Policy Paper

for the Electricity Sector

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Executive Summary

This policy paper constitutes a global framework for the electric energy sector in Lebanon, and includes ten strategic initiatives that are integrated and correlated to cover the sector's infrastructure, supply/demand, and the legal aspects. The initiatives are developed into identified plans of action with required budget, financing schemes, and timeframe. The elimination/delay of any initiative and action will lead to losing the policy objective of rescuing the power sector from the current drastic situation to a new sustainable, reliable, and efficient delivery of electricity. A transitional rescue period of 3 - 4 years is required to achieve the goals of this policy.

This paper remedies most of the problems of the electric energy sector starting by the addition of generating capacity to cover the existing gap, demand forecast and required reserve together with the necessary infrastructure to transmit and distribute the generated energy to consumers throughout the Lebanese service territory in a secure and economical manner. The transmission and distribution infrastructures will be upgraded to cope with the capacity additions and to improve the operability of the system, thus decreasing the technical losses. The policy calls for the establishment of a smart grid using meters with remote disconnects from control centers that will be operated with specialized service providers for the transitional period to modulate consumption and reduce non-technical losses.

On the supply side, the capacity addition shall include conventional energy sources that are the most economical with the least environmental impact mainly the natural gas; and renewable energies such as wind, solar, waste to energy, etc. The infrastructure requirements for the natural gas (LNG terminal, pipeline along the coast, etc.) are included in the policy. On the demand side, the policy aims to develop several demand side management and energy efficiency initiatives (e.g., CFL, SWH, etc.) to curb the load growth and improve the load factor which translates into guaranteed savings for the economy. To help increase the penetration of energy efficient devices, the policy calls for the adoption of standards and labels to promote them. Furthermore, a restructuring of the tariff, leading to a gradual balance in the fiscal budget of EDL, is necessary to both generate needed revenues on the treasury side and to unload the financial burden on the economy and the consumer side by eliminating the need for private generators and providing reliable 24/24 hour service.

The multitude of the projects included in this policy will require a proper legal framework for a transition phase until a permanent and stable situation for the sector is established. Similarly, the necessary financial, administrative and human resources will be given to EdL to manage the transition phase until the corporatization of EDL is accomplished. All this will be done in collaboration and partnership with the private sector and the donor community to benefit from their vast experiences and resources.

The policy will result in a solid power sector with more than 4000 MW generation capacity in 2014 and 5000 MW after 2015, reliable transmission and distribution networks, and efficient delivery of electricity to cope with the overall socio-economic development of Lebanon. The policy targets a gradual implementation of the initiatives in the short and medium terms totaling 4870 M$ for 4000 MW (Government in Lebanon up to 1550 M$, the private sector contribution of 2320 M$, and the international donor community up to 1000 M$), and an additional amount of 1650 M$ in the long term. The full implementation of all the strategic initiatives in this policy will reduce the total losses from 4.4 Billion $ in 2010 to zero in 2014 where 24/24

hours of service is provided, and the possibility of profit making as of 2015; while it will reach 9.5 Billion $ in 2015 if no action is taken.

This ambitious but realistic policy was prepared after a review of all previous studies, and in collaboration of all concerned parties, whether internal or external, constitutional and political, and aims to be approved consensually by the Council Of Ministers.

Current Situation / Background

The Lebanese power sector has been thoroughly described in a large number of studies sponsored by the Government of Lebanon and International agencies. The problems in the sector are well identified but the technical and financial numbers vary widely and carry large uncertainties.

A summary of the current sector situation for the year 2009 is presented in this section.

- **Production**: Electric energy is produced in Lebanon from hydroelectric and thermal power plants and purchased from Syria and Egypt through regional interconnections.
    - **Power Purchase**: The purchases from Syria (589 GWh) and Egypt (527 GWh) constituted 7.5% of the total energy production.
    - **Hydraulic power plants**: The installed capacity of all hydro plants is 274 MW but the actual generation capacity is 190 MW. The energy produced from the hydro plants (Litani, Nahr Ibrahim and Bared) constitutes 4.5% from the total production.
    - **Thermal Power Plants:** The installed capacity of thermal power plants is 2038 MW but the actual capacity is 1685 MW. Thermal capacity is divided into HFO-fired steam-turbines at Zouk, Jieh and Hraycheh, diesel-fired Combined Cycle Gas Turbine (CCGT) at Beddawi and Zahrani and diesel-fired Open Cycle Gas Turbine (OCGT) at Sour and Baalbek. The energy produced from these plants is 88% of the total production and the fuel cost vary widely from 9 USC/kWh to 22 USC/kWh.

  The average capacity and imports available in 2009 was 1500 MW; the average demand was 2000-2100 MW and the instantaneous peak in the summer was 2450 MW. The total energy demand in 2009 was 15,000 GWh (7% increase from 2008) whereas the total production and purchases was 11,522 GWh (6% increase from 2008) which resulted in energy not supplied (deficit) of 3,478 GWh (23%). The supply of energy averaged 21.22 hours for greater Beirut area and 15.79 hours for the South with an average of 18 hours (75%) for the whole country.
- **Average Cost**: The average cost of electricity in 2009; including EdL's fixed costs, was 17.14 USC/kWh (255 LBP) of which 10.77 USC/kWh are fuel (high fuel bill), and 6.37 USC/kWh are for generation, transmission and distribution. The contribution of the fuel bill to the total cost was around 1450 M$ (75%) and 1165 M$ (62%) in 2008 and 2009 respectively due to fluctuations in the cost of fuel.
- **Losses:** The total losses on the system are about 40% (more than $300 million): 15% technical losses; 20% non-technical Losses and 5% uncollected Bills. The arrears and uncollected bills are worth more than $1.3 billion with 75% by the private sector and 25% by the public sector, Frontier Villages and Palestinian Camps.
- **Transmission:** The transmission system has 1427 km of 66, 150, 220 and 400 kV lines with 1920 meters missing in Mansourieh, for a number of years, to complete the 220 kV loop which, if completed would increase stability, reduce the technical losses by more than 1% and increase the transmission capability of the system.
- **Distribution and tariffs:** The distribution system has 18,182 transformers and 1,206,499 low voltage customers (plus 82,000 customers are within concessions); 76.4% of which have meters rated (5-20)

amps and an average monthly consumption less than 500 kWh. The energy charge for low voltage residential customers varies from 35 LBP to 200 LBP per KWh in blocks of 100 kWh. In addition, customers pay a monthly subscription fee of 1,200 LBP/5A and a rehabilitation fee of 5,000 – 10,000 LBP/month. The current tariff structure is not equitable because it subsidizes all customers; large and small, and penalizes small consumers with very large fixed charges.

- **Distribution of non-technical losses and collection rates:** The non-technical losses are not uniform as they vary between provinces from 9.6% to 58% and then between regions from 15% to 78%. Similarly, there is no uniformity in the collection rates as they vary from 83% to 97% in provinces and from 62% to 97.5% within the regions.
- **EDL's financial deficit:** The financial deficit of EdL averaged $1.5 billion for the past three years. The total investment from 1992 to 2009 was only $1.6 billion ($50 million from 2002 to 2008) and the subsidy for the same period was $6.4 billion, amounting to a total deficit of around $8 billion without interest.
- **Concessions:** There are different types of concessions for generation, transmission, and distribution. The number of subscribers in all distribution concessions is 82,000 (56% in Zahle, 28% in Jbeil, 12% in Alieh, and 4% in Bhamdoun). EdL provides these concessions with energy at reduced prices (50 to 75 LBP/kWh as compared to a total cost of 255 LBP/kWh) which results in accumulated losses of $185 million in the last eight years as compared to the price of energy wheeled from Syria and Egypt.
- **EDL's administrative status:** EdL has an organizational chart of 5027 full time employees (FTE) out of which 3125 (63%) are vacant with a yearly attrition rate of ~8% and an average age of 52 years. However, EdL employs around 2000 contractual and daily workers, many of whom are political appointees and unqualified workers.
- **Legal Framework:** The legal framework for privatization, liberalization and unbundling of the sector (law 462) exists but is not applied. In parallel, the law implemented by decree 16878/1964 and 4517/1972 which gives EDL exclusive authority in the generation, transmission, and distribution areas is still being applied.
- **Losses to the national economy:** The cost of energy not supplied (VOLL) has been estimated by Electricite De France (EDF) and the World Bank in the Public Expenditure Review (PER) to vary between 200 and 2,000 $/MWh. An average value of $700 per MWh not supplied (which includes the cost of private generation) has been used to show losses of $2.5 billion in 2009 for the Lebanese economy, which is divided between $1.3 billion for private generation and $1.2 billion for direct consumer losses.

