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SHORTAGE OF ELECTRICITY IN LEBANON AND THE WAYS TO HANDLE IT

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1.0 Introduction

This part will begin to investigate to a certain extent about Lebanon in general, its economy, the legislature, and the absence of departments that include the vital part. The reasons why its vitality is significantly reduced in the administrations period are explained. The motivation behind this examination is to understand and distinguish the case and approach to enhance flows and flow, consider the investigation, explore the objectives of the importance of this examination. The reasons are so far a predictable issue for the general population. It ended up in Lebanon by identifying electrical energy through a special part. Private-generation companies took a generation. They began working in the crude courses in 1925 in Beirut and then in Tripoli. Before the outbreak of the joint war in 1975, Lebanon had every minute of power every day. If so, the 15-year conflict has crushed much of the nation's capacity. After decades, this part has not been fully renewed and has not been created with the evolving interest of the Authority. This involves a power outage of three hours a day in Beirut and in some cases 12 hours or more outside the capital. After the war ended and the beginning of redrawing and developing in 1993, the Lebanese government gave awesome importance to the division of power and the need to renew it, creating it to take care of the growing demand for energy. The cost of these pledges was about \$ 1.8 billion that year. However, the original citizen was not ready for the full force of the

different reason I had expressed in the previous section and I would refer to the comfort at the top and come once.

1.1 Background of Study

Lebanon Parliamentary, multi-religious and. It is the focal point of clashes in the Middle East, regardless of its small size, as a result of its parties with Syria and Israel, which is very unpredictable. Population of 6 million with a land area of about 10,500 square kilometres spoken by dialects is Arabic and French Beirut is the capital and the largest city with the masses more than two million people. The Lebanese government was unable to absorb many views in the midst of war and after the war. Since the war, the absence of transportation has been a real leader in light of some conflicting forces: Israel and Syria have used Lebanon as the cradle and battlefield. The stateless Palestinians are military dynamic in Lebanon. Hezbollah fighters, who claim to produce an Islamic state, are operating in the south. Syria maintains a decisive influence on Lebanese projects through the proximity of a large number of officers and security operators in the country.

The Lebanese economy is a ranked benefit; basic development departments include account management and tourism. Principle projects are wine, preparation of spirits and other substances.

GDP, PPP (current international)	\$89,262,508,158 (2017)
GDP Growth Rate (annual %)	2.021% (2017)
GDP Per Capita, PPP (current international)	\$14,676 (2017)
<u>Labor Force</u> , Total	2,207,590 (2017)
Employment in Agriculture (% of total employment)	3.244% (2017)
Employment in Industry (% of total employment)	20.266% (2017)
Employment in Services (% of total employment)	76.491% (2017)
Unemployment Rate	6.641% (2017)

1.2 Electricity of Lebanon

The power of Lebanon (EDL-Electricité du Liban) is an open establishment with a modern profession and operates under the supervision of the Ministry of Energy and Water (MEW). It was established by Decree No. 16878 on 10 July 1964 and has fulfilled its duty of age, transportation and vital electrical transport in Lebanon. EDL consumes the energy sector, which currently owns more than 90% of the Lebanese energy area (North Lebanon). Various members in this sector include hydropower plants. Concessions to power plants required by Ibrahim and Al-Barad (privately owned companies), which the stadium was built by EDL Electric. The concessions are a means of transportation in Zahle, Jubail, Aley and Bhamdoun, where EDL is awarded 50-75 lbs / hr when real account contrasts with 255 LP / kWh. Prior to 1975, there are 10 noteworthy power

plants associated with the regulation of typical propagation, provided that the majority of the energy is in the country. EDL has 1700 GWh of electricity, while ESS T power.

1.3 Problem Statement

The use of energy in Lebanon is rising, as services and legislative power are preparing to cope with excess weights while increasing costs. Despite the fact that there are about 11 to 13 controllers built between the late 1980s and 2010, emergency emergencies and lack of sustenance continue 24 hours a day. Some areas in Beirut, where reinforcement is restricted to 10 hours per day, and a few guardians have shown that interest in special generators is important to compensate for shortages. Which led the private sector to control half of the power of the nation by owning generators and choosing their serious behaviour and timing, and so on.

Lebanon needs 3,000 megawatts of power to take care of demand, while the construction and purchase of energy does not exceed 1500 MW. It has been similar in the last few years, despite the way in which four of the older plants have been aiming to use gas, but are fuelled by the cost of gas oil (diesel), which raises the cost of life. This at the expense of gas is not sufficiently accessible despite the fact that the legislature was preparing that it would determine the diesel option. Do not support accidental protective support that causes enormous damage to generators that increase the lack of working hours. Access factors for plants are far from the usual global characteristics, which is why they cannot access assistance from any country, regardless of neighbouring countries.

Lack of legitimate and clear requests for fuel shipments on time. Also, the oil institutions (Zahrani and Tripoli) were forced to furnish EDL with the costs of the capital markets and move the fuel in the tanks when they were supposed to be exchanged through an expert road without incurring additional costs, leading to further calamities.

1.4 The Research Objectives

The research objective include the following below:

- RO1: To investigate the elements of the shortage in energy and reveal a specific details about the 3 types of energy producers
- RO2: To compare between the electricity back in the 90's and now
- RO3: To provide recommendation on how to improve the electricity quality
- RO4: To provide some solution that will lessen the shortage in a reasonable prices

1.5 The Research Questions

Based on the research objectives, the following research questions are developed:-

- RQ1: What are the main reasons behind the shortage of electricity?
- RQ2: What are factors that holding the government from solving this issue
- RQ3: What's the cost been paid throw the years and what is useful
- RQ4: What are the maximum capacity of each of the thermal power plants, the hydropower plants and the generators?

