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Contact Information

Sami Baff

Sami.baff@blominvestbank.com

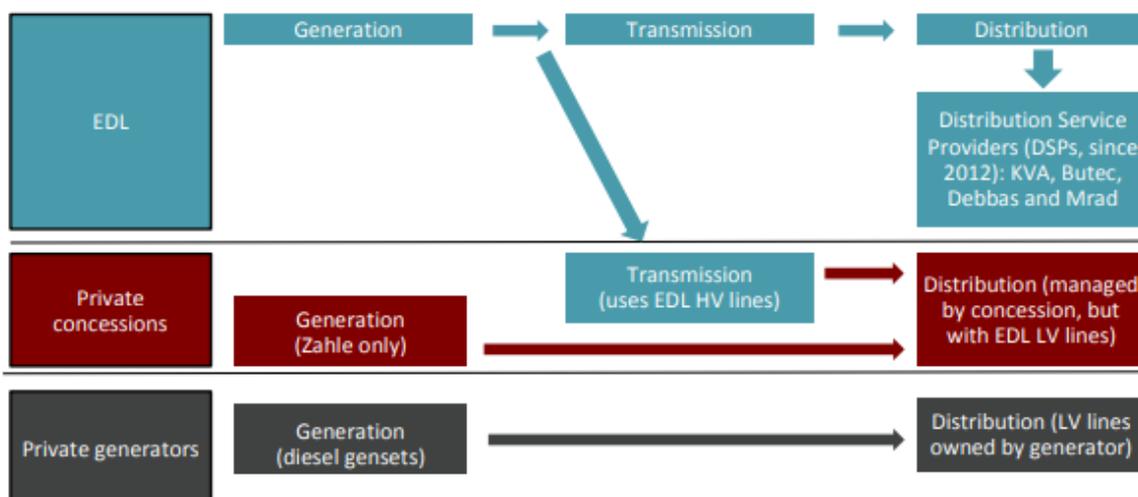
Lebanon has suffered from shortage in electricity for decades. This sector has been for many years a liability on the Lebanese state and caused painful debts on the whole national economy. The corruption and mismanagement has not only damaged the electricity sector but it had severe consequences on the whole economy. In fact, between 2010 and 2018, transfers to EDL totaled more than US \$14B while EDL transfers averaged 3.8% of GDP and accounted around half of the fiscal deficit.

We summarize briefly below the two reports "From dysfunctional corruption: The politics of reform in Lebanon's electricity sector" by "Ali Ahmad" , "Neil McCULLOCH" , "Muazna Al-Masiri" and "Marc Ayoub" published on December 2020 and "Lebanon power sector emergency action plan" published by the **World Bank Group** in 2020. The two reports present an overview of the electricity sector in Lebanon and some steps that the government will need to take in order to achieve the ultimate goal of 24/7 electricity.

Electricity in Lebanon

EDL has a single, integrated utility which is responsible for the provision of electricity for the entire country. The sector is determined by the Ministry of Energy and Water (MOEW) while regulation of the sector is undertaken by EDL; private generators are not legally authorized however MOEW attempts to impose some regulation over their activity.

The structure of the electricity sector in Lebanon



EDL losses

EDL suffers from technical and non-technical losses as the average tariff is only 27% the cost recovery level. High technical losses reflect poor quality of infrastructure, while the non-technical losses reflect corruption through theft, poor governance, and failure to enforce the law. Furthermore, EDL suffers from low collection rates due to corruption, as for example some politicians refuse to pay their electricity bills. The low average tariff (9cent/kwh) is way below the cost of generation, especially with the increase of price of fuel oil price.

The private generators lobby

According to the World Bank, the total number of diesel generators in Lebanon is between 32,000 and 37,000. The owners of those generators have imposed a political pressure to refrain any reforms or solution to solve the electricity problem in Lebanon. By keeping EDL incapable to achieve the 24/7 goal, the Lebanese people will keep depending on this “mafia” in order to have electricity. In 2018, the government started a campaign to regulate the operations of commercial diesel generator networks by forcing them to install metering systems for their subscribers and follow the monthly tariff issued by the MOEW. However, this tariff wasn't always respected by the owners of those generators.

Reform plan

The reform plan suggested by the World Bank tackles four dimensions of this sector:

- 1. Governance**
- 2. Security of Supply**
- 3. Financial stability**
- 4. Environmental sustainability**

Also, the plan should include a several actions to increase transparency and accountability.