The failure of the GoL to reform the electricity sector is causing an annual deficit of 1.5 billion dollars on the public purse and losses on the national economy estimated at not less than $2.5 billion dollars per year. This crisis is caused by the lack of worthy investments); high fuel bill (62%-75%); the operating status of power plants half of which are old and inefficient and the other half uneconomical; high technical and commercial losses in transmission and distribution; wrong tariff structure and low average tariff; deteriorating financial, administrative, technical and human resources of EdL, all this in the presence of convoluted legal and organizational frameworks. The totality of these issues needs to be addressed in a prioritized manner in order to find a comprehensive and durable solution, which is the core of this paper.

Preamble:

This paper presents a comprehensive policy and a realistic implementation program for the radical rehabilitation and development of the electric sector to respond to the economic, social and political needs and aspirations of Lebanon. The paper constitutes the cornerstone of the integrated national energy program that will be prepared by the Ministry of Energy and Water for the first time in Lebanon.

The policy paper covers 3 distinct strategic areas with 10 specific initiatives in a comprehensive program of 42 action steps:

I. **Infrastructure**: (1) Generation; (2) Transmission; and (3) Distribution

II. **Supply and demand**: (4) Fuel Sourcing; (5) Renewable Energies, (6) Demand Side Management / Energy Efficiency, (7) Tariffs

III. **Legal framework**: (8) Norms and Standards (9) Corporatization of Électricité Du Liban, (10) Legal Status

The implementation of the program will be phased according to the following planning horizons:

1. **Short term 2010-2012**: (Immediate and urgent, 1 – 2 years);
2. **Medium term 2012-2014**: (2 – 4 years); and
3. **Long term 2015 and beyond**: (Long term and future, 5 years and more).

The policy paper presents a policy statement for each strategic initiative **(Bold)** and a set of action steps for which the timeline, investment, financing party, impact and decision making are summarized, and follow-up actions *(Italic)*.

I. Infrastructure

1. Generation

The generation policy is targeting a total installed capacity of 4,000 MW by 2014 and 5,000 MW thereafter to meet a load of 2500 MW (summer 2009), 500 MW of demand not currently supplied (i.e. self generation), future demand corresponding to an annual load growth of 7%, and ~15% of peak load reserve.

a. Possibility for renting 250 MW (barges or small generators or imports) in the immediate term as a stop-gap solution for summer 2010 and to provide the standby capacity needed for 2 – 3 years to rehabilitate and/or replace old power plants.

Item	Financed by	Implementation		Capacity (MW)	Budget
		From Year	To Year (s)		
Barges	GoL	2010	3	110-280	5.2 USC/kWh
Import from Turkey	GoL	2010	3	100-150	12.66 USC/kWh
1) The tender for the barges can take 5 weeks or a negotiated contract immediately. Price is for energy conversion; fuel cost is not included *2) The wheeled energy from Turkey is subject to Syrian agreement*					

b. Rapid increase of the installed capacity by 600 – 700 MW using Combined Cycle Gas Turbine (CCGT) and/or Reciprocating Engines with a probable distribution of 200-300 MW reciprocating engines and 400-500 CCGT, financed by the Lebanese government with a possibility of foreign or private financing later on (end of 2010 – beginning 2011).

Item	Financed by	Implementation		Capacity (MW)	Budget (Million $)
		From Year	To Year (s)		
New Power Plants	GoL	1	3	600-700	750-875
1) Note that both alternatives can support the hybrid multi-fuel solution. 2) *Pending Budget approval or an alternative decree/law action.*					

c. Rehabilitate, maintain, replace, or upgrade existing plants to increase their overall capacity by about 245 MW.

Item	Financed by	Implementation		Capacity (MW)	Budget (Million $)
		From Year	To Year (s)		
Rehabilitate Zouk , Jieh	International Loans	1	5	~100	180
Upgrade Deir Amar, Zahrani	GoL	1	3	75	108
Add CC to Tyr, Baalbeck	GoL	1	2	70	130
The rehabilitation and/or replacement schedule of Zouk 1-2-3-4 and Jieh 3-4-5 will be updated based on the progress of other projects. Consider moving Baalbeck GTs to Tyr. Details of these projects are available.					

d. Start the process of increasing the installed capacity by 1,500 MW now and 1,000 MW after 2014 using the modality of Independent Power Producer (IPP) in collaboration with the private sector with a minimum share of 20% financed by international loans if it proves its economic and operating effectiveness through a tender and by giving it all opportunities for success. A draft law was prepared for this purpose and for all renewable energy projects.

Item	Financed by	Implementation		Capacity (MW)	Budget (Million $)
		From Year	To Year (s)		
New Power Plants	Private Sector International Loans	0	4	1,500	1,500
1) Public-Private Partnership (PPP) is to be considered as a major option for this type of projects *2) An additional 1000 MW (1000 M$) is to be added after 2014* * ***The Ministry is actually receiving encouraging offers with very attractive financing facilities to provide 3,000 MW of CCGT in the short term.***					

e. Increase the share of hydraulic power production through maintenance, rehabilitation and/or replacement of existing hydro plants, and facilitate the implementation of additional capacity on a BoT basis, and storage dams (no less than 120 MW according to EdF draft Master Plan).

Item	Financed by	Implementation		Capacity (MW)	Budget (Million $)
		From Year	To Year (s)		
Hydraulic Power	Private Sector International Loans	2	5	40	200
1) The viability of micro-hydro should be studied. *2) The hydro capacity is divided into 40 MW for the mid-term and 80 MW (500 M$) for the long term.* *3) A capital cost of 5800 $ per kW of hydro power was used for budgetary purposes.*					

f. Introduce wind power via the private sector by building wind farms (60 – 100 MW).

Item	Financed by	Implementation		Capacity (MW)	Budget (Million $)
		From Year	To Year (s)		
Wind Power	Private Sector	1	3	60-100	115-195
A capital cost of 1950 $ per kW of wind power was used for budgetary purposes					

g. Encourage the private sector to adopt the technologies of "waste to energy" for power generation and investigate geothermal energy.

Item	Financed by	Implementation		Capacity (MW)	Budget (Million $)
		From Year	To Year (s)		
Waste to Energy	Private Sector	3	4	15-25	30-50
1) This option is driven by a solution to Solid Waste treatment. *2) A capital cost of 1900 $ per kW of waste to energy power was used for budgetary purposes.*					

The Ministry will continue to work with EDF on the generation master plan which will be updated in line with the phases of implementation and with the changes in demand growth.

2. Transmission

The transmission policy will focus on removing bottlenecks, reducing transmission losses, completing a control facility to ensure adequate connection between power plants and load centers together with high reliability and stability at the lowest cost.

a. Complete the 220 kV loop at Mansourieh in 2010.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
220 kV loop at Mansourieh	GoL	0	1	1

b. Complete the infrastructure at the 400 kV Ksara substation for the Arab interconnection.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
Infrastructure at KSARA substation	International Loans	1	2	20-30
Subject to the reinforcement of the transmission network on the Syrian side among other networks in the 8-country Arab interconnection.				

c. Complete the Lebanese Electricity National Control Center (LENCC) in 2011.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
LENCC	International Loans	1	2	20

d. Build regional substations, reinforce existing system according to the detailed EdL plan and budget (Appendix) to reduce technical losses and remove bottlenecks, and expand the transmission system to increase evacuation capacity in accordance with the increase in generating capacity.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
Regional Substations / Transmission System	GoL	1	3	250
Transmission System Expansion	International Loans	3	5	400
1) Details of the EdL plan are included as an appendix *2) A budget of 500 M$ (400 M$ Medium term and 100 M$ Long term) excluding expropriation, is needed for transmission system expansion to cope with the generation expansion and these figures will be updated upon the completion of the Transmission Master Plan being prepared by EdF.*				

The Ministry will continually review and update the transmission master plan to conform to the growth in generation and demand and to meet the regional needs and interconnection requirements and execute all the programs related to this master plan.

3. Distribution

The distribution sector policy is based on implementing a transitional and realistic program with the participation of the private sector on the basis of the existing legal framework and aiming at investing in planning, constructing, operating and maintaining the distribution activities including metering, billing and collection based on modern and smart systems.

a. Improve the distribution services in 2010 in preparation for the participation of the private sector in 2011 and equalize respectively the supply and collection between regions. Thus, a set of "quick fixes" will be used to reinforce collection and limit all types of theft and losses.

b. Prepare the Terms of Reference (ToR) and implement a bidding process to select specialized companies in a transparent manner as service providers (SP's) whose responsibility is to provide distribution services and improve quality and adhere to performance benchmarks (KPI's) that would result in progressive increase of revenues (2011 – 2014). This will be implemented in the transition period for 3 years after dividing Lebanon into electrical regions (example scenarios are in Appendix). The determination of the number of regions and Service Providers will be decided based on socio-political functions and availability of professional companies as per the tender technical prequalification results. A program manager with EDL will supervise the success of this process.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
Bidding Process	GoL	0	1	1
Distribution Network Facilities, AMR and Billing System	Private Sector	2	4	300
Upgrade / Rehabilitate Distribution System	Private Sector	2	4	50
Program Mngt.	GoL	2	4	10
1) The recovery of capital and cost of financing will be paid from improved collection *2) An additional 50 M$ worth of upgrade/rehabilitation of the distribution system will be added after 2015*				

c. Develop simultaneously a center able to monitor automatic meter reading, perform remote connection/disconnection of supply and demand management functions and its reduction.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
Monitoring Center	Private Sector	2	4	30

d. Introduce new services for consumers, and payment facilities and adopt new tariff structures and mechanisms (feed-in tariff, prepaid cards, net metering, etc.).

e. Envisage the possibility of developing a Distribution Management Center (DMC) in line of the progress of the distribution plan for Greater Beirut first and other major cities later.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
Distribution Management Center	International Loans	2	4	25

During the completion of the transition period, the distribution sector will be re-examined in order to be restructured based on the results achieved and the improvements in the quality of service. At this point, assess the unbundling of the distribution sector and extend this process to EdL.