1.6 Research Methodology

This examination was composed using quantitative techniques. The investigation utilized overview poll roused from the different associate looked into diaries with respect to investigation of authoritative upper hand in task administration. The quantitative strategies accentuate target estimations and the factual, scientific, or numerical examination of information gathered through surveys, polls, and reviews, or by controlling prior measurable information utilizing computational methods, likewise quantitative research centers around get-together numerical information and summing it up crosswise over gatherings of individuals or to clarify a specific wonder. The example included 40 members haphazardly chose extend the nation, while the survey includes 180 members. The study questions will be circulated to them

2.0 Literature Review

This section consists of a review of literary works identified in the emergency in Lebanon. As expressed before the part of the reasons that the holding of vital plants to take advantage of their full capacity to (achieve public interest) are abuse and absence of manganese, there are some more in the various investigations also function. It is important to identify the problems from each point of view and investigate the ingredients to think about the best arrangement. Individuals do not affect day-to-day life in many viewpoints, for example, the cost of business offsets of elements, instructions, etc. Most of the different scientists focused on energy emergencies from the point of view, the first is the point of incitement that tries to investigate everything from the designer's point of view, and the second is from the management perspective. This section will review the writing of the previous investigations regarding the difficulties facing the electricity offices in Lebanon in recent years and their movements to address these difficulties. Reasons and alternative options, for example, own generators and expenses left behind there. An inevitable reason in previous years, no examination was carried out at any given time. It was the flood shelters that emerged from the burdensome states, for example Iraq and Syria. The literary works examined in this examination were divided into two broad areas, the shortage depends logically on certain information, as well as power control stations and their capacity, and continues to transfer their issues.

2.1 Background of Lebanon

Lebanon, officially known as the Lebanese Republic, is a nation in West Asia. Lebanon is a country east of the Mediterranean, surrounded by Syria to the north, east and Israel to the south, while Cyprus lies to the west of the Mediterranean Sea. The Lebanese region at the confluence of the Mediterranean basin and the Arab interior regions encouraged its rich history and diverse social and religious diversity. It has an area of 10,452 km² (4,036 square miles), the smallest sovereign state on the territory of Asia.

The most important evidence of human progress in Lebanon is more than seven thousand years old, originated before written history. Lebanon was home to the Canaanites / Phoenicians and their kingdoms, a maritime culture that flourished for more than a thousand years (around 1550 - 539 BC). In 64 BC, the area was under the control of the Roman Empire, eventually ending up in one of the axes of the Christian empire. In Mount Lebanon, a religious tradition known as the Maronite Church was built. When Arab Arabs defeated the place, the Maronites retained their religion and personality. However, another religious group, the Druze, established itself in Mount Lebanon, creating a long-standing religious gap. In the midst of the Crusades, the Maronite Church was restored with the Roman Catholic Church, and is expected to be a fellowship of Rome. His ties with the Latins influenced the region in the advanced period.

2.2 The challenges and the causes

Since 2006, the state of electricity has not improved and deteriorated, and nutrition rates in the Lebanese regions have fallen to more than 12 to 14 hours a day in some areas. Generators and private subscription rates have generated generators of 200,000 pounds sometimes to five amperes per month, there are about 750 megawatts produced from private generators in Lebanon. No step has been taken since 1996, seventeen years ago, to improve the reality of electricity. A new station has not been established in 30 years, more than a dozen ministers have been punished by the Ministry of Electricity. The causes of the problem that lead to this great lack of codification and aggravation are complex, and the most important is:

- The significant shortage of stations, transmission and distribution lines,
- Continuous breakdowns in production plants,
- Attacks on networks, theft of current and decline in collection,
- To the network as a result of the civil war and military and security events,

The electricity sector suffers from additional pressures, particularly the behaviour of a segment of consumers, namely, evasion of bills, unorganized collection by the institution, the continuing population density, and the demographic and geographic spread of the population prior to the extension. And the rehabilitation of the electricity network in the Lebanese region

2.2.1 Electricity production plants

Lebanon has 13 power plants with a capacity of 3,016 megawatts distributed:

2,764 MW thermal coefficient.

252.6 megawatts water factor.

Its actual capacity is not more than 2,000-2,200 megawatts

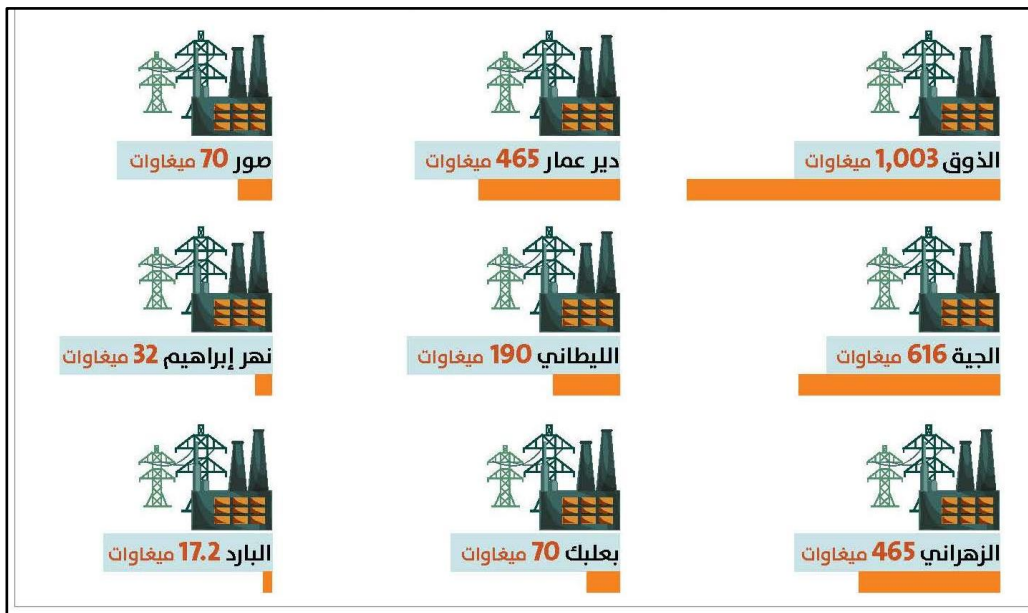


Figure 1: Electricity Power Plan

2.2.2 Transmission

EDL transmission network consists of three types of high voltage power lines: 66, 150, and 220 kV as well as 58 major power substations converting power from high voltage to medium voltage. In addition, the network, currently, includes more than 1615 km lines (1336 km of overhead lines and 279 km of underground cables) of various voltages used for transmission and distribution.

