanon signed a 5-year project with UNDP dubbed “The Country Program of Lebanon under the Global Solar Water Heating Market Transformation and Strengthening Initiative”. While no progress report is available for 2013, results for 2011 show that solar installations stretched over an area of 43,500 m2 as compared to the ideal area initially set at 38,000 m2 with 12,197 solar water heaters installed in the residential sector alone. Developments in this sector are surely promising as the total market value for solar water heaters in Lebanon reached $18.13M in 2011. In 2012, the LCEC along with the Lebanese Standards Institution drafted a set of qualifications, matching those adopted in European States that should be respected by Lebanese companies providing solar water heaters.

The Central Bank of Lebanon (BDL) also sought to encourage the use of alternative energy resources. The National Energy Efficiency and Renewable Energy Action (NEEREA) is a national financing mechanism initiated by the Central Bank of Lebanon in 2010 in collaboration with the Ministry of Energy and Water, UNDP, and the Lebanese Center for Energy Conservation LCEC. NEEREA encourages the installation of Solar Water Heaters by offering loans with a 0% interest rate and a repayment period of 5 years.

The substantial yearly energy bill of $3.83B in 2009, the equivalent of 11% of GDP, is reason enough to bring energetic reform back to the forefront of the national agenda. Any reform plan must also seek to reduce Lebanon’s dependency on imports (over 95%) and sensitivity to the fluctuations of international oil prices. The gateway to achieving these goals is the proper exploitation of the offshore gas and oil reserves. Oil and gas licensing rounds also need to fall into a proper conceptual legal framework. However, the UNDP highlights that with the current public procurement law, contracts are awarded purely by reference to price as legislation fails to specify non-price criteria. Furthermore, the local political deadlock and the dispute between Israel and Lebanon over the maritime borders represent major hurdles to the passing of oil and gas decrees.
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