1-Governance

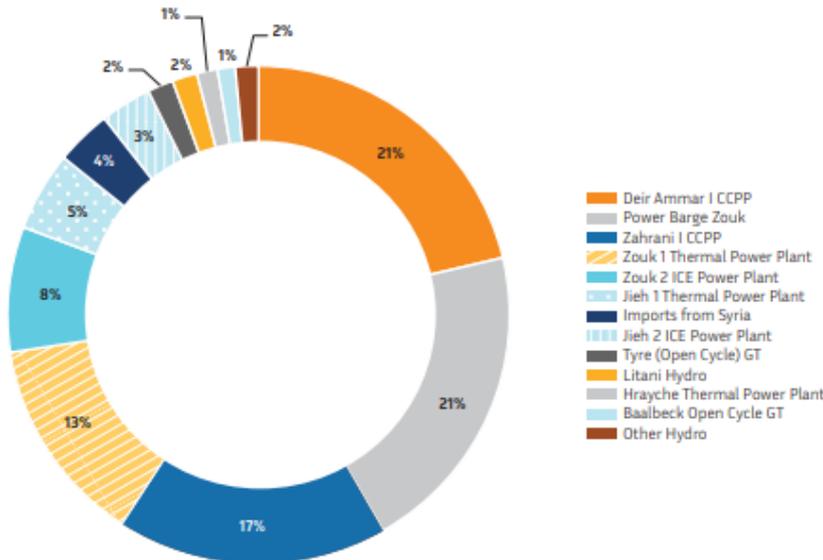
The Lebanese government has showed her incompetence to govern the electricity sector in Lebanon due to political corruption and bureaucracy. The best solution is adopting a time-bound plan to privatize EDL's generation plants and establish private concessions for distribution services. Doing so, will decrease the political influence and improve this sector. On the other hand, the government should establish a plan to introduce new generation that are least cost and to adopt a time-bound plan to modernize EDL's operations, and increase the public communications by implementing a time-frame for those reforms.

2-Security of Supply

Of course, one of the major problems of this sector is the shortage in supply. The old power plants at Zouk, Jieh, and Hrayche have outputs that are significantly less than their design capacity and are operating only from 36 % to 68% maximum. While most of the generation resources including the rented powers barges can run on the much less expensive and more

environmentally friendly natural gas. However, due to the lack of gas, they run on the more expensive liquid fuels.

Breakdown of EDL Energy Generated



For the World Bank, one of the solutions for the shortage in supply is to increase the share of renewable energy (RE) in the system. In fact, renewable energy can be cost savings for the power sector and more environmental friendly. However, in order to achieve this goal Lebanon needs a significant ramp-up of investments in renewable energy capacity. Furthermore, to secure low renewable energy prices the government should increase the sector tariffs to cover the costs. To be more accurate, Lebanon needs to scale up both its thermal and RE capacity in parallel as relying only on RE may take some time. Lebanon should have plan for the short-medium term, as installation of new gas-fired generation capacity should be accelerated in order to fill the demand-supply deficit, as Lebanon needs at least 1500-2000 MW of additional capacity in order to minimize reliance on private generators.

3.Financial Stability

Electricity tariffs are far below EDL’ s average cost of supply. Of course, this was the main reason behind losses in this sector. In details, the effective cost is 25cent/kwh while the Lebanese state collect only 1 cent per hour by taking in consideration the devaluation of Lebanese lira against the dollar. Of course, the severe depreciation of the national currency due to the financial crisis has worsened the situation and caused more losses. World Bank suggested indexation for exchange rate fluctuations between the Lebanese lira and US dollar, as this foreign currency is the basis for EDL’ s purchase of fuel, equipment, and spare parts.

The new tariff should take into consideration the social welfare, as it’ s necessary to restrict low tariffs to those consume up to 500kwh/month in order to protect the welfare level of poor most vulnerable households. The government should focus on increase the supply to replace private generators that will decrease some cost on the subscribers as they will pay one bill (EDL’ S bills) instead of paying two electricity bills (Private generators bills+ EDL’ s Bills).

4. Sustainability

Lebanon cannot continue to rely only on fuel and gas as the government should have a plan to diversify more its resources by investing more in renewable energy (RE) and implement Energy Efficiency (EE) measures. Some measures were already implemented in collaboration with BDL that provided access to low interest rate loans (2.5%) for all RE applications and EE projects. This step has already financed more than 940 projects with a total investment amount of more than 560\$ million, which include rooftop PV and public street lighting PV. Unfortunately, due to the financial crisis the percentage of loan amount per year dropped from 18 percent in 2017 to only 7 percent in 2019.

Loans & Percentage of Loans per Year



The implementations of EE measures are necessary in order to reduce energy consumption and reinforce operations costs. In fact, synergy between renewable technologies and EE measures is required to increase the country’s energy security and sustainability.

Conclusion

From an objective point of view, the two reports can be considered a roadmap to 24/7 electricity. No doubt, applying the renewable energy is the optimal solution in terms of cost and the environment. However, Lebanon needs an urgent plan to secure minimum hours of electricity. The diversification of energy resources is a must in the long run, though in the short run the recent deal signed with the Egyptian government to import gas through Syria can give some oxygen to this sector.

For your Queries:

BLOMINVEST BANK s.a.l.

Research Department

Bab Idriss, Weygand Str.

POBOX 11-1540 Riad El Soloh

Beirut 1107 2080 Lebanon

Sami Baff

Sami.baff@blominvestbank.com

Tel" +9613081872

Research Department

Tel: +961 1 991 784

research@blominvestbank.com

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