- i. Here I will state some of the problem facing the transmission:
- ii. High technical losses
- iii. There is a huge number of transformers (~11%) that are reaching to the end of their expected life
- iv. No computerized companywide management information systems exist to assist staff in the control of costs, analysis, management, maintenance programs or work issue and reporting implementation of the 220 kV tension line network has not completed yet.

2.3 The Lebanese Electricity System

2.3.1 Electricity Generation

The era of official power in Lebanon is three types: warm pressure paid, global imports from both Syria and Egypt. In 2009, Syria and Egypt imported 589 MWh and 527 MWh individually, more than 7.5%. Tragically, because of these internal problems, these imports have not been stable and have experienced some fluctuation over the past four years. As far as this is the case, the same age capacities are captured by the wasted aspects of power plants due to their intermittent conditions (Verdon, Abraham, Younis, Luhila-Galus, 2016). The high pressure level associated with the development of the estimated power demand indicates that Lebanon needs to strengthen the flow strength framework and increase the limit that has been introduced.

2.3.2 Electricity Consumption

Due to EDL failure to provide continuous electricity service, back-generation self-generated. The World Bank estimates that the estimated 900 megawatts capacity will absorb 33-38% of Lebanon's electricity

consumption. The Lebanese government has always turned a blind eye to private generator operators, although it is causing the oil import bill to rise (al-Fadil, Hammond, Harragli, Jones, Kabakian and Wasset) and to sell electricity to the public. At a much higher cost than EDL definitions (Hamdan, Roma and Zaid).

2.3.3 Electricity Pricing in Lebanon

With more than 1.5 million customers, EDL has adopted a strong business approach since 1994. The current standard for home use is 9.58 US cents per kilowatt, although small businesses pay an average of 7.63 pence per kilowatt-hour. In 2009, the periodic maintenance of power at 17.14 pence per kWh, of which 62% (10.77 pence per kilowatt hour) went to fuel costs, while age, transport and distribution accounted for the rest of the expenditure. Along with the EDL bill, families and shops pay a special bill for private generators at 45 US cents per kWh (Hamdan, Ghajar and Hadid). The enormous distinction between the expenses of private generators and the VAT tax imposes an additional requirement on individual use and, therefore, on financial development.

2.3.4 Power Ships in Lebanon

As we have shown previously, leased power plants have risen as one of the ideal solutions for Syrian and Egyptian imports. In June 2013, Lebanon introduced the first control of the control system of 187.5 megawatts (KPS9) near the Zouk plant to provide crisis capacity in the Mount Lebanon region. Then, in September 2013, a second power transmission (KPS7) was delivered with an expected power limit of 83.5 MW in Jieh. Both boats, which use basic fuel oil, benefit from 20% of Lebanon's energy needs or approximately two additional hours of energy. It seems that the decision to hand over another force is good and good because of its adaptability and short time of concentration. Moreover, its ability to adapt to the EDL as much as fuel and its ability to move to any place where power is needed is that electric ships occur to a mandatory decision at present. The project had a normal cost of 4.8 pence / kWh, except for the cost of fuel. Similarly, the latest accessible figures show that the total cost of power generation for the two oil vessels found the average value at 19.33 psi / kWh. In this investigation, the power delivered by the two energy vessels was used with the ultimate goal to show the lifetime of the total power, its demand, and the shortfall in the period 2009-2014. Figure 1 depicts the aging, demand, and lack of electrical vitality somewhere in the 2009 range and 2012. As it appears, energy shortages, 2016, 9, 5 583 of 12 for electric vitality decreased to 7,295 GWh in 2013 and to 5,524 GWh in 2014 after the correlation of 2w01o6, fl 9o, 5a8t3in g plants to National poetry. 5 of 12.

2.4 Lebanon to experience increased power cuts

BEIRUT, Sept. 19 (Xinhua) - Lebanese citizens rely on extended energy strips of no more than 6 to 7 hours of energy per day in the next three months, and nearby media reported Wednesday. The Electricity Company of Lebanon (EDL) said that the electricity segments had declined due to the absence of assets. "EDL did not get adequate assets from the Treasury Department in the 2018 spending plan for the era of legitimate authority," EDL quoted an EDL source as saying. EDL has stated that the assets of Turkish energy companies in the country are based only until the end of this month. If the 2019 spending plan does not give sufficient assets to the institution one year from now, individuals can only estimate 6 to 7 hours of daily energy.

2.5 Lebanon's electricity problem: More obstacles on the road

Agreed (Arabian Week, 2018) as the summer approaches, more weight is normal on the system, with increased demand and lower supply. The Lebanon capacity segment is a prominent feature among the most visible examples of back-to-back disappointments to find and implement arrangements. The Lebanese government has cost \$ 2 billion, but the nation needs every minute of every day to monitor the offer. As summer approaches, weight is more natural on the system, with increased demand and lower supply.

2.6 Analysis: Electricity in Lebanon, understanding the real problem

The energy sector in Lebanon has faced many difficulties over the years. The civil war from 1975 to 1990 caused the country's power zone to fall behind patterns of power throughout the world and the region, due to the institution's loss and damage, as well as poor executive and operational management. And EDL-related limits.

The legislature was neither proactive nor creative. Instead, they followed similar old examples of power generation, depending on the oil. In addition, consideration has not been given to the development of the population and the continued increase in the demand for vitality over the years. Similarly, it did not consider the results for funds that could increase the cost of fuel. In addition, political distortions and risks persisted, hampering a vital region of creation, the power framework in Lebanon was also affected by the outbreak of civil war in Syria in 2011. Initially, the flow of Syrian refugees into the nation opened up to the force, with the country calling for more than 1.5 million settlers. Secondly, an investigation by the United Nations and the Government in 2017 shows that "at least 45 per cent of the electric associations carried out by the Syrian family units to the matrix are carried out unlawfully (Verdon, Abraham, Younis, Luhila-Galus, 2016).

2.7 The spiral effects of insufficient funding on power availability

2.7.1 Lack of Latest (modern) Equipment:

At any point there is no store, it is fundamentally recommended that the basic hardware and effective vitality will not be accessed. When the old machines are still in management, the recurrence of the event will be a lot of issues. Not only that, maturity and long use greatly reduces machine productivity. This means that more fuel will be spent than usual to be suitable for creating very little energy.