II. Supply and demand

4. Fuel Sourcing

The fuel sourcing policy is based on diversity and security where 2/3 of the fuel mix is based on natural gas with multiple sources of supply; more than 12% are renewable energies; and the remaining from other sources of fuel while selecting technologies that work on both natural gas and fuel oil.

a. Study and develop a plan for an infrastructure to supply and distribute natural gas based on the land pipeline in Beddawi and LNG marine station(s) and interconnect them with the power plants; thus providing a flexible and stable supply of natural gas.

b. Gradually convert / build most power plants on natural gas while diversifying the sources of supply through contracts from: Turkey, former Soviet republics, Russia, Syria, Egypt (finalize the gas agreement), Qatar, Algeria, etc. while stressing on the potential of finding natural gas in the territorial waters of Lebanon (where the Ministry has prepared a draft law for its extraction).

c. Complete a prefeasibility study and construct a Liquified Natural Gas (LNG) marine terminal in Salaata or Zahrani (2011) where the choice of site location will be based on its results

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
LNG Terminal	Private Sector GoL	1	3	70-550
According to World Bank Study: $70 million for FSRU, $550 million for land based station and $110 million and $220 million for other configurations				

d. Build a gas pipeline along the coast (onshore and subsea where necessary) to feed all power plants from Beddawi to Tyre to reduce their operating costs. Furthermore, the pipeline will be used by the industrial sector and to initiate residential gas distribution (e.g. CityGas) and launch NGV (natural gas vehicle) initiatives (2010 – 2012). The pipeline will follow the railway track to cut expropriation costs.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
Gas Pipeline	GoL Private sector	1	3	120
A feasibility study has already started to determine the routing and budget of the pipeline.				

All of the above will be executed in light of studying and monitoring of the fuel international market, the development of resources, its availability and price fluctuations in line with the interchangeability of technology versus resources.

5. Renewable Energy

This policy commits to launching, supporting and reinforcing all public, private and individual initiatives to adopt the utilization of renewable energies to reach 12% of electric and thermal supply.

a. Complete a wind atlas for Lebanon and launch IPP wind farms with the private sector (2010).

b. Start a pre-feasibility study on Photovoltaic (PV) farms.

c. Encourage public and the private sectors to adopt incineration technologies to produce electricity from waste.

d. Encourage all individual and private initiatives to produce hydro power; even micro-hydro.

The Ministry will seek a substantial amount of financing and benefit from CDM mechanism in cooperation with the Ministry of Environment and other carbon financing schemes for setting the tariff of energy produced from renewable resources (feed-in and net-metering) and synchronizing it to the electric network.

6. Demand Side Management / Energy Efficiency

This policy commits to the preparation and spreading of the culture for proper electricity use; adoption of national programs focused on demand side management as the basis for: effective energy use; peak shaving; load shifting; and demand growth control in order to save a minimum of 5% of the total demand.

a. Adopt the Energy Conservation law and institutionalize the Lebanese Center for Energy Conservation (LCEC) and launch a national plan for energy conservation in 2010.

b. Widely spread the use of Compact Fluorescent Lamp (CFL), starting in 2010, with the aim of banning energy guzzling devices in the future.

c. Increase the penetration of Solar Water Heaters (SWH) and devise innovative financing schemes in collaboration with the banking sector to achieve the slogan “A solar heater for each household”.

d. Encourage the use of energy saving public lighting.

e. Set-up the National Energy Efficiency and Renewable Energy Account (NEEREA) as a national financing mechanism and develop the ESCO (Energy Service company) business dealing with energy audit applications.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
LCEC / CFL / SWH / Public Lighting	GoL	0	4	25
Savings: The $9 Million extracted from the Diesel subsidy showed a $100 Million yearly savings.				

- *It should be noted that AMR and Smart Grid infrastructure will allow active engagement in DSM.*

All of the above will be implemented in conjunction with energy conservation initiatives and programs with Non Governmental Organizations (NGO’s) and civil societies, companies, banks, and investors to adopt sectorial and temporal electricity pricing.

7. Tariffs

The policy will gradually restructure and increase the existing tariff to eliminate the financial deficit in the electricity sector and establish a balanced budget for EdL, on one hand; and reduce the financial burden on the citizens caused by the utilization of costly private generators, on the other hand.

a. Gradually increase the tariff in conjunction with improvements in the electric service provision until reaching the goal of a sustainable 24/24 electric service hence eliminating the need for private generators and abolishing the financial deficit.

b. Adopt special tariffs and fees for low income consumers and productive sectors.

c. Implement Time Of Use (TOU) tariffs (e.g., night-reduced) in conjunction with the implementation of Automatic Meter Reading (AMR) schemes.

The tariff will be continuously reviewed in line with the budget for this sector, taking into consideration the diversity in conventional and renewable resources; without being a burden on consumers or the public purse; rather, it will be used as a flexible tool to enhance equity among various customer groups and provide the necessary revenues for the Treasury.

III. Legal Framework

8. Norms and Standards

The objective of this policy consists of setting norms and standards for the provision of electric services that is safe, equitable and fair with the best quality and lowest cost.

a. Resolve the problems with the current concessions through a fair and equitable compromise for the owners and the Government using a financial settlement that gives the GoL its rights and the concession owners' incentives and encouragements to have them enter in operation of independent production (IPP) and distribution service provision (SP).

b. Develop rules and laws that promote the largest penetration of "Green Buildings (GB)" and "Energy Efficiency (EE)" in collaboration with concerned institutions.

c. Comply and respect international norms and standards in the energy efficiency, environmental and public safety domains.

The provision of electric service through its equipment, techniques, related production, transmission, distribution and interconnection, will be based on intelligent systems (SmartGrid) to position Lebanon to the highest regional and international level in the electric arena.

9. Corporatization of EdL

The success of this policy necessitates the "revitalization" of EdL because it is the core entity of the sector. This entails providing the financial, administrative and human resource flexibility needed to cope with the rapid and vital changes. To achieve this goal, this paper considers corporatization as the ideal solution.

a. Increase the human resource capacity of EdL by direct and gradual hiring and by relying on the private sector using outsourcing contracts for: the administrative, engineering, technical, and contracts of installation, operation and maintenance.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
EDL Human Resource	GoL	0	2	15

b. Update the legal due diligence needed to corporatize EdL as per the three functions of generation, transmission and distribution:

   i. Prepare a road map for the corporatization of the EdL in 2010 and enact the implementation process.

   ii. Develop the necessary related legal amendments, if needed.

   iii. Subject the newly formed EDL to further evaluation and improvements in the future where the internal structure of the company allows the unbundling of the electricity sector when and if the decision will be taken at the end of the transition process.

c. Implementation of the road map includes, but is not limited to, asset registration and valuation, capital identification, hiring, firing and compensation procedures, financial and administrative procedures, etc. This implementation will start in 2011 and be completed in the shorted possible delay.

d. The procedures for the corporatization will be prepared in a gradual and smooth manner but they will be executed simultaneously upon completion to avoid unwanted and additional burden on EdL; during the transition phase, the Ministry will take measures to relieve EdL of certain responsibilities using Service Providers, independent power production, Operating & Maintenance (O&M) contracts in such a way that EdL will become responsible for overseeing, supervising, and administering these contracts in addition to the transmission and existing production.

Item	Financed by	Implementation		Budget (Million $)
		From Year	To Year (s)	
Corporatization Procedures	GoL	1	3	165
According to HCP, a budget of $165 million includes compensation for EDL employees.				

This operation will be executed under close supervision of the Ministry and in complete coordination with HCP while focusing on the rights of the employees and by giving them all the incentives and assurances that accompany the operation of transfer and development.