2.7.2 Policy on Engineering Infrastructure:

Because of the absence of a bioremediation plant, it turned out to be already annoying for the country to help businesses with their own extra parts. The establishment of the National Agency for Engineering and Engineering Sciences (NASANI) and the Ajaokuta Steel Rolling Mill mission can have the ability to assist in the assembly of part of this electrical equipment. In any case, this is especially unthinkable given the fact that there is no arrangement supporting the assembly of machines and their limbs. What's more, the government did not go to any institution with the producers of this equipment.

2.7.3 Low Morale among the Workers and Embargo on Employment:

Nigerian designers are among the best designers on the planet, but because of the legislative issues of delegating a political figure as a youth leader, they often lose enthusiasm for the framework. This is due to the fact that processors specialists regard it as a way of introducing them and their commitments to business back. This has reinforced their keenness to create a rigorous maintenance approach for the successful and efficient operation of the energy business. The bulk of these non-experts do not appreciate the value involved in routine and planned maintenance. In addition, there was a ban on the work of graduates in business. This predicts an exceptionally dangerous sign in the sense that there is an imminent perforation of an age hole that is carried out by this type of approach. This means that when the age of the most independent designers resigns, there will be insufficient hands for the courts to take over. Since design is an exceptionally strong call, it is mandatory to sharpen specialists to be reliably linked to standard and standard training and re-training programs. This provides staff with the new difficulties that have been identified in their fields and how to deal with such difficulties in the new century, but it is shocking to discover an incredible indifference towards preparing for some time at work.

2.8 Impacts of Lebanon Power Shortage

The inability of each of the three departments in the case of financial, monetary and social progress with its negative effects. After that, it may be well emphasized that the current lack of energy in South Asia is a remarkable obstacle to reasonable progress in the region. This section will include the negative effects of low density in South Asia. 2.1 Economic impacts It is clear from Area 1.1 that the negative effects of under-intensity will have a severe impact on the future economy of South Asia if the issue continues. However, there are negative financial implications currently felt in the region due to the lack of capacity. Although the financial impact of the lack of intensity in South Asia is the lowest studied circle; however, some of the investigations that have been distributed in the past years have mainly assessed their effects.

2.8.1 Environmental Impacts on the Environmental

Front, the most retroactive effect of non-access to power was identified with biomass consumption of vital source in rural areas. However, in urban areas, although a certain segment of the population still depends on the type of vital sources of activity, for example, forest fuel, coal and harvest. After the main spring of the natural effects is the switch to light oil or control of the second oil product modified generators. In South Asia, it is particularly important for families and private companies to have these generators in urban areas, creating greenhouse gases (GHGs) and breathing air and sounds in their overall areas. Despite the fact that its limited impact on air pollution is clear, these effects of low density are not counted in any test. Effect of biomass cooking in the Asian stacking BC. BC accumulation for 2003-2004 shows b. When the BC flow of the biomass cooker is expelled from. The lighter regions speak of the convergence of black carbon.

2.8.2 Challenges to Hydropower Development in South Asia

Absence of investment: Despite the various advantages of partition financing, engineers, and the whole of South Asia (development of the framework, potential for monetary development, job creation, situation, and disruption of medical problems), the region faces moderate development in the hydropower sector (Keong, 2005). . In Nepal and Pakistan, political unrest is one of the major difficulties in withdrawing direct telecommuting projects (Thavasi and Ramakrishna, 2009). If these countries want to make profits through their hydroelectric potential, progress must be made to improve political conditions immediately. Hydropower projects are expensive and require extensive speculation and may involve many risks.

2.9 Power Production Plants

In Lebanon, there are 13 power plants with an installed capacity of around 3,016 MW, broken down as follows:

- Thermal power plants: 2,764 MW
- Hydraulic power plants: 252.6 MW

The 1,362 km of air transmission lines are divided into four types:

- 400 KV high-voltage power lines, of 21 km of length.
- 220 KV high-voltage power lines, of 484 km of length.
- 150 KV high-voltage power lines, of 163 km of length.
- 66 KV high-voltage power lines, of 689 km of length.
- The 178 km underground cables are divided into three types:
- 220 KV high-voltage cables, of 50 km of length.
- 150 KV high-voltage cables, of 26 km of length.
- 66 KV high-voltage cables, of 102 km of length.

2.10 Related Work in area of Study

Research by (Salah & Abosedra, 2011), title Demand for Electricity in Lebanon: This paper evaluates interest in power in Lebanon through the use of three methods to clarify specifically OLS, ARIMA, and the exponential boot time range from January 1995 to December 2005. The estimates in the test reveal that ARIMA estimates (0.1, 3) 12) Diffuse with respect to reduced RMSE, MSE and MAPE standards, lagged by exponential homogenization and OLS. In this way, regulators in Lebanon can use non-direct-time chronological models to determine the future interest of the Authority until specific information about the various financial factors is reached, which may later lead to other presentation procedures that are better than measuring the interest on power in the nation.

Power is one of the indispensable elements of the financial progress of today's society. Interest in power is rapidly expanding, especially in emerging countries. This expanded request must be legitimately checked for appropriate manufacturing arrangements for this mainframe, so that the public will have the desired rate of

development. The idea of power is different from the force of different types, since power cannot be stored, and there were varieties of cross-cutting importance and merit. Precise assessment and expectation of energy demand can help in the proper adventure of new foundations as well as the fruitful activity of all types of electrical facilities in order to meet the demands of customers adequately. Accurate interest estimates are also essential for better planning of production facilities and security assessment of the framework. Several studies in writing have analysed the scale of the use of electrical dynamism and related topics (Bernard, 2002), among others, most of these examinations have examined the effect of real salary, energy cost, the cost of alternative ratios of vitality, population, temperature and other factors related to the use of power. Expecting the interest of force in a country like Lebanon is vital for two reasons. In the first place, to this point, only two studies have managed issues identified in different financial parts of energy use in Lebanon. Horie and Corvale (2005) used an example of 509 households in Lebanon to examine the country's vital private benefits in terms of wages, value, area of residence and number of tenants. Nasr, Bader and Debeba (2000) examined the determinants of energy use.

Research by (Elie Bouri 1, and Joseph El Assad, 2016), title The Lebanese Electricity Woes: An Estimation of the Economical Costs of Power Interruptions: A reliable and non-stop source of energy, as a noteworthy element of framework administrations, is essential for every single financial action. It also adds to the improvement of citizens' way of life and the innovative and logical progress of social orders. In Lebanon, whether it is to ensure such access remains a noteworthy test. Since the end of the war in the mid-1990s, Lebanon has never had a satisfactory level of energy security. Late figures indicate that per capita per capita use has developed at a normal rate of 7% per year, while the energy age has declined considerably. Of the most important, which is guided by the balance of energy supply / demand, is the demand for energy in Lebanon is oversupplied, leading to a shortage of energy supplies, causing a general blackout throughout the country. More than 7.5% of the energy demand (1116 GWh) was transferred from Syria and Egypt through the domestic interconnection framework. With the rise of the Syrian war in 2011, Lebanon has become more like a vital island. Energy imports have receded and significant new interest has been stimulated by the flooding of thousands of Syrian outcasts in Lebanon, leading to a further power shortage (Assad, 2016).

Research by (Elie and Joseph, 2016), title The Lebanese Electricity Woes: An Estimation of the Economical Costs of Power Interruptions:

This paper adds to the political and logical debate that includes the cash expenditures resulting from power cuts in Lebanon. By examining the information on the use of energy generated from local and external power stations, this paper evaluates the cash expenditures of intensive interventions in Lebanon during the period 2009-2014. In the light of 700 USD / MWh, I spoke with the natural appreciation of the lost pregnancy. (VOLL) at the time, the results show that energy inefficiency still offers commendable exchanges of wealth to deprive the economy and society as a whole. During the period 2009-2014, the total losses in the Lebanese economy amounted to 23.23 billion dollars. Similarly, some evidence recommends a sharp reduction in the cash expenditure of intensive interventions with the start of the corrosion factor in 2013. The results are

necessary for the presidents to distinguish the monetary productivity of the elective measures to improve the security of the Lebanese energy supply (Joseph, 2016).

3.0 Research Methodology

This report is quantitative research and this section discusses the plan of the exploration, the objective populace, arbitrary testing, the device utilized, and the strategy for information gathering and the technique for information examination. It will likewise give testing strategies and so forth this part talks about and clarifies the plan of the device for experimental investigation and strategy for information accumulation and strategies for inspecting the information utilized in it and will be utilized in this examination. In the contrary way, the power deficiency in Lebanon is likewise dissected and the strategies for preparing it dependent on information gathering. Proficient experts are a favoured principal perspective of any association since they are the fundamental main impetus in accomplishing a definitive objectives. In spite of the fact that these roofs of advancement are pending on all relations, there is a solid need to search for the best estimates fitting to the particular condition. Also, we used SPSS Software.

3.1 Research Approach

This project will carry out a descriptive study of the shortage of electricity in Lebanon and ways of addressing it. A sample population will be used for primary collection using the structured questionnaire.

3.2 Design Research

In the depiction of the plan, Uganda and Uganda (2003) revealed that the game plan recommends covering the name of the different gadgets and materials that the examination is relied upon to utilize, and applying some of them to convey the base of a vast segment of the test. Investigation is the essential strategy, which manages information gathering and investigation. The structure exhibits the sort of data to be gathered and gotten from the information accumulation framework.

3.3 Area of Study

The research will cover only widen Lebanon country while respondents will be selected randomly, the questionnaire will be distributed to them.

3.4 Method of Data Collection

This procedure will utilize the study strategy, to know the measure of respondents in the nation. While the data structure may not empower extremely precise appraisals, this method gives a general proportion of the degree of the school-prepared difference over the spaces (Jennings and Diprete 2010).

In the get-together data for the test, the master utilized the underlying spring help and information. The review conformed to the overview as an apparatus for gathering essential data. Studies were led on respondents who were assessed. Was a strategy for cleaving and determination, with more qualified respondents repaying essentially for lost time, making it hard to finish audits promptly, requiring extra time for remuneration. The surveys had an airplay plan that announced unseemly training, working conditions, school bolster, and called for basic leadership and arrangement.

3.4.1 Primary Source

The primary sources contains the data at first gathered by the individual watching the wonder by and large. The essential data emerges generally from the familiarity with occasions' directions, factor control, and the development of research conditions, including the usage of investigates and criticism on the review. The specialist sources essential data through recognitions and study methodologies for the review.

3.4.2 Secondary Source

These incorporate wellsprings of data that, albeit required for the present examination, have been gathered essentially from another examination. The data from these sources was not extraordinary to the world. Other individuals have taken them. With a particular last target to accumulate adequate data for this imperative work in people in general areas, past data, journals, periodicals, course exercises, magazines, day by day papers, reference books, singular undertaking reports, library and library were utilized.

3.4.3 Sampling Technique

A class test will be used because people have the best organization, and focus on what's more, less. (Sarantakos, 2013). Then the direct estimate that is freely searched should be used to ensure that all workers are in a reasonable position to maintain the main chapter on the tendency to test and certify that the results have been properly and correctly tested to summarize them. After this trade, we used the review of solace as a strategy to examine our exploration where this system falls under the technique of analysis is not possible.

3.5 Sampling Method

The random sampling method will be used in this study. The sample size of this study was 40 respondents randomly from Lebanon. This technique will enable the researcher to ensure that all participants in the population have the same right to participate in research sampling.

3.6 Population of the study

The target population of this study consists of people randomly selected in Lebanon. The study will be examined in 180 groups, based on students' experience in the academic and social environment at the main campus.

3.7 Sampling techniques for the study

Sampling is the procedure of selecting a certain number or any part of that audience for the motive behind obtaining data for speculation about population expansion Sarantokos (2013). People's testing is used to stay away from perceived mistakes in managing people. The audience estimate is limited to the example scale report. A realistic recipe was used as part of the example scale report.