10. Legal Status

The implementation of this policy requires the elimination of the convoluted and altercated legal and organizational debacle of the electricity sector, and needs a clear legal track with political and institutional consensus, which would suppose the adoption of this policy paper by the Council of Ministers (CoM) as one integrated and self-standing policy while adhering to the legal, administrative and financial requirements.

a. Initiate the process of revising Law 462 with all involved parties in light of the consensus on this matter, to draw the strategic consensual options to be taken in the sector:

   i. Introduce the necessary amendment on Law 462 to make it applicable after correcting its deficiencies and contradictions taking into considerations the recommendations made in this regards.

   ii. Prepare and approve all the execution decrees of the amended law including the development of the regulatory, organizational, and operational requirements.

   iii. Complete the process with the associated recruitment and procurement procedures.

b. Begin with the current legal status of EdL which is governed by the law implemented by decree # 16878/1964 and 4517/1972 to benefit from its facility, and to avoid any delays in the execution of the strategy, especially in the immediate and short terms.

c. Adopt a Law for the new power plants with all possible technologies and encourage all forms of Public Private Partnership to facilitate the transition and ensure proper continuity between current and future legal status.

Ensure full correlation between the development of the legal framework and the corporatization process taking place at EDL. Such process shall not affect the ability of EDL to maintain adequate electricity supply or the implementation of the policy. The discussion and adoption of the new amendments should not hinder the actual plan in any of its phases especially the transition phase; rather they should be studied and applied gradually with the implementation of the transition period to achieve the intended goal. By that time (2013 - 2014), the electricity sector will be restructured (EDL Co, unbundling, liberalization, etc.) in parallel with the execution of this policy.

Conclusion

In light of what has been proposed herein, this paper recommends adoption of this policy during the transition period as an emergency recovery and reform plan for the development of the sector in which exceptional powers should be given to the Minister of Energy and Water and the Council of Ministers.

APPENDIX A

APPENDIX A: INVESTMENT SUMMARY

Infrastructure: Generation

Planning Horizon / Financed By	Short Term	Medium Term	Sub-Total (M$)	Long Term	Total
GoL	577-640	411-474	988-1,114	--	988-1,114
Private Sector	95	1,400-1,500	1,495-1,595	1150	2,645-2,745
International Loans	90	440	530	350	880
Total (M$)	762-825	2,251-2,414	3,013-3,239	1500	4,513-4,739

Infrastructure: Transmission

Planning Horizon / Financed By	Short Term	Medium Term	Sub-Total (M$)	Long Term	Total
GoL	51	200	251	--	251
Private Sector	--	--	--	--	
International Loans	40-50	400	440-450	100	540-550
Total (M$)	91-101	600	691-701	100	791-801

Infrastructure: Distribution

Planning Horizon / Financed By	Short Term	Medium Term	Sub-Total (M$)	Long Term	Total
GoL	1	10	11	--	11
Private Sector	110	270	380	50	430
International Loans	--	25	25	--	25
Total (M$)	111	305	416	50	466

Overall Investment for the Infrastructure

Planning Horizon / Financed By	Short Term	Medium Term	Sub-Total (M$)	Long Term	Total
GoL	629-692	621-684	1,250-1,375	--	1,250-1,375
Private Sector	205	1,670-1,770	1,875-1,975	1,200	3,075-3,175
International Loans	130-140	865	995-1,005	450	1,445-1,455
Total (M$)	964-1,037	3,156-3,319	4,120-4,355	1,650	5,770-6,005

Supply and Demand: Fuel Sourcing

Planning Horizon / Financed By	Short Term	Medium Term	Sub-Total (M$)	Long Term	Total
GoL	20	10-20	30-40	--	30-40
Private Sector	130-370	30-260	160-630	--	160-630
International Loans	--	--	--	--	--
Total (M$)	150-390	40-280	190-670	--	190-670

Supply and Demand: Demand Side Management / Energy Efficiency

Planning Horizon / Financed By	Short Term	Medium Term	Sub-Total (M$)	Long Term	Total
GoL	15	10	25	--	25
Private Sector	--	--	--	--	--
International Loans	--	--	--	--	--
Total (M$)	15	10	25	--	25

Overall Investment for the Supply and Demand

Planning Horizon / Financed By	Short Term	Medium Term	Sub-Total (M$)	Long Term	Total
GoL	35	20-30	55-65	--	55-65
Private Sector	130-370	30-260	160-630	--	160-630
International Loans	--	--	--	--	--
Total (M$)	165-405	50-290	215-695	--	215-695

Legal Framework: Corporatization of EDL

Planning Horizon / Financed By	Short Term	Medium Term	Sub-Total (M$)	Long Term	Total
GoL	115	65	180	--	180
Private Sector	--	--	--	--	--
International Loans	--	--	--	--	--
Total (M$)	115	65	180	--	180

Summary of Energy Program Budget per Strategic Area:

Planning Horizon / Strategic Areas	Sub-Total (Short and Medium Terms) Budget	Long Term Budget	Total Budget (M$)
Infrastructure	4,235	1,650	5,885
Demand/Supply	455	0	455
Legal Framework	180	0	180
Total (M$)	4,870	1,650	6,520

Summary of Energy Program Budget per Financing Party

Planning Horizon / Financed By	Short Term	Medium Term	Sub-Total (M$)	Long Term	Total (M$)
GoL	810	740	1,550	--	1,550
Private Sector	455	1,865	2,320	1,200	3,520
International Loans	135	865	1,000	450	1,450
Total (M$)	1,400	3,470	4,870	1,650	6,520

Summary of Budget Commitment (Short and Medium)

Planning Horizon / Financed By	Requested (M$)	Committed (M$)	Pledged (M$)	Remaining (M$)
GoL	1,550	-	1,180	370
Private Sector	2,320	-	-	2,320
International Loans	1,000	40	120	840
Total (M$)	4,870	40	1,300	3,530

APPENDIX B

APPENDIX B: FINANCIAL IMPACTS

Existing Power Sector

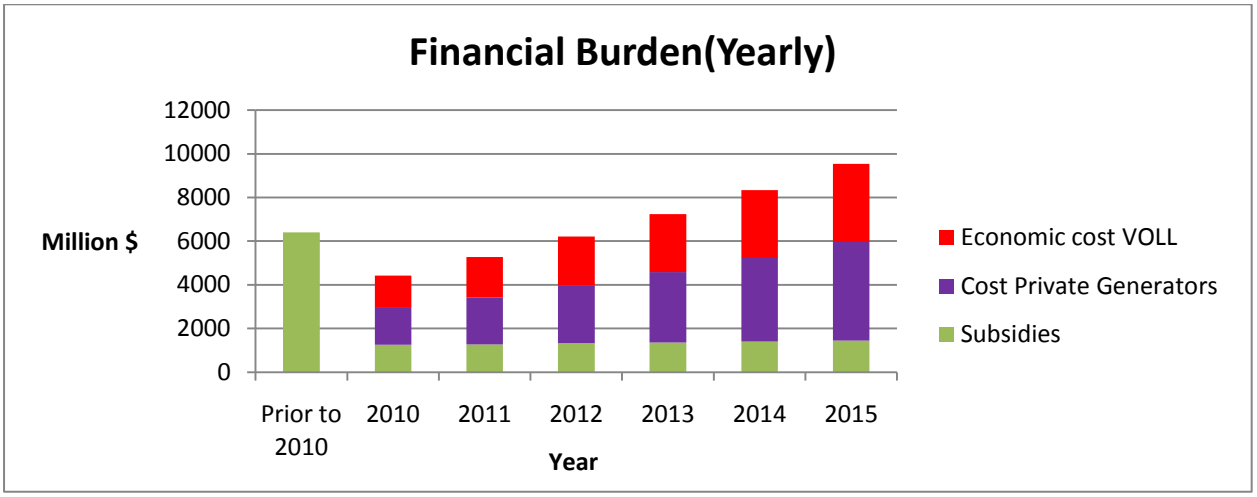


Figure 1: Financial Burden of the Existing Power Sector (Yearly)

Table 1: Total Losses and Subsidies on the Economy and the Government

	2009	2010	2011	2012	2013	2014	2015
Cost Private Generators M$	1300.693	1690.812	2150.403	2658.102	3218.428	3836.315	4517.152
Economic cost VOLL M$	1138.107	1479.158	1844.332	2235.068	2653.156	3100.509	3579.178
Total Economic Losses M$	**2438.8**	**3169.97**	**3994.735**	**4893.17**	**5871.584**	**6936.824**	**8096.33**
Subsidies total M$	1500	1253.326	1274.59	1321.128	1359.858	1399.751	1440.843
Total Losses/ subsidies	**3938.8**	**4423.296**	**5269.325**	**6214.298**	**7231.442**	**8336.575**	**9537.173**