4.0 Data Analysis

analysis of the data and findings of the study as described in the research methodology. The chapter also provides an explanation for the results of data from 180 respondents within Lebanon regarding the lack of

electricity within the country. All 180 respondents who replied to the questionnaire and answered their questionnaires responded. Thus, the response rate was 100% and was considered excellent. According to Moganda and Uganda (1999), the response rate of 50 per cent is sufficient for analysis and reporting; a good 60 per cent rate and response rate of 70 per cent and above are considered excellent. This excellent response rate is due to the researcher's additional efforts in developing an online questionnaire and making courtesy calls to remind respondents to fill out and return questionnaires

As Cooper and Schindler (2009) have appeared, information testing empowers the analyst to manage information assembled amidst a request with the particular point of contemplating and assessing revelations and meeting some basic, essential and indispensable issues.

4.1 Respondent Demographic information

This section sought to ascertain the general information regarding participants in the study with regard to country respondents, their duration of service in the organization, their academic qualifications, age, gender, unit and GDP.

From 180 questionnaires, 180 were usable. There are no unusable or missing questionnaires in the scanning tool. Therefore, data from 180 participants were analysed in this study. As described in Chapter 3. The following are the statistics of the Respondent for Demographic Information.

Table 1: Statistics

		Respondents Gender	Respondents Age	Respondents Working Experience	Respondents Qualification	Hard electricity shortage unit.	Electricity shortage on GDP and social welfare, unit
N	Valid	180	180	180	180	180	180
	Missing	0	0	0	0	0	0

4.1.1 Respondents Gender

Respondents from the 180 questionnaire, which has been distributed to organizations in others to measure gender response statistics, receive the questionnaire. The results show that males are 70 percent (60.6 percent) while females are 30 percent (39.4 percent). According to these statistics, it shows that the proportion of males has a higher (Table 2).

Table 2: Respondents Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	109	60.6	60.6	60.6
	Female	71	39.4	39.4	100.0
	Total	180	100.0	100.0	

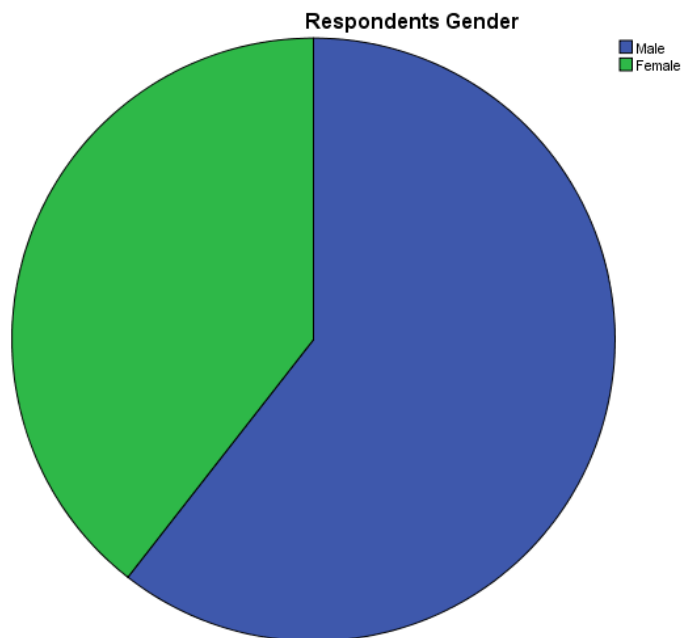


Figure 2: Respondents Gender

4.1.2 Respondents Age

Respondents receive questionnaire 180 distributed to organizations in others to measure age-responsive statistics. The results show that 19-20 (20.0%), 21-24 (40.0%), 25-30 (20%), 31 and above (20.0%). According to these statistics, it shows that 21-24 has the highest ratio (Table 2).

Table 3: Respondents Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19 - 20	36	20.0	20.0	20.0
	21 - 24	72	40.0	40.0	60.0
	25 - 30	36	20.0	20.0	80.0
	31 and Above	36	20.0	20.0	100.0
	Total	180	100.0	100.0	

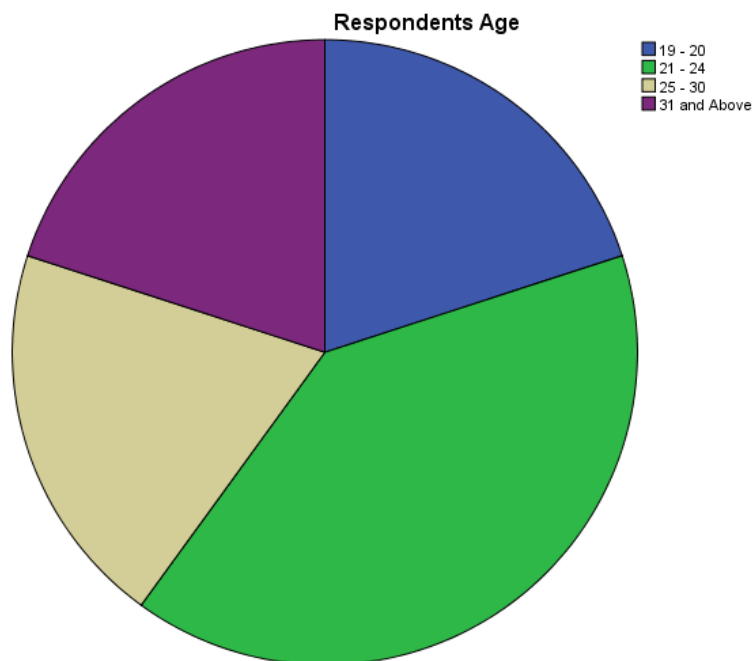


Figure 3: Respondents Age

4.1.3 Respondents Working Experience

Respondents from the 180 questionnaire distributed to organizations in the other to measure response statistics experience the work experience. Results show that 0 - 1 (39.4%), 2 - 3 (20.6%), 4-5 (20%), over 5 years (20%). According to these statistics, it was found that 0 - 1 has the highest ratio (Table 2).