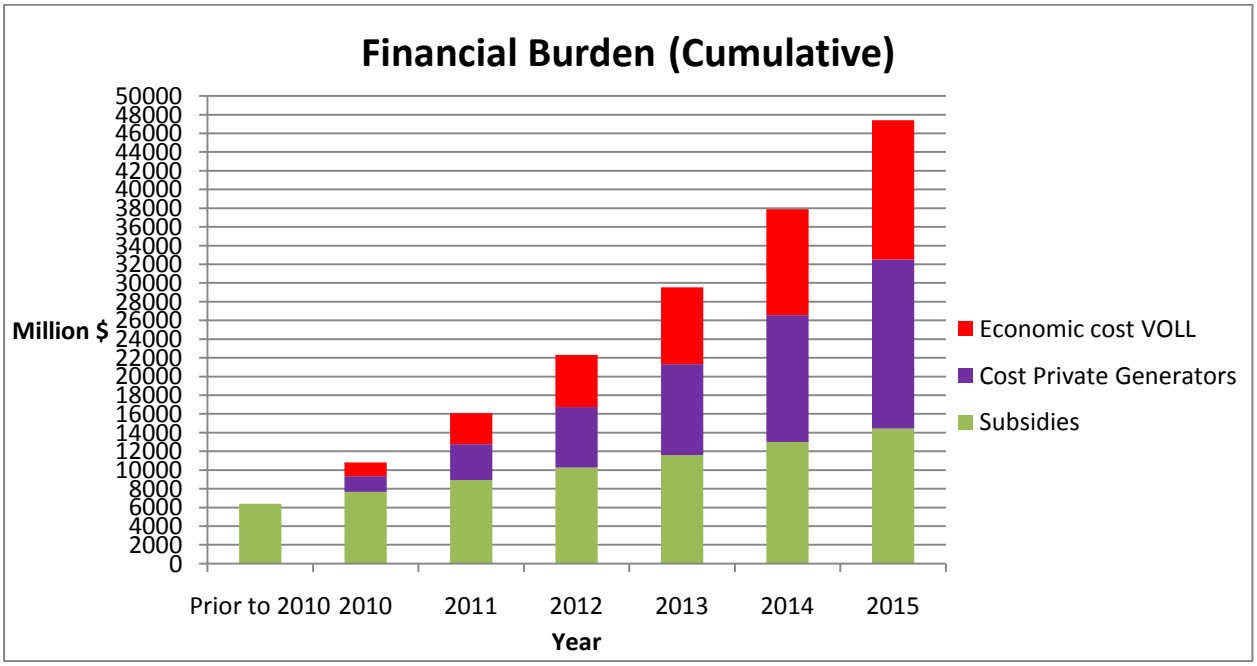


Figure 2: Financial Burden of the Existing Power Sector (Cumulative)

Implementation of Power Sector policy:

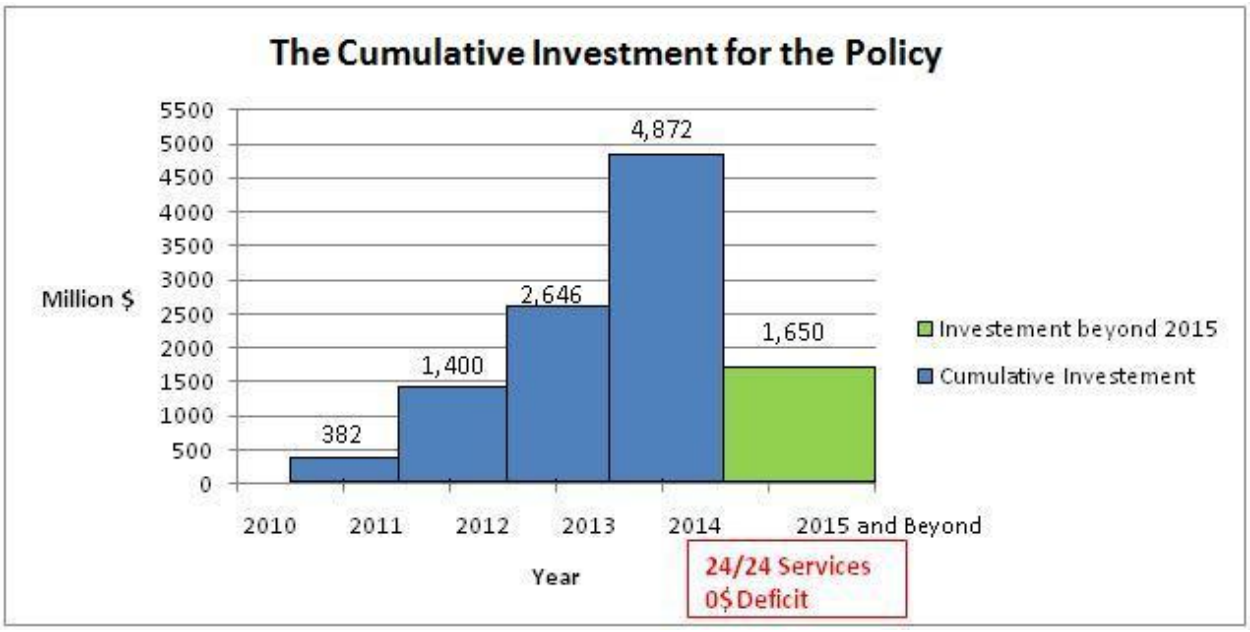


Figure 3: Cumulative Investment for the Policy

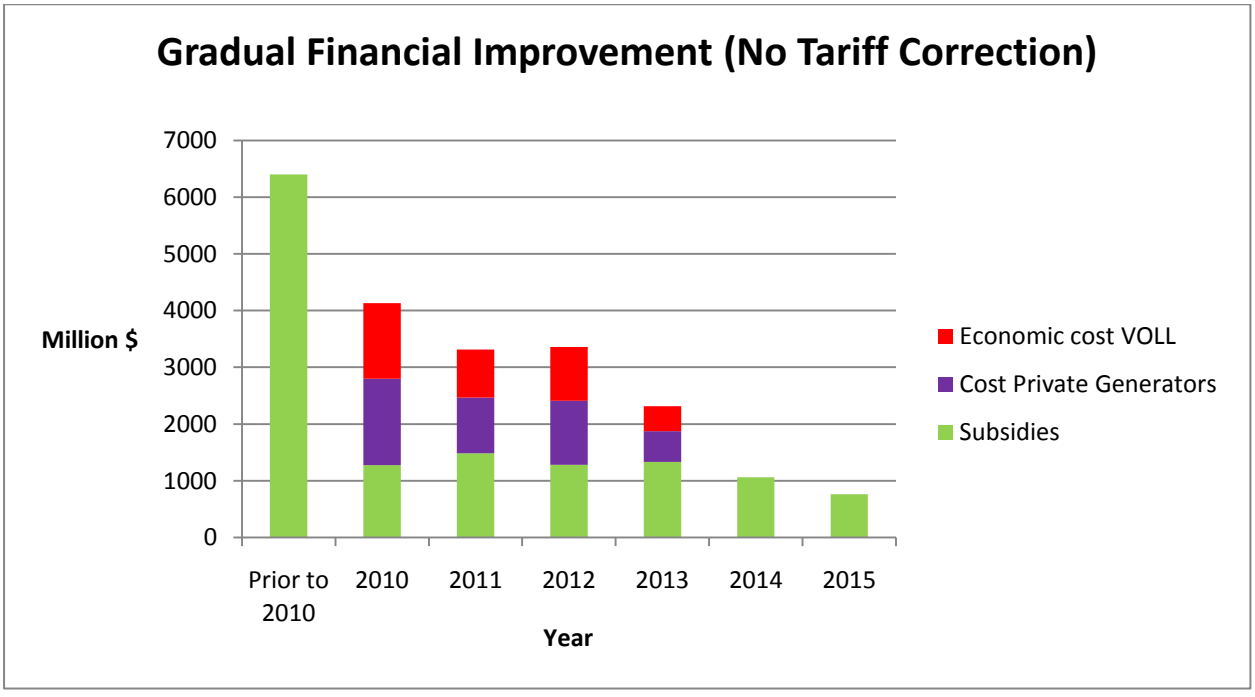


Figure 4: Power Sector Policy Implementation: Gradual Financial Improvement (No Tariff Correction)

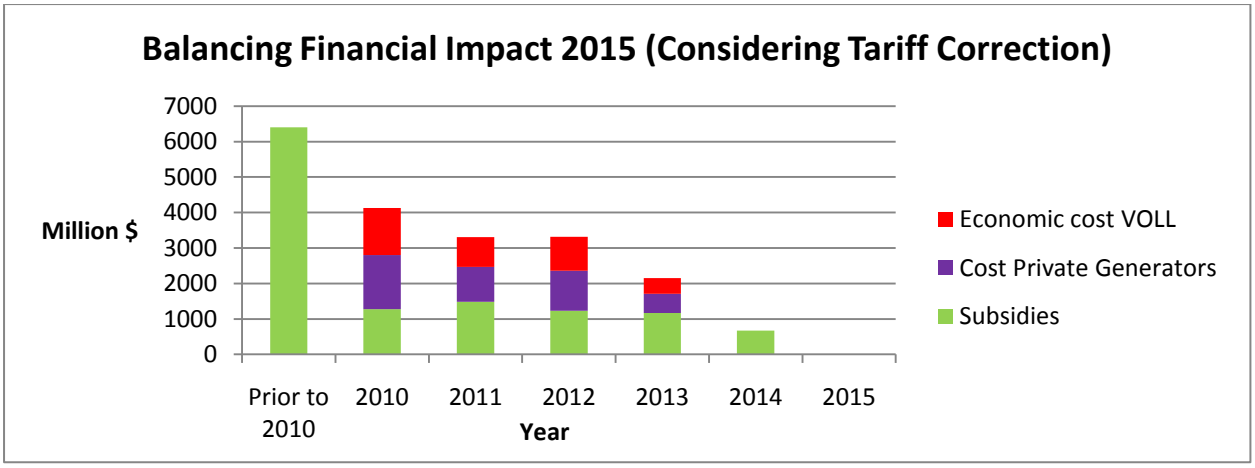


Figure 5: Power Sector Policy Implementation: Balancing Financial Impact 2015 (Considering Tariff Correction for Cost Recovery)

Table 2: 5-Year Tariff Adjustment (2010-2015) for cost recovery in 2015

	2010	2011	2012	2013	2014	2015
Subsidies total M$	1276.084	1482.742	1234.685	1171.5	672.0819	0
Total Losses/ subsidies	**4130.42**	**3310.562**	**3311.748**	**2152.478**	**672.0819**	**0**
% of Average Tariff Increase	0%	0%	5%	8%	11%	14%
Tariff in US$/ kWh	0.0958	0.0958	0.1006	0.1086	0.1206	0.1375
% increase of tariff from 2010	**43%**					

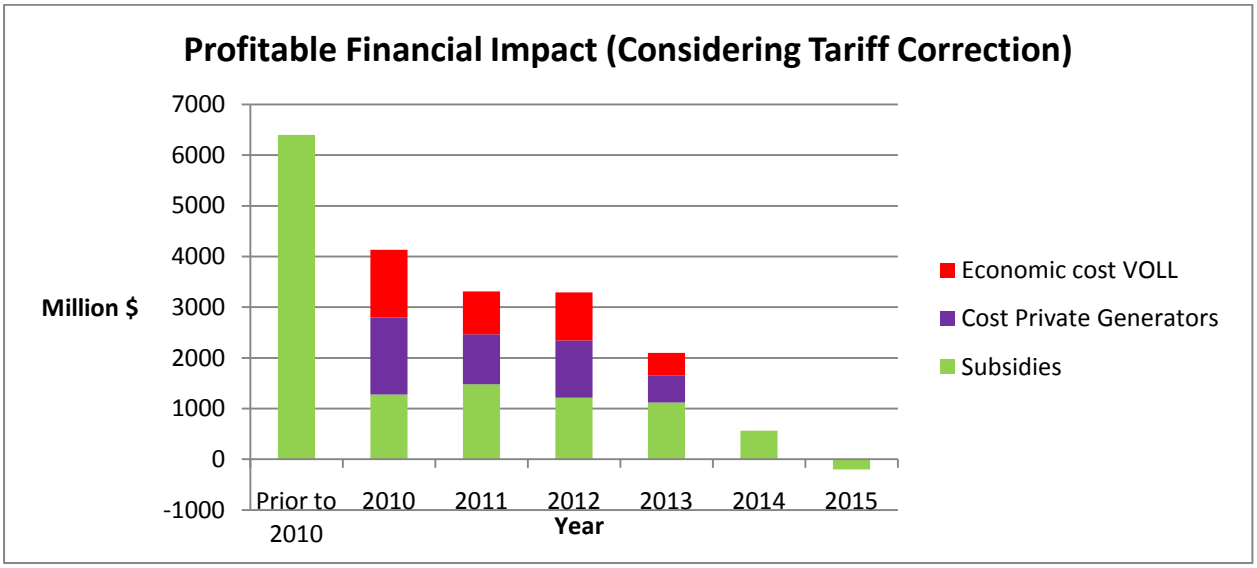


Figure 6: Power Sector Policy Implementation: Profitable Financial Impact (Considering Tariff Correction for profit making)

Table 3: 5-Year Tariff Adjustment (2010-2015) for profit making in 2015

	2010	2011	2012	2013	2014	2015
Subsidies total M$	1276.084	1482.742	1215.927	1119.452	564.7958	-201.073
Total Losses/ subsidies	**4130.42**	**3310.562**	**3292.99**	**2100.429**	**564.7958**	**-201.073**
% of Average Tariff Increase	0%	0%	7%	10%	13%	16%
Tariff in US$/ kWh	0.0958	0.0958	0.1025	0.1128	0.1274	0.1478
% increase of tariff from 2010	**54%**					

APPENDIX C

APPENDIX C: TIME TABLE / INFRASTRUCTURE

I.1.a	Power Rental / Import	380 MW	380 MW	280 MW				
I.1.b	New Power Plant (Reciprocating Engines / CCGT)			325 MW	325 MW			
I.1.c	Power Plant Rehabilitation / Upgrade		85 MW	85 MW	50 MW		25 MW	
I.1.d	New Power Plant (IPP Modality)					1500 MW		1000 MW
I.1.e	Hydraulic Power					20 MW	20 MW	80 MW
I.1.f	Wind Power			50 MW	30 MW			
I.1.g	Waste to Energy				10 MW	10 MW		
TOTAL	MW Addition	0	85	460	415	1530	45	1080
	Cumulative MW	1600	1685	2145	2560	4090	4135	5215
I.2.a	220 kV loop at Mansourieh		1% Network Losses Improvement (NLI)					
I.2.d	Regional Subs. / Transmission System				0.5%	0.5%		
I.3.a	Improve the distribution		0.5%	0.5%				
I.3.b	Distribution Network Facilities / AMR / Billing				3.5%	5.5%	6%	8%
	Upgrade / Rehabilitate Distr. Syst.					0.5%	0.5%	
TOTAL	Network Losses Improvement %	1.5	0.5	4	6.5	6.5	8	-
	Cumulative % of NLI	1.5	2	6	12.5	19	27	-
Year		2010	2011	2012	2013	2014	2015	>2015

TIME TABLE / SUPPLY AND DEMAND/ LEGAL FRAMEWORK

II.4- Fuel Sourcing	Complete a prefeasibility study and construct LNG marine terminal in Salaata or Zahrani							
	Build a gas pipeline along the coast (onshore, Subsea) from Beddawi to Tyre and will be used by the industrial, residential, NGV							
II.5-RE	Complete a wind atlas for Lebanon and launch IPP wind farms							
	Complete a pre-feasibility study on PV farms							
II.6- DSM / EE	Adopt the Energy Conservation law and institutionalize LCEC and launch a national plan for energy conservation							
	Encourage use of CFL / SWH / Public Lighting			1%	2%	1%	1%	
TOTAL	**Demand Decrease %**		**1**	**2**	**1**	**1**		
	Cumulative Demand Decrease %		**1**	**3**	**4**	**5**		
II.7- Tariffs	Gradually increase the tariff with improvements of electric service to 24/24 eliminating private generators and abolishing financial deficit.							
	Implement Time Of Use (TOU) tariffs (e.g., night-reduced)							
III.8 Norms and Standards	Resolve problems with current concessions through a fair compromise for the owners and the Government.							
	Develop rules and laws that promote the largest penetration of "Green Buildings (GB)" and "Energy Efficiency (EE)"							
III.9 Corporatization of EdL	Increase the human resource capacity of EdL by direct and gradual hiring and by relying on the private sector							
	The procedures for the corporatization will be prepared in a gradual manner to avoid unwanted and additional burden on EdL.							
III.10 Legal Status	Begin with the current legal status of EdL which is governed by the law implemented by decree # 16878/1964 and 4517/1972							
	Adopt a Law for new PP and encourage all forms of PPP to facilitate the transition between current and future legal status.							
Year		**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**>2015**