Table 4: Respondents Working Experience

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0 – 1 years	71	39.4	39.4	39.4
2 – 3 years	37	20.6	20.6	60.0
4 – 5 years	36	20.0	20.0	80.0
Above 5 years	36	20.0	20.0	100.0
Total	180	100.0	100.0	

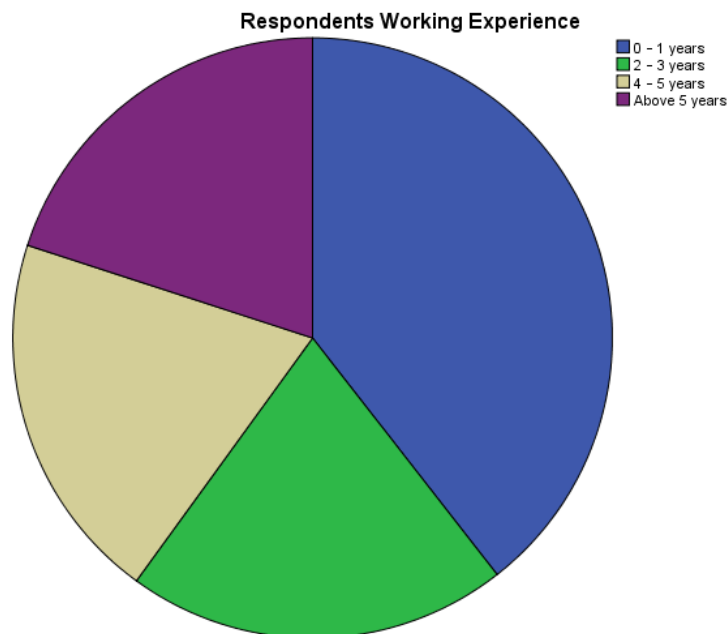


Figure 4: Respondents working Experience

4.1.4 Respondents Qualification

Respondents getting from the 180 questionnaire that has been distribution to among the organisations in order to measure the qualification response statistics. The results shows that Diploma (39.4%), Bachelor Degree (20.6%), Master's Degree (20.0%), and PhD Degree (20.0%). According to this statistic, it shows that Diploma has highest percentage (Table 2).

Table 5: Respondents Qualification

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Diploma	71	39.4	39.4	39.4
Bachelor Degree	37	20.6	20.6	60.0
Master Degree	36	20.0	20.0	80.0
PhD Degree	36	20.0	20.0	100.0
Total	180	100.0	100.0	

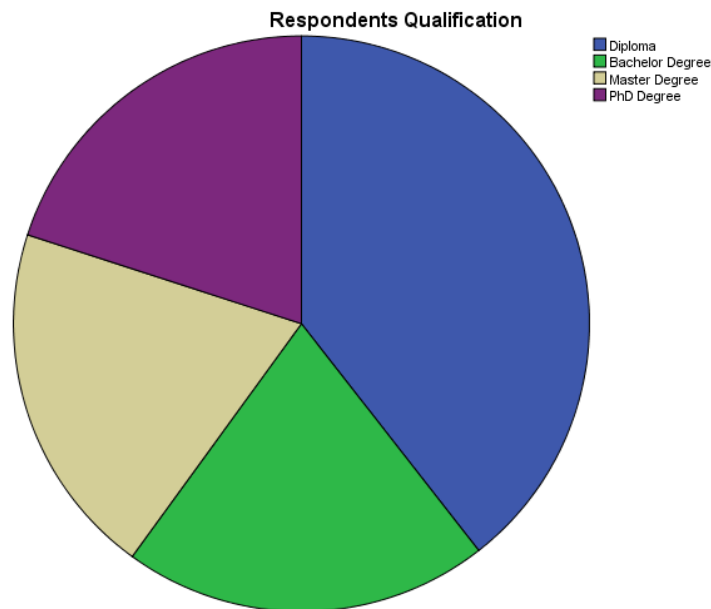


Figure 5: Respondents Qualification

4.1.5 Respondents Qualification

Respondents from Questionnaire 180, which has been distributed to organizations in other countries to measure solid electricity response statistics. The results show that the primary industry (20.0%), heavy industry (20.6%), construction industry (20.0%), oil and gas extraction (20.0%), while others (19.4%). According to these statistics, it shows that the heavy industry has the highest ratio (Table 2).

Table 6: Which electricity of various sectors under the condition of “hard electricity shortage” unit.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Primary Industry	36	20.0	20.0	20.0
Heavy Industry	37	20.6	20.6	40.6
Construction Industry	36	20.0	20.0	60.6
Petroleum and gas extracting industry	36	20.0	20.0	80.6
Others	35	19.4	19.4	100.0
Total	180	100.0	100.0	

Which electricity of various sectors under the condition of "hard electricity shortage" unit.

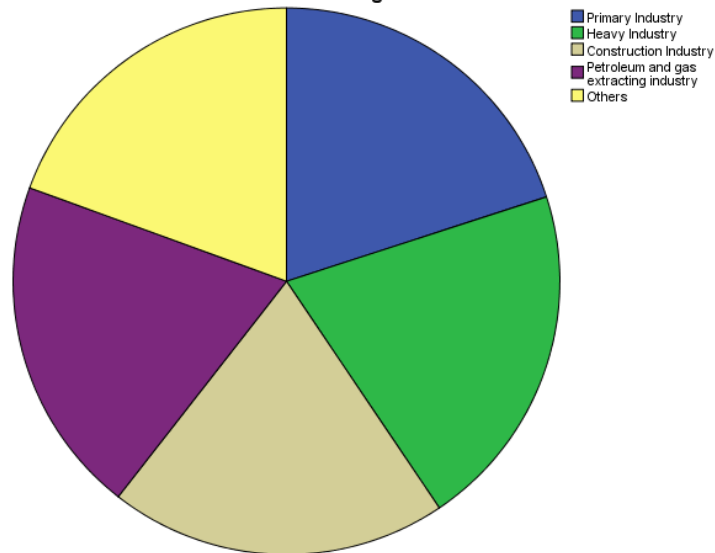


Figure 6: Respondents Electricity Unit

4.1.6 Respondents for GDP, Welfare and Price

Respondents from Questionnaire 180 are distributed to organizations in others to measure GDP response statistics. The results show that GDP (39.4%), consumer welfare (20.6%), and price 40.0%). According to these statistics, it shows that GDP has the highest ratio (Table 2).