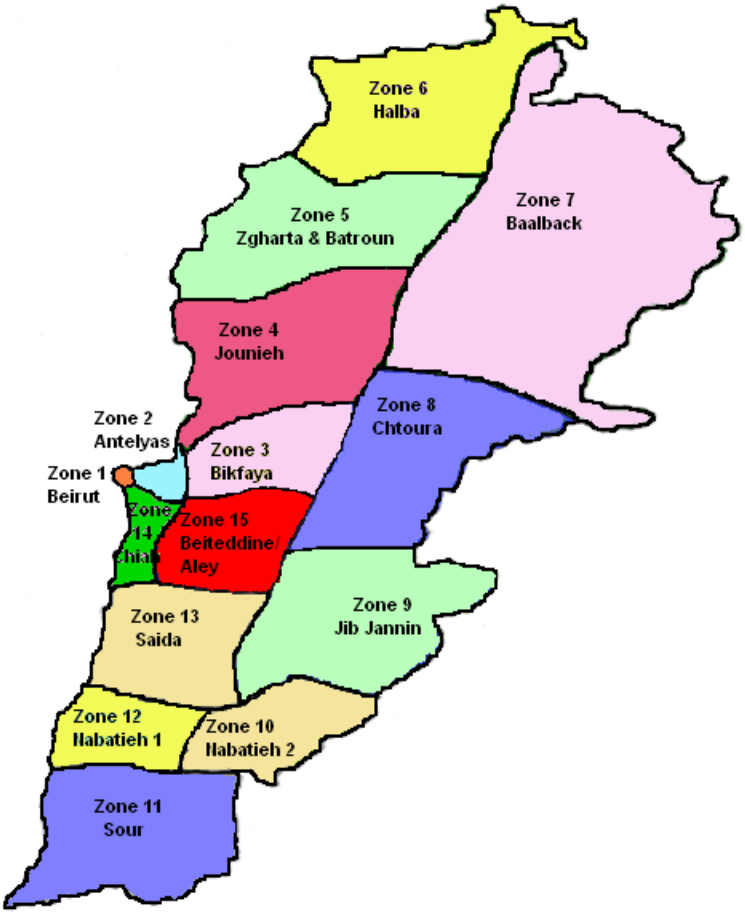
APPENDIX D

APPENDIX D: ZONE SCENARIOS

Scenario 1

Scenario for Regional Distribution areas based on several zones distributed among 10 lots:

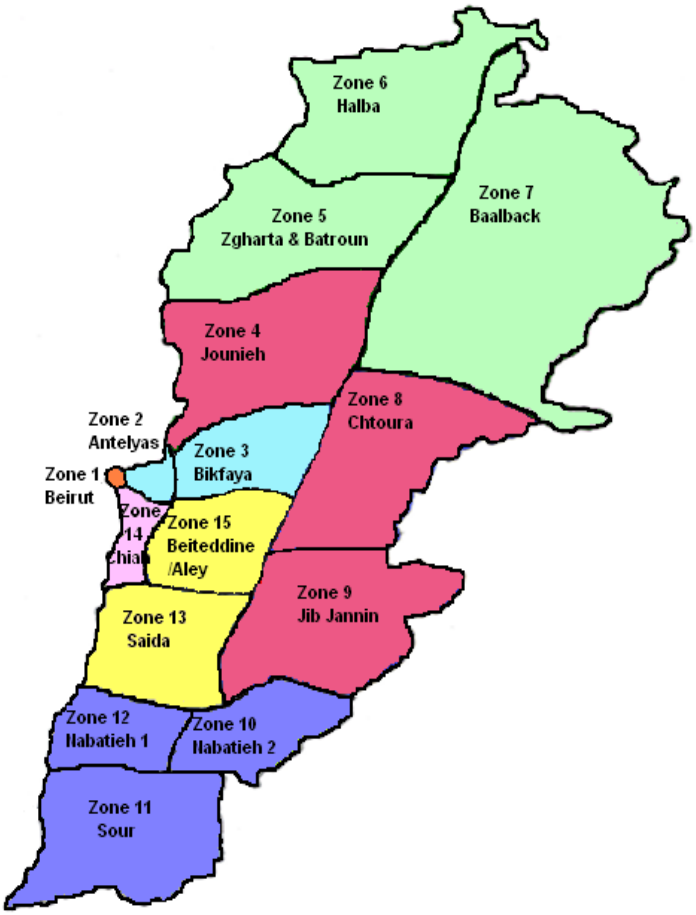
LOT Nb	Zone Combination	% KWH billed	% KVA billed	% Nbr of customers	% subscription power (KVA)	% of total MV/LV Transformer
1	1	25.88%	27.48%	13.35%	20.65%	11.03%
2	2	15.59%	19.05%	12.18%	15.03%	8.19%
3	3 & 7	6.45%	6.62%	8.42%	8.56%	12.48%
4	4	8.78%	8.31%	9.40%	11.86%	9.90%
5	5 & 9	4.32%	3.23%	6.18%	4.52%	8.37%
6	6 & 12	4.48%	4.48%	8.39%	5.29%	11.50%
7	8 & 11	4.31%	4.53%	8.44%	6.11%	13.20%
8	10 & 13	6.49%	4.21%	6.98%	5.54%	8.64%
9	14	18.20%	17.70%	17.72%	16.10%	8.37%
10	15	5.51%	4.40%	8.94%	6.33%	8.31%



Scenario 2

Scenario for Regional Distribution areas based on several zones distributed among 7 lots taking into consideration the geography

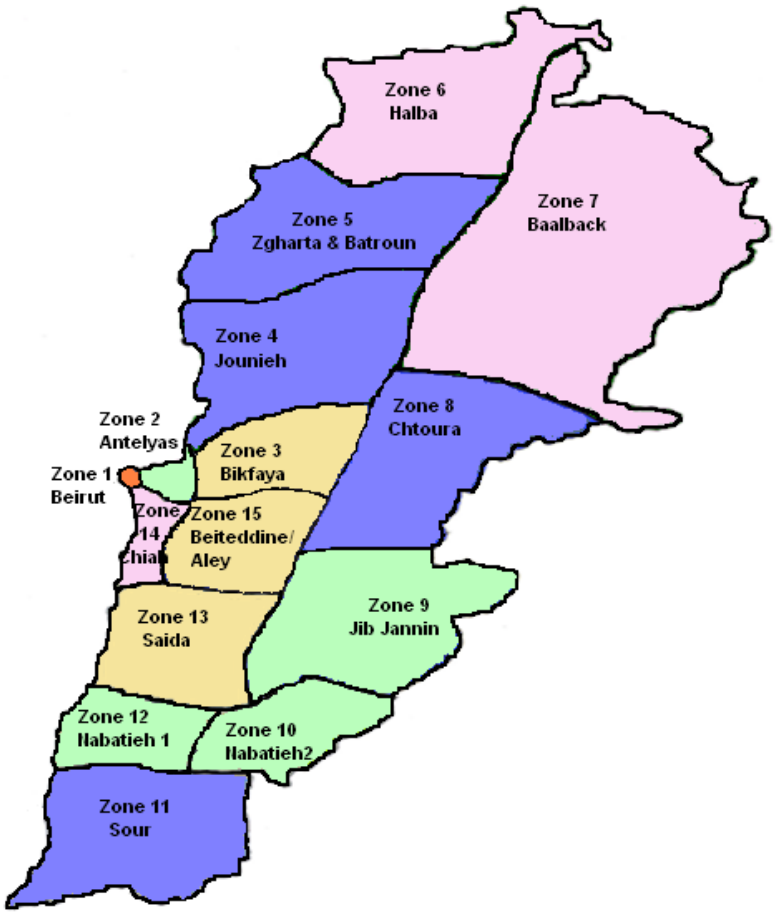
LOT Nb	Zone Combination	% KWH billed	% KVA billed	% Nbr of customers	% subscription power (KVA)	% of total MV/LV Transformer
1	1	25.88%	27.48%	13.35%	20.65%	11.03%
2	2,3	21.36%	24.27%	17.31%	21.63%	14.75%
3	4,8,9	12.36%	11.08%	14.00%	15.31%	16.75%
4	5,6,7	5.29%	5.86%	11.16%	7.30%	16.00%
5	13,15	11.05%	7.60%	14.28%	10.90%	14.67%
6	10,11,12	5.86%	6.01%	12.19%	8.11%	18.44%
7	14	18.20%	17.70%	17.72%	16.10%	8.37%



Scenario 3

Scenario for Regional Distribution areas based on several zones distributed among 5 lots:

LOT Nb	Zone Combination	% KWH billed	% KVA billed	% Nbr of customers	% subscription power (KVA)	% of total MV/LV Transformer
1	1	25.88%	27.48%	13.35%	20.65%	11.03%
2	2,9,10,12	20.72%	23.30%	20.52%	20.48%	20.27%
3	3,13,15	16.82%	12.82%	19.41%	17.50%	21.22%
4	4,5,8,11	15.82%	14.92%	21.98%	20.99%	28.63%
5	6,7,14	20.76%	21.48%	24.75%	20.39%	18.85%



APPENDIX E

APPENDIX E: KEY BENEFITS

Item	Description		Investment (M$)	Annual Saving /Revenue (M$)	Comments	Financing Party			Period			Potential involved parties
						GOL	Int'l Loan	Priv Sect.	Short	Medium	Long	
I.1 Infrastructure - Generation												
I.1.a	Power Rental	Barges(280 MW)	5.2 USc/kWh (Energy Conv. Charge)	25	Savings Resulting from Replacement of more expensive generation	X			0-3 yrs			EdL, MoEW, CoM
		Import from Turkey(100 MW)	12.6 USc/kWh	11								EdL, MoEW, CoM
I.1.b	Increase rapidly installed capacity (CCGT / Reciprocating Engines) from 600-700 MW		750-875	96-110	Additional Revenue from new and more efficient generation	X			1-3 yrs			EdL, MoEW, CoM, PoL
I.1.c	Rehabilitate Zouk, Jieh (+100MW)		180	32	Savings Resulting from Capacity and efficiency improvements		X		1-5 yrs			EdL, MoEW, CDR, CoM
	Upgrade Deir Ammar, Zahrani (+75MW)		108	48	Savings from Additional capacity and derate deduction	X			1-3 yrs			EdL, MoEW
	Add Combined Cycle to Tyr, Baalbek (+70MW)		130	60	Benefits from installing HRSG	X			1-2 yrs			EdL, MoEW, CoM
I.1.d	Install new Power Plants using IPP modality on Natural Gas		1500	390	Revenue from additional energy		X	X	0-4 yrs			EdL, MoEW, HCP, CoM, PoL
			1000	260	Revenue from additional energy						X(1000 M$)	

Item	Description	Investment (M$)	Annual Saving /Revenue (M$)	Comments	Financing Party			Period			Potential involved parties
					GOL	Int'l Loan	Priv Sect.	Short	Medium	Long	
I.1.e	Increase share of hydraulic power production	700	16-47	Savings from avoided cost of displaced thermal energy(No Capex): Hydro: 40-120 MW Wind: 60-100 MW Waste to Energy: 15-25 MW		X	X		2-5 yrs (40 MW)	X (80 MW)	EdL, MoEW, CoM, PoL
I.1.f	Introduce wind power via the private sector	115-195	20-33				X	1-3 yrs			EdL, MoEW, CoM, HCP, PoL
I.1.g	Encourage Priv. Sect. to adopt 'Waste to Energy'	30-50	12-20				X		3-4 yrs		EdL, MoEW, CoM, HCP, PoL
I.2 Infrastructure – Transmission											
I.2.a	Complete the 220 kV loop at Mansourieh in 2010	1	11	Loss savings starting 2010	X			0-1 yr			EdL, MoEW, CDR
I.2.b	Complete infrastructure at the 400 kV Ksara Subs.	20-30	-	Benefit will depend on volume and price of energy available		X		1-2 yrs			EdL, MoEW, CoM
I.2.c	Complete the LENCC in 2011	20	15	Loss savings, improved operability, increased redundancy, higher reliability		X		1-2 yrs			EdL, MoEW, CDR
I.2.d	Build regional substations / Transmission System	250			X			1-3 yrs			EdL, MoEW, CDR, CoM
	Expand transmission system	500				X			3-5 yrs	x (100 M$)	
I.3 Infrastructure – Distribution											
I.3.a	Improve the distribution services in 2010	-	11	Reduction in technical and non-technical losses							EdL, MoEW
I.3.b	Bidding process	1	Annual savings from 2012 to 2015 are: 30, 94, 204, 341	Savings accrue and accumulate from the systematic reduction of technical and non-technical losses	X			0-1 yr			EdL, MoEW
	Distribut. Network Facilities, AMR, Billing System	300					X		2-4 yrs		EdL, MoEW, HCP, CoM
	Upgrade / Rehabilitate Distribution System	100					X		2-4 yrs	X(50 M$)	EdL, MoEW
	Program Management	10			X				2-4 yrs		EdL, MoEW

Item	Description	Investment (M$)	Annual Saving /Revenue (M$)	Comments	Financing Party			Period			Potential involved parties
					GOL	Int'l Loan	Priv Sect.	Short	Medium	Long	
I.3.c	Develop simultaneously a monitoring center	30	-	The benefits are part of 1.3.b.			X		2-4 yrs		EdL, MoEW, CoM
I.3.d	Introduce new services for consumers, payment facilities and adopt new tariff structures / mech.	-	-								EdL, MoEW, CoM, PoL
I.3.e	Envisage possibility of developing a DMC	25	-			X			2-4 yrs		EdL, MoEW, CoM
II.4 Supply and Demand – Fuel Sourcing											
II.4.a	Study and develop a plan for infrastructure to supply and distribute natural gas based on land pipeline in Beddawi and LNG marine station(s) and interconnect them with power plants	-	200 for Zahrani CCGT 32 for 600-700 MW on HFO	Benefits resulting from switching HFO and diesel Plants to natural gas							MoEW
II.4.b	Convert / build most power plants on natural gas	-									EdL, MoEW
II.4.c	Complete a prefeasibility study - construction of LNG marine terminal	70-550			X		X	1-3 yrs			EdL, MoEW, GoL, PoL
II.4.d	Build a gas pipeline along the coast	120			X		X	1-3 yrs			MoEW, CoM
II.5 Supply and Demand – Renewable Energy											
II.5.a	Complete wind atlas / launch IPP wind farms	-	-								MoEW, CoM, PoL
II.5.b	Complete a pre-feasibility study on PV farms	-	-								MoEW
II.5.c	Encourage to produce electricity from waste	-	-								MoEW, CoM, PoL
II.5.d	Encourage to produce hydro power	-	-								MoEW, CoM

Item	Description	Investment (M$)	Annual Saving /Revenue (M$)	Comments	Financing Party			Period			Potential involved parties
					GOL	Int'l Loan	Priv Sect.	Short	Medium	Long	
II.6 Supply and Demand – Demand Side Management / Energy Efficiency											
II.6.a	Adopt EC law, institutionalize the Lebanese Center for Energy Conservation and launch a national plan for energy conservation	25	-	The remaining 16 M$ will be used to build LCEC home and help in institutionalization process	X			0-4 yrs			MoEW, CoM, PoL
II.6.b	Widely spread use of Compact Fluorescent Lamp		76.5	3 million CFL							EdL, MoEW, CoM
II.6.c	Increase SWH penetration / devise financing schemes		20.5	22,500 SWH financed 2/3 by the banking sector and 1/3 by MoEW							EdL, MoEW, CoM
II.6.d	Encourage use of energy saving public lighting		-	Pilot projects can show benefits							MoEW, EdL, CoM
II.6.e	Set-up NEEREA / develop ESCO business	-	-								MoEW, CoM, PoL
II.7 Supply and Demand – Tariffs											
II.7.a	Gradually increase the tariff in conjunction with improvements in the electric service provision	-	100	Additional revenues from increasing tariff by 1 USC/kWh using existing consumption							EdL, MoEW, CoM
II.7.b	Adopt special tariffs and fees for low income consumers and productive sectors	-	-								EdL, MoEW, CoM
II.7.c	Implement Time Of Use (TOU) tariffs in conjunction with Automatic Meter Reading (AMR) schemes implementation	-	-								EdL, MoEW, CoM
III.8 Legal Framework– Norms and Standards											
III.8.a	Resolve the problems with current concessions	-	-								MoEW, EdL, CoM, PoL

Item	Description	Investment (M$)	Annual Saving /Revenue (M$)	Comments	Financing Party			Period			Potential involved parties
					GOL	Int'l Loan	Priv Sect.	Short	Medium	Long	
III.8.b	Develop rules/law to promote GB/EE penetration	-	-								MoEW, EdL, CoM, PoL
III.8.c	Comply and respect international norms / standards in EE, environmental and public safety	-	-								MoEW, EdL
III.9 Legal Framework– Corporatization of EdL											
III.9.a	Increase human resource capacity of EdL	15	-	Needed to implement projects outlined in this policy paper	X			0-2 yrs			EdL, MoEW, CoM
III.9.b	Update legal due diligence needed to corporatize EdL and prepare legal amendments.	-	-	Needed to prepare for full fledged corporatization of EdL							EdL, MoEW, HCP, CoM, PoL
	Prepare EdL corporatization roadmap and enact implementation process	-	-								MoEW, EdL, HCP
III.9.c	Implementation of EDL Corporatization road map	-	-								MoEW, EdL, HCP
III.9.d	Procedures for EDL corporatization	165	-	According to HCP, this budget includes comp. for EDL employees	X			1-3 yrs			MoEW, EdL, HCP
III.10 Legal Framework– Legal Status											
III.10.a	Initiate the process of revising Law 462 to draw the strategic consensual options to be taken in the sector	-	-	Needed to prepare for full fledged corporatization of EdL							MoEW, EdL, HCP, CoM, PoL
	Introduce necessary amendments on Law 462	-	-								
III.10.b	Begin with current EDL legal status governed by the law implemented by decrees #16878 and 4517	-	-								MoEW, EdL
III.10.c	Encourage all forms of PPP and endorse adoption of the necessary laws / decrees	-	-								MoEW, HCP, CoM, PoL

EdL: Electricite Du Liban; **MoEW:** Ministry of Energy and Water; **CoM:** Council of Ministers; **GoL:** Government of Lebanon; **HCP:** Higher Council for Privatization; **CDR:** Council for Development and Reconstruction; **PoL:** Parliament of Lebanon