Table 7: Which is the impact of hard electricity shortage on GDP and social welfare, unit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	GDP	71	39.4	39.4	39.4
	Welfare of consumers	37	20.6	20.6	60.0
	Price	72	40.0	40.0	100.0
	Total	180	100.0	100.0	

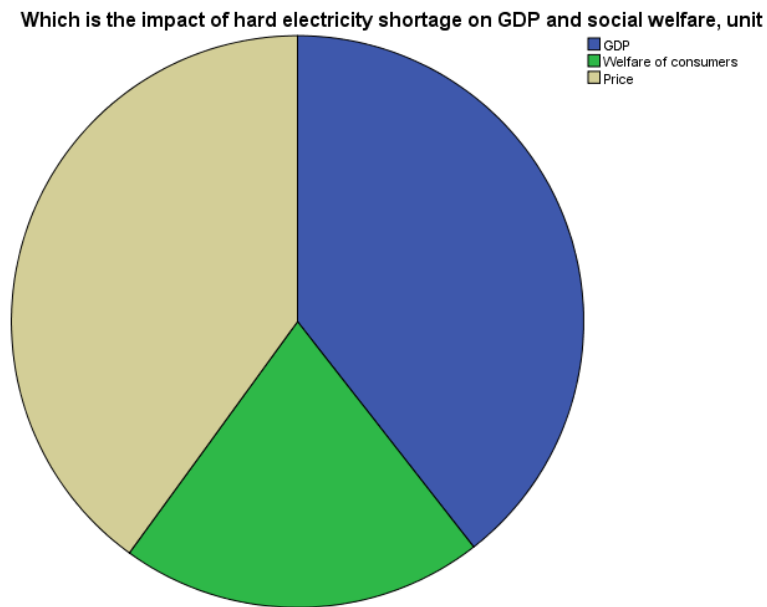


Figure 7: Respondents GDP and social welfare unit

4.2 Electricity Shortage Response

The first objective of the study was to establish the problem of problem of shortages of electricity in Lebanon and also the way to handle it. To achieve this, the respondents were requested to indicate their level of agreement on the questionnaire items on the subject. The responses were rated on a five point likert scale. The mean and standard deviations on these particular items and responses were generated and are presented in tables below.

Table 8: There are the maximum capacity of each of the thermal power plants, the hydropower plants and the generators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral Agree	37	20.6	20.6	20.6
	Agree	72	40.0	40.0	60.6
	Strongly Agree	71	39.4	39.4	100.0
	Total	180	100.0	100.0	

The Table 6 of frequency on this item shows that highest percentage of this question is (40.0%). This indicates that the respondents to this question choose “Agree” which seen to be the highest percentage.

Table 9: Our demand is providing 24hr electricity in summer temperature

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	35	19.4	19.4	19.4
Neutral Agree	72	40.0	40.0	59.4
Agree	73	40.6	40.6	100.0
Total	180	100.0	100.0	

The Table 6 of frequency on this item shows that highest percentage of this question is (40.6%). This indicates that the respondents to this question choose “Agree” which seen to be the highest percentage.

Table 10: There is also opinion about the electricity demand in winter temperature

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Disagree	36	20.0	20.0	20.0
Neutral Agree	36	20.0	20.0	40.0
Agree	36	20.0	20.0	60.0
Strongly Agree	72	40.0	40.0	100.0
Total	180	100.0	100.0	

The Table 6 of frequency on this item shows that highest percentage of this question is (40.0%). This indicates that the respondents to this question choose “Strongly Agree” which seen to be the highest percentage.

5.0 Discussion

As shown in the previous table, the negative effects of the lack of intensity on GDP are very large. GDP crop speeds up as the extent of the effect of lack of increases. At a point when the range is 15%, GDP is 6.39% lower. The effects of energy shortages on GDP are the result of a low yield in the same energy area; in addition, the yield of different segments collapses further to varying degrees with a restricted force. Attention is drawn to the fact that, in the industrialization and urbanization phase, there is a fixed 1: 1 relationship between gross domestic product (GDP) and long-term biological exploitation, which does not contest the results in this paper.

From a single perspective, we focus a lot on stock communication between GDP and energy demands, not the flow relationship. Again, the CGE showed the results of the balance, as projects move from high-energy spending to low-energy consumption due to power shortages, which makes it somewhat more flexible for power.

Changes in buyer welfare are also shown in the table above. The well-being of the buyer is estimated through a similar variety of Hicks, and its appearance is: consumer methods of money management can be changed by lack of strong influence. Moreover, the lack of energy makes costs rise. The production of different parts will be reduced due to the absence of energy, and supply will decrease more than the interest.

Impacts on the Output of Various Sectors due to shortage of electricity

Table 4 shows the effects of the lack of solid energy on the crop of different divisions. As shown, the effects of solid power control on different sections are unique. Basic business and light business are most influential, with low returns and energy shortages. At a time when the energy shortage is 15%, the production of industry and light industry is decreasing by 11.39% and 10.12% individually. Core business, development work and administrative work are less affected, but coal mining and design are strongly affected. Unlike the different parts, the revenue of the oil and gas industry is increasing somewhat.

Our investigation is an exceptional work by separating itself from previous tests by portraying, within an improved model, both the immediate and periodic financial expenses of the severe interventions in the Lebanese environment, where the official electric age coincides with the special period. Specifically, this investigation adds to the relevant writing by showing the function of power plants in reducing those expenses and locating the two vessels of force, as far as expenditures, in the era of the current force in Lebanon. The results showed that intervention costs had a negative impact on the neighborhood economy. In the light of the normal VOLL of 700 USD / MWh, the results show that the total estuaries of the Lebanese economy achieved 23.23 billion US dollars in 2009-2014. Be well, these expenses have decreased since the start of a sailing force. In 2013, this paper confirmed that the idea of using control boats designed to work for energy creation is a clear engagement in the short and medium term monetary perspective, as stipulated in the MEW plan in 2010.

The data presented in this paper can be valuable to leaders and industry professionals who are looking to understand the unparalleled hardness and quality of the electrical area. Instinctively, the use of distress vessels increased as an ideal and time-efficient response to reduce these total costs, given their adaptability and low speculative costs compared to warm or imported energy. Given that the power failures have financial implications for the country everywhere, the Lebanese electricity framework and in this way, the Lebanese economy will make a profit by reducing the costs of blackout. Low expenditure by Lebanese family units and institutions on private generators, whose expenditures are significantly higher in terms of energy 2016, 9,883 11 out of 12 EDL companies recommend that customers and organizations place, spend and develop resources in the near economy. Enhance the way of life